EMERGENCY MEDICAL SERVICES SYSTEMS AMENDMENTS OF 1979

HEARING

BEFORE THE

SUBCOMMITTEE ON HEALTH AND SCIENTIFIC RESEARCH

OF THE

COMMITTEE ON LABOR AND HUMAN RESOURCES

UNITED STATES SENATE

NINETY-SIXTH CONGRESS

FIRST SESSION

ON

S. 497

TO EXTEND THE AUTHORIZATIONS OF APPROPRIATIONS RELATING TO EMERGENCY MEDICAL SERVICES SYSTEMS UNDER TITLE XII AND SECTION 789 OF THE PUBLIC HEALTH SERVICE ACT

FEBRUARY 28, 1979

Printed for the use of the Committee on Labor and Human Resources

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EMERGENCY MEDICAL SERVICES SYSTEMS AMENDMENTS OF 1979

WEDNESDAY, FEBRUARY 28, 1979

U.S. SENATE,
SUBCOMMITTEE ON HEALTH AND SCIENTIFIC RESEARCH,
OF THE COMMITTEE ON LABOR AND HUMAN RESOURCES,
Washington, D.C.

The subcommittee met, pursuant to notice, at 9:12 a.m., in room 4232, Dirksen Senate Office Building, Senator Alan Cranston, presiding pro tempore.

Present: Senators Kennedy, Cranston, and Schweiker.

OPENING STATEMENT OF SENATOR CRANSTON

Senator CRANSTON. This morning we are once again holding hearings on the extenstion of the authorities in title XII of the Public Health Service Act—emergency medical services systems—and section 789 of that act—training in emergency medical services.

We will be discussing the achievements under the four major programs involved. Those four programs are the development of comprehensive emergency medical services systems; research in emergency medical services; training of personnel in emergency medical services; and special programs related to burn injuries.

The achievements in these four areas are impressive. Of the 304 designated emergency medical services regions in the United States, all but 22 have received support under this legislation. With the awards made in fiscal year 1978, 29 of these regions will have completed the five-grant cycle authorized by the legislation and will be capable of providing the most advanced level of care to emergency victims independent of Federal grant support. Another 169 regions are in various stages of development toward this level.

Research grants have supported such studies as consideration of how to improve the provision of emergency medical services during disaster situations, the handling of pediatric emergency telephone calls to an emergency room, and the linking of patient medical records between emergency departments and other providers of health care.

Training grants have supported the training of over 7,500 physicians in continuing medical education programs, the establishment of seven residency programs for emergency physicians, and the training of over 20,000 nurses and almost 50,000 emergency medical technicians and paramedics.

The newer burn injury program is supporting six major studies designed to tell us the incidence of burn injuries, where burn

patients go for care, how many severe burns are treated in specialized burn treatment facilities, and the cost of this treatment, and to provide other data on the most effective way of assuring good and timely treatment to burn victims. This program has also supported special training programs for professionals who provide care to burn victims.

In addition to these achievements under the EMS statutory provisions, I believe we must look beyond the impressive statistics and assess the impact of the program on the community at large.

EMS legislation has provided the catalyst for community providers to work together to look at community problems and to solve them together. These providers have learned about the value of sharing specialized, costly resources that are needed to care for the critically ill emergency patient—and many times for the hospitalized, nonemergency patient as well. This approach is setting an example for the feasibility of further coordinated efforts in those regions where health planning is on its way to becoming a reality.

The legislation has also provided an opportunity for intergovernmental and regional approaches to medical care by establishing a neutral program unit to offer these governmental agencies assistance in developing a community resource. In turn, these governmental agencies are working together in a joint effort, in many cases for the first time, to provide a coordinated method of providing emergency medical services.

Most significantly, I believe, the EMS Act has improved the quality of medical care for emergency victims. Trained personnel now respond to most accidents and victims can have considerable assurance that they will not be further injured through improper handling by the ambulance attendant. Most heart attack victims now receive experienced and knowledgeable help within minutes of their attacks, help which means the difference between life and death.

These services are taken for granted now in many, many communities. We have come a long way from the days when I first introduced the Emergency Medical Services Systems Act in 1972. At that time, many ambulances did not have attendants who had been trained even in basic first aid. The highly trained paramedic was a rarity, and in many communities the undertaker's hearse doubled as the ambulance service. The Emergency Medical Services Systems Act has helped many communities correct these deficiencies.

I believe we have a commitment to all the 304 designated EMS regions to help them achieve their maximum potential in providing emergency medical services. A year ago, the Administration estimated it would have all these regions operating at full capacity by the end of fiscal year 1985. However, to my extreme disappointment, today the Administration is proposing to phaseout the program by fiscal year 1982—obviously leaving many regions far short of their full potential.

I will be exploring with the Administration and with the witnesses today the data on which the Administration has based this recommendation as well as the effects of such a rapid phaseout. S. 497, which I introduced on Monday with Chairmen Kennedy and Williams and Senators Randolph and Javits, proposes continuation

of the present program level for 3 years in anticipation of enactment in 1982 of a final 3-year extension to complete funding our commitments to all of the 304 regions.

I will also be exploring with the Administration today its implementation of the existing law and particularly the implementation of the amendments made in 1976 by Public Law 94-573.

Those amendments were based in large part on findings made by the General Accounting Office (GAO) in 1976. The GAO study found that grants made to support the establishment of EMS systems provided the incentives to enable a community to overcome the initial, difficult obstacles hindering regionalization of emergency medical services. However, the study also found that there were considerable inconsistencies in the degree and duration of support that the EMS systems were receiving from participating governments within the region.

In addition, the GAO study found a serious lack of coordination between HEW programs supporting EMS activities, as well as a nearly total lack of coordination between EMS activities supported by Federal agencies at the local and national levels.

In the course of the hearings on the 1976 amendments, it also became clear that the EMS division of HEW was not given enough personnel to provide the technical assistance necessary to advise local communities how to file grant applications and then to administer those grants.

The 1976 law addressed these problems.

That law placed new requirements on grant applicants to provide assurances of continued operation of the system after the termination of Federal support. It also imposed specific statutory responsibilities on the EMS division of HEW to provide technical assistance to grantees and help coordinate Federal activities related to emergency medical services. In addition, the 1976 amendments required HEW to allocate enough money and positions to that unit to enable it to carry out its responsibilities.

This morning we will hear from HEW and representatives of professional organizations and EMS systems. I look forward to this testimony and the opportunity to discuss with each of our witnesses ways in which the EMS program can be strengthened.

I ask that the text of S. 497 and my remarks when it was introduced be printed in the hearing record at this point.

[The information referred to follows:]

96TH CONGRESS
1ST SESSION

S. 497

To extend the authorizations of appropriations relating to emergency medical services systems under title XII and section 789 of the Public Health Service Act.

IN THE SENATE OF THE UNITED STATES

FEBRUARY 26 (legislative day, FEBRUARY 22), 1979

Mr. CRANSTON (for himself, Mr. KENNEDY, Mr. WILLIAMS, Mr. RANDOLPH, and Mr. JAVITS) introduced the following bill; which was read twice and referred to the Committee on Human Resources

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A BILL

To extend the authorizations of appropriations relating to emergency medical services systems under title XII and section 789 of the Public Health Service Act.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Emergency Medical Services Systems Amendments of 1979".

PLANNING, INITIAL OPERATION, AND IMPROVEMENT

SEC. 2. (a) Section 1207(a)(1) of the Public Health Service Act (42 U.S.C. 300d-6(a)(1)) is amended by—

(1) striking out "and" after "1977",

(2) striking out the semicolon after "1978" and inserting in lieu thereof a comma,

(3) striking out "and for the purpose of making grants and contracts under sections 1202, 1203, and 1204, there are authorized to be appropriated" the second time it appears, and

(4) inserting before the period at the end thereof a comma and "$40,000,000 for the fiscal year ending September 30, 1980, $43,000,000 for the fiscal year ending September 30, 1981, and $46,000,000 for the fiscal year ending September 30, 1982".

(b) Paragraph (5)(B) of subsection (a) of section 1207 of such Act is amended by striking out "two" and inserting in lieu thereof "five".

RESEARCH

SEC. 3. Section 1207(b) of the Public Health Service Act (42 U.S.C. 300d–6(b)) is amended by inserting before the period at the end thereof a semicolon and "and $3,200,000 for the fiscal year ending September 30, 1980, $3,500,000 for the fiscal year ending September 30, 1981, and $3,800,000 for the fiscal year ending September 30, 1982".

BURN INJURIES

SEC. 4. Section 1221(c) of the Public Health Service Act (42 U.S.C. 300d–21(c)) is amended by—

(1) striking out "and" after "1978", and

(2) inserting before the period at the end thereof a comma and "$3,000,000 for the fiscal year ending September 30, 1980, and for each of the next two fiscal years".

TRAINING

SEC. 5. Section 789(g)(1) of the Public Health Service Act (42 U.S.C. 295g–9(g)(1)) is amended by striking out "five" and inserting in lieu thereof "eight".

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[From the Congressional Record--Senate, Monday, February 26, 1979]

Introductory Remarks of Senator Cranston on S. 497

By Mr. CRANSTON (for himself, Mr. KENNEDY, Mr. WILLIAMS, Mr. RANDOLPH, and Mr. JAVITS):

S. 497. A bill to extend the authorizations of appropriations relating to emergency medical services systems under title XII and section 789 of the Public Health Service Act; to the Committee on Human Resources.

EMERGENCY MEDICAL SERVICES SYSTEMS AMENDMENTS OF 1979

● Mr. CRANSTON. Mr. President, I am pleased to introduce the proposed "Emergency Medical Services Systems Amendments of 1979," and am gratified to be joined in introducing this legislation by the chairman of the Human Resources Committee (Mr. WILLIAMS), and of its Health and Scientific Research Subcommittee (Mr. KENNEDY), as well as by two fellow committee members with longstanding interest in emergency medical services, the Senator from West Virginia (Mr. RANDOLPH), and the Senator from New York (Mr. JAVITS).

Mr. President, the Emergency Medical Services Systems Act of 1973, Public Law 93-154, which I authored in the Senate, was enacted in November 1973, and its appropriations authorizations were extended and its authorities improved in October 1976 by Public Law 94-573. The provisions of these laws constitute title XII and section 789 of the Public Health Service Act.

The legislation we are introducing today would extend the appropriations authorizations in title XII and section 789 of that act for another 3 years. These authorizations provide for grant and contract support for emergency medical services systems, research in emergency medical services, demonstration projects in burn injury programs, and training in emergency medical services.

NEED FOR THE PROGRAM

Mr. President, when I first introduced the Emergency Medical Services Systems Act in 1973, there was growing recognition of the inability of many communities to respond immediately and effectively to a medical emergency. These communities represented a broad range of geographical configurations, of population density, and of economic diversity. Their emergency medical services deficiencies were caused by a multitude of problems. In some cases the cause lay in a shortage of good emergency facilities and equipment. In others, it lay in too many facilities competing with each other for the patient. In some areas, vast geographical distances created special problems. In others, a lack of trained emergency personnel delayed the provision of care that could prevent death and disability.

Our study of the problem at that time convinced us that the solution lay in establishing systems to support emergency medical services in the communities so that these systems could pull together, in a rational manner, the medical resources needed to provide prompt and competent care to an emergency victim.

Mr. President, the numbers of preventable deaths and disabilities resulting from medical emergencies provide grim evidence of the need to improve the provision of emergency medical services. Accidental injury is the leading cause of death among all persons aged 1 to 38 and is the fourth highest cause of all deaths in the United States. Recently, the National Center for Health Statistics reported that, in 1976, 100,000 accidents were the cause of these deaths. Included in this figure were 46,700 deaths from automobile accidents; 14,300 from falls; 7,200 from drowning; 6,200 from fires, burns, and injuries related to fire; 4,400 from poisoning; and 21,200 from all other accidental causes. Although this number is tragically high, it does represent a decrease from the 117,000 deaths from accidents which occurred in 1972—a decrease of almost 15 percent.

I do not think any single factor can be credited with causing this decrease of 17,000 in the numbers of deaths from accidental injury, but it stands to reason that improvements in the quality of emergency care in the community over that span of years must have contributed to this decrease. Those specific areas where fewer lives were lost in 1976 than in 1972 were automobile accidents, poisoning—a major improvement in saving children under age 5 who are victims of accidental poison—and infant mortality which decreased from 18.5 per 1,000 live births in 1972 to 15.1 in 1976. Victims of these circumstances are particularly dependent on good emergency care, which, in turn, is dependent on bringing skilled personnel quickly to the victim, transporting the victim as rapidly and as safely as possible to the level of care needed to treat his or her injuries, and insuring that that level of care is accessible and meets high standards of quality.

PROVISIONS OF THE PRESENT LAW

Title XII of the Public Health Service Act authorizes appropriations for grants to communities to support the planning, establishment, development, or expansion of comprehensive EMS systems. Eligible grantees are States, local units of government, public entities administering a compact or other regional arrangement or consortium, or a public or nonprofit private entity representing the

units of government in the region for which a system is proposed.

Such an applicant must submit with its application a proposal indicating how the community it represents will develop a comprehensive EMS system utilizing to the best effect existing health care resources, facilities, and personnel. The proposal must cite gaps in the community's ability to provide services and the steps that will be taken to overcome such deficiencies. Title XII specifies 15 requirements for basic components of a comprehensive EMS system which all applicants must provide assurances of meeting or being able to meet within a specified period of time.

These 15 components were derived from testimony received in both the Senate and House during consideration of the act in the 93d Congress and represent the basic requirements for a comprehensive EMS system. These basic components include, among other requirements, such things as well-trained personnel, adequate and centralized communications capability, adequate transportation systems, categorized and nonduplicative facilities, access to specialized medical care units, and assurances that services will be provided without regard to an individual's ability to pay.

In addition to grant support for development of an EMS system, the EMS Act and the 1976 amendments also provide authority for specific project grant and contract support for research and training programs in emergency medical services or techniques and in burn injuries.

EMERGENCY MEDICAL SERVICES SYSTEMS DEVELOPMENT

Mr. President, I would like to remind my colleagues that, when this legislation was first enacted, the intent was clearly expressed that the Federal support provided each community would be a maximum of five grants.

With those grants, the communities were to progress through the several stages of development of a comprehensive emergency medical services system. At the conclusion of those five grants, the community would be expected to maintain the EMS system at the level it had achieved with the Federal assistance.

Mr. President, after 5 years of experience under the Emergency Medical Services Systems Act, 282 of the 304 State-designated emergency medical services regional systems have received support. With completion of the current grant awards which were in June of 1978, 29 regions will have achieved total independence from Federal-grant support. Another 169 regions will be in some phase of operation development, and 84 are planned or being planned, leaving 22 regions which have not yet received support. A year ago HEW estimated that all of these systems would have reached their optimum potential in 6 years or by the end of fiscal year 1985.

The 3-year extension we are introducing today would provide the basis during the next 3 fiscal years for an additional 53 regions to complete the 5-year cycles, and an additional 80 regions to move forward in their development.

Mr. President, as I have suggested, at the end of the 3-year period of support authorized by the legislation we are introducing today, it would probably take only an additional 3 years for the remaining regions to complete their progress through the various stages of development. However, I have limited this bill to 3 years because I believe it is necessary for Congress to review the implementation and administration of grant programs periodically so that any needed improvements or modifications in the statutory authorities can be made.

In the next 3 years, I intend to exercise a close watch over HEW's administration of the emergency medical services systems program to insure that the EMS regions throughout the country are given adequate support to progress toward their maximum potential and are, as the law requires, moving toward independence from Federal financial support.

In fact, Senator KENNEDY and I have already asked the General Accounting Office to review the administration and implementation of provisions we enacted in the 94th Congress requiring communities to take steps toward achieving that self-sufficiency. We have requested the GAO to report back to us with recommendations on how these requirements can be administered more effectively if it is found that improvements are necessary. Thus, 3 years from now, I fully expect to be introducing legislation to authorize appropriations for the concluding 3 years of this program.

Today, in addition to limiting the appropriations authorizations to 3 years, I am limiting the level authorized to the level of current appropriations plus a modest increase each year to permit program support to remain relatively constant, taking into account inflation.

The present authorization of appropriations for fiscal year 1979 is $70 million. I am suggesting that the authorization of appropriations for fiscal year 1980 be reduced by $30 million—back to $40 million—with $43 million and $46 million authorized in fiscal years 1981 and 1982, respectively. It is my understanding that continuation of support in these increments for the subsequent and final 3 years of the program would be adequate to meet projected commitments.

I believe that this reduced level of funding will be sufficient to permit emergency medical services systems to grow at a rate which will recognize their potential to progress through the various development stages, and to provide for necessary support of those systems as they become able to utilize it to best advantage.

RESEARCH IN EMERGENCY MEDICAL SERVICES

Mr. President, the second appropriations authorization in title XII provides for grant support for research under section 1205 in emergency medical techniques, methods, devices, and delivery. Among the useful research projects completed under this authority are studies on the provision of emergency medical services during disaster situations, patient medical record-linking between emergency departments and other providers in the medical care system, the use of specially-trained assistants guided by protocols to improve handling of pediatric emergency telephone calls to an emergency room, and the advantages and problems of using public safety personnel in providing emergency medical services.

In addition, I understand that major advances are being made toward developing accurate means of measuring the effectiveness of emergency medical services systems in reducing deaths and disabilities resulting from emergencies.

Mr. President, when the EMS legislation renewed in 1976, the authority for research grants was amended to specify that, in awarding research grants or contracts, special consideration would be given to emergency medical services research in rural areas, emphasizing the identification and utilization of techniques and methods to improve the provision of emergency medical services in rural areas. It is my understanding that considerable research has indeed been conducted which would have direct relevance, to providing emergency medical services in rural areas, and I know that my colleagues will be interested in hearing from HEW on the impact of this research in rural areas when the administration testifies before the Subcommittee on Health and Scientific Research.

Although $5 million has been authorized to be appropriated each year for research since the Emergency Medical Services Systems Act was first enacted, this year we are introducing legislation to authorize a level of appropriations slightly above the present amount that has actually been appropriated. In fiscal year 1979, $3 million was appropriated for research in emergency medical services, and the bill we are introducing today would authorize the appropriation of $3.2 million, $3.5 million, and $3.9 million for fiscal years 1980, 1981, and 1982, respectively.

BURN INJURY PROGRAM

The burn injury program, Mr. President, was added in the 94th Congress by Public Law 94-573. That law added a new part B to title XII to authorize grants for the establishment, operation, and improvement of programs to demonstrate the treatment and rehabilitation of burn victims, and to conduct research and provide training in the treatment and rehabilitation of burn victims.

In developing that law, we became convinced that there is a need to improve the provision of burn care; national understanding of the magnitude of the burn problem; utilization of current resources; the support and location of treatment programs; specialized training for physicians, nurses, and ancillary professional and paramedical personnel; and programs for rehabilitation; as well as to establish evaluation methodologies on a regular basis which can provide epidemiological data on burn incidence, permit the tracking of patients through the most appropriate levels of care to determine immediate and long-term treatment and rehabilitation outcomes, and provide comparative cost data for systems of burn care. The new authority

gave us the means to pursue these concerns.

Mr. President, in September 1977, HEW initiated work in six areas to implement this program. These six areas are the six New England States, the Finger Lakes and central New York region, the State of Virginia, the State of Alabama (except Mobile), northern Texas, and San Diego and Imperial Counties, Calif. These sites, during the next 3 years, will collect census data for all burn patients requiring hospital care. Data will be collected in each of five data-gathering areas: the emergency department, the outpatient department (including rehabilitation treatment), general hospitals without specialized burn care, hospitals with specialized burn treatment facilities, and the morgue.

Patients admitted to the hospital will be tracked for a maximum of 18 months with periodic collection of data. The population included in the six sites is estimated at 28 million.

The data collected will be used to estimate the incidence of burn injuries, where burn patients go for care, how many severe burns are treated in specialized burn treatment facilities, and other topics which will provide a description and understanding of the Nation's current burn treatment system.

Economic data will be collected to describe the spectrum of costs, charges, and reimbursements associated with burn care.

Each project area is also involved in one or more applied research tasks of national interest. These tasks range from the development of a burn severity index to the development of a burn nurse training curriculum.

Mr. President, I am pleased that the activities of this program have been coordinated with the National Institute of General Medical Sciences, the National Center for Health Statistics, the National Center for Health Services Research, the Health Care Financing Administration, the Consumer Product Safety Commission, and the National Fire Prevention and Control Administration.

In fiscal year 1979, $10 million was authorized to be appropriated for the burn injury program; $3 million was appropriated.

The legislation we are introducing today would authorize the appropriation of $3 million for each of the next 3 fiscal years for the burn injury program—the same level as has been appropriated annually for the 3 years of the program. Early indications from the studies under way indicate that there is a considerable need for training health care personnel in the treatment of burn patients as well as in teaching them how to develop relationships between burn centers and related community health or rehabilitation providers. I intend to look carefully at the feasibility of utilizing this authority for support of such training efforts.

TRAINING IN EMERGENCY MEDICAL SERVICES

Mr. President the fourth appropriations authorization in the emergency medical services systems amendments we are introducing today would extend the authorizations—contained in section 789 of the Public Health Service Act, as added by the 1973 EMS Systems Act—for training programs in emergency medical services. This authorization has been $10 million each year since 1973, and the amount appropriated each year has been $6 million. The legislation we are introducing today would retain the authorization level at $10 million for the next 3 years, while we consider the best way to provide for training support in the burn field.

Under this program, 7 residency programs have been established for emergency physicians, and 77 residents are currently being trained. In addition, over 3,300 physicians are receiving continuing medical education in such diverse subject areas as medical management of an EMS system; training in poisoning and overdose; and interdisciplinary training programs with emergency medical residents, paramedics, mobile intensive care nurses, physicians, and EMS instructors.

In addition, with support under section 789, almost 12,000 nurses are currently being trained in emergency care, and over 13,000 emergency medical technicians and paramedics are currently being trained.

In previous years, a total of 4,334 physicians, 10,510 nurses, 34,635 paramedics and emergency medical technicians, and 7,825 people in other categories have been trained in some aspect of emergency medical services under this authority.

It is estimated that there is still a need for over 9,000 emergency medicine physicians, over 20,000 EMS nurses, 30,000 emergency paramedics, and over 100,000 emergency medical technicians in the United States. The training programs supported by section 789 grants can help us fill that need.

Mr. President, I am pleased to report that over 90 percent of these training programs are awarded in areas receiving support for the establishment or expansion of an emergency medical services system. This is in full accord with the provision in the law requiring that priority in the awarding of training grants be given to those regions with EMS systems supported under title XII of the Public Health Service Act. As these systems are established throughout the Nation, more of these trained personnel can be effectively used in the lifesaving work to which they are dedicated. The authority for training such individuals has enabled many communities to provide good emergency medical services utilizing a well-trained team of physician, nurse, paramedic, and technician. I believe this authority should be extended through fiscal year 1982 to help develop the personnel needed to improve, expand, maintain, or initiate the 304 emergency medical services systems which the Nation requires.

CONCLUSION

Mr. President, in my view, our experience over the past 5 years under the authorities first enacted in the Emergency Medical Services Systems Act of 1973 fully supports the extension we propose at this time. In the communities where systems have been developed, there has been a measurable improvement in the provision of health care and in the coordination of many resources that previously operated independently.

As more and more EMS systems become operational, I believe that the grim statistics on deaths and disabilities resulting from accidents and sudden illnesses will be reduced still further, and that we will begin to see substantial advances made in terms of lives saved and disabilities averted due to prompt and competent medical intervention in emergency situations. The human resource gain and the dollars and productive lives saved fully justify the modest investment already made and which we are calling for to be continued in developing emergency medical services systems throughout the Nation. With extension of the title XII and section 789 authorities for 3 more years, I hope that we will be able to make major progress toward nationwide coverage.

* * * * * * *

● Mr. KENNEDY. Mr. President, I am pleased to join my distinguished colleague, Senator CRANSTON, as a cosponsor of the Emergency Medical Services Systems Amendments of 1979.

This program first began in 1973 when the Emergency Medical Services Systems Act became law (Public Law 93–154). As chairman of the Subcommittee on Health and Scientific Research I have seen this program grow and provide needed technical support to communities around this country. While recognizing the uniqueness of each community the EMS program has made great progress in regionalizing programs and having communities work in concert with each other.

There are at present 304 EMS regions in the country. During fiscal year 1978 over $36 million were awarded to recipients in 43 States, the District of Columbia, Puerto Rico, and the Virgin Islands.

The bill introduced today by Senator CRANSTON makes no substantive changes and continues the authorization of the program through fiscal year 1982. This bill also continues the national burn injuries program through fiscal year 1982. The burn program was initiated in 1976 under Public Law 94–573.

The Subcommittee on Health and Scientific Research will be holding a hearing on this bill Wednesday of this week. I urge my colleagues to join in cosponsoring this legislation that has an important impact in almost every State.●

Senator CRANSTON. Senator Schweiker, do you have any opening comments?

Senator SCHWEIKER. Thank you, Mr. Chairman. I am most pleased to be able to be here this morning with my colleague, Senator Cranston, who has done much in this field, to discuss reauthorization of title XII of the Public Health Service Act, emergency medical services systems. I want to extend my appreciation to Dr. Boyd and to the administration witnesses and also a fellow Pennsylvanian, Dr. Gene Cayten, Director of the Center for the Study of Emergency Health Services, University of Pennsylvania, who will also be testifying.

As ranking Republican on the Labor and Human Resources Committee and its Subcommittee on Health and Scientific Research, I have supported development of the Nation's regional emergency medical systems since their enactment in 1973. As a vital entry point to the delivery system, I believe every citizen ought to have a prompt and direct access to emergency medical care. Moreover, the care should have the minimal capability of providing basic life support. I am particularly concerned about those who live in rural and other medical-shortage areas where emergency care may be the principal link between a suffering individual and necessary medical services.

This becomes especially essential when the emergency calls for sophisticated medical and institutional health care. Having one ambulance and an attendant in a community or a neighborhood is not sufficient. An integrated systems approach on a regional basis is more appropriate and desirable. To establish a network of these systems across the country was the intent of the Congress in 1973 and has been the thrust of the Federal Government's emergency medical services program.

I understand that the emergency medical services program has provided grant support to 282 EMS regions out of an identified 304. In addition, several regions have progressed through all funding stages and achieved the capability of advanced life support. This is a laudable attainment and the regions and the program directors can be proud of their accomplishments. Nevertheless, to expect the majority of emergency medical service regions to attain this level of sophistication is asking too much. Instead, we should be asking if the EMS regions realistically can attain that level and if there will, in fact, be continued financial support for EMS activities when Federal support stops.

The purpose of today's hearings, as I view them, is threefold: first, to examine the experience of EMS systems development under the Federal program; second, to determine at what service capability our policy objectives should be targeted; and, third, to provide sufficient funding authority to achieve those objectives. I hope the witnesses will address themselves in the testimony to these critical questions.

In closing my remarks, I would like you to consider that we have an excellent opportunity here to accomplish two substantial goals: to assure virtually all Americans access to quality medical care in the event of an emergency, and to bring to a successful conclusion the Federal program instrumental in reaching your goals.

Thank you, Mr. Chairman.

Senator CRANSTON. Thank you very much, Dick. I appreciate very much your collaboration and cooperation in the consideration of this legislation.

We will now proceed with the Administration witnesses. I want to remind you and all witnesses that we have limited time for this hearing this morning. So if you can be very brief in your testimony and summarize your statements—they will go in the record in full—we will appreciate it.

Our first witness this morning is Dr. George Lythcott who will lead off for the Administration. Good morning.

I would like to repeat one thing I said in welcoming you; that we have limited time available for this hearing this morning. So if you can be rather brief in your statement, summarizing the high points, the full statement will go in the record as if read.

STATEMENT OF GEORGE I. LYTHCOTT, M.D., ADMINISTRATOR, HEALTH SERVICES ADMINISTRATION, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE ACCOMPANIED BY DR. DAVID R. BOYD, DIRECTOR, DIVISION OF EMERGENCY MEDICAL SERVICES, HEALTH SERVICES ADMINISTRATION; DR. LAWRENCE R. ROSE, SENIOR RESEARCH MANAGER, NATIONAL CENTER FOR HEALTH SERVICES RESEARCH; AND DR. KENNETH MORITSUGU, DIRECTOR, DIVISION OF MEDICINE, BUREAU OF HEALTH MANPOWER, HEALTH RESOURCES ADMINISTRATION

Dr. LYTHCOTT. Thank you, Senator. I would like to apologize to the committee for my lateness.

Senator CRANSTON. That is quite all right.

Dr. LYTHCOTT. It took 2 hours for a 1-hour trip today, sir.

Good morning, Mr. Chairman. I am pleased to be here today to discuss with you the emergency medical services program. Seated with me at the table are Dr. Boyd, on my left, Dr. Ken Moritsugu, on my right, and Dr. Larry Rose, on my far left.

As you have requested, I will keep my opening remarks to a minimum. I have a rather lengthy formal statement which will be inserted in the record.

As you know, the emergency medical services systems program has provided the mechanism and funds for States and communities to develop regional systems of emergency care throughout the Nation. This program was enacted by the Congress in 1973. It has provided the incentive for other Federal programs, States and local agencies to undertake a nationwide effort to improve the emergency care of our sick and injured citizens.

As a result of the interest of Congress in this program, $184 million have been appropriated through fiscal year 1979 to provide grants to plan, establish, and improve emergency medical services systems. About $22 million have been appropriated to undertake an EMS research program to explore applied research problems related to many of the regional concerns of emerging emergency medical services systems.

As you know, the current EMS law provides for three distinct levels of activity. The first funding year is directed toward developing a program plan for a regional system. The following 2 years are the operational or establishment years which will produce a basic

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life support system. The law provides for 2 additional funding years during which the regional community may improve or expand the regional system to upgrade services to advanced life support.

With the award of grants in fiscal year 1979, it is estimated that 291 of the 304 national EMS regions will have received funding at some level under the EMS program. It is further estimated that 66 regions will have completed the funding process, another 140 will be in the developmental phase, and 85 regions will have completed the planning process. This will leave 13 regions that have not participated in the program. Within the 140 regions that are in the development phase, 131 will be in the basic life support portion of the program, and 9 will be just instituting the advanced life support program.

The program has been in existence since fiscal year 1974. The results, through fiscal year 1978, have continued to support the contention that emergency medical services can be a major contributing factor to saving lives. For example, 51 projects in the EMS program, within metropolitan communities with populations of over 100,000, are providing prehospital advanced support for cardiac care. Various projects have reported in the literature describing 20 to 60 percent field conversion of ventricular fibrillation. This is a mortal condition when it occurs outside the medical system. With the advent, however, of advanced life support in EMS systems, it is coming under medical control. We have had projects reporting as high as a 33-percent long-term survival rate for this patient group. The advent of CPR, or cardiopulmonary resuscitation, by citizens, has also been a major contributing factor in supporting many of these heart attack patients until the emergency medical services arrive on the scene.

One of the most exciting areas of EMS has been the area of poison care. Major emergency medical services systems are building and incorporating poison care as one of the critical patient categories. In those locales where there are regional poison control centers, there has been a 40- to 60-percent reduction of poisoning encounters in the emergency departments. This has been attributable to outreach information programs and the management of a poison episode within the home through the intervention of poison control centers. This early intervention, provided by experts, prevents inappropriate use of the expensive emergency department resources and, of course, results in the most appropriate care for those patients who do incur a life-threatening poisoning episode.

The emergency medical services program of the Department of Health, Education, and Welfare has worked exceedingly well with other components of the total health care delivery system and other programs that are related to emergency medical services. These include some of the activities of the Health Resources Administration's Bureau of Health Manpower, the National Center for Health Services Research, the National Institutes of Health, the Food and Drug Administration, the Indian Health Service, and the Bureau of Community Health Services.

The National Center for Health Services Research administers the program in emergency medical services research authorized under section 1205 of the Public Health Service Act. Since fiscal year 1974, $22.4 million have been appropriated for EMS research,

supporting 66 grants and 19 contracts; 25 projects are presently being funded under section 1205, and 18 additional EMS-related studies are being supported under the NCHSR general research authority.

The Federal program to establish EMS systems has been implemented vigorously, with emphasis on compliance with required systems and configurations. The applied research program has focused on ways to obtain credible evidence about the effectiveness and efficiency of this mandated model, and on appropriate and economical alternatives. Dr. Rose, on my left, is here to answer any questions you may have about this applied research effort.

While the primary mission of the National Institutes of Health is basic biomedical research, much of this research is indirectly related to emergency medical services. The National Heart, Lung, and Blood Institute, the National Institute of Neurological and Communicative Disorders and Stroke, and the National Institute of General Medical Sciences each fund research programs in their program areas related to EMS. These Institutes and others coordinate closely with the Health Services Administration.

The emergency medical training program, authorized under section 789 of the Public Health Service Act, provides grants and contracts to appropriate schools and other entities to assist training programs in the techniques and methods of providing emergency medical services. In addition to institutional grants, financial assistance is provided to medical students who plan to practice or specialize in emergency medicine. Of the amounts appropriated, at least 30 percent is used to train physicians in emergency medicine. Since 1974, $18,700,000 has supported the training of approximately 92,600 emergency care providers. Dr. Moritsugu, on my right, is available for any further information you may want in this area.

As I indicated earlier, Mr. Chairman, with the completion of the projects in fiscal year 1979, 95.7 percent, or 291 of the 304 State-designated emergency medical services regions, will have received assistance under title XII of the Public Health Service Act; 85 regions will have completed the planning phase, covering a population of 59,500,000; 140 regions will be in some phase of operational development, serving a population of 98,000,000; and 66 emergency medical services regions serving a population of 52,100,000 will have completed their eligibility under title XII.

Within the next few days, we will be submitting to the Congress proposed legislation for continuation of the EMS program for another 3 years. We propose that this be the final extension of the EMS legislation, with a planned phaseout of the program in 1982. For the period 1980 through 1982, the program priority will be placed upon completing those regional systems that are currently in the process of developing an advanced life support system. The major emphasis will be given to completing the greatest number of EMS systems through the basic life support capability. For the period 1980 to 1982, no planning will be initiated and no new systems previously not involved in the program will enter into the program. Through this approach, we anticipate that approximately 83 percent of the total 304 regions will be able to achieve either a basic life support or advanced life support capability by the comple-

tion of the program in 1982. Approximately 17 percent of the regions will have received no support or only planning support.

In summary, Mr. Chairman, we have been able to collect information from our EMS systems' grantees which indicates that EMS has, directly or indirectly, contributed to the reduction of death and serious injury. We feel that there is an improved awareness by citizens of the need for emergency medical services. There is an improved awareness by government officials of this need, and there has been an increase in local and State spending to support the development and continuation of emergency medical services. We therefore feel that this is an appropriate Federal program to complete in the immediate future, so that we can devote our existing resources to other health initiatives having a greater need for Federal support.

Thank you, Mr. Chairman, for your time. We will be prepared to answer any questions you may have.

[The prepared statement of Dr. Lythcott follows:]

FOR RELEASE ONLY UPON DELIVERY

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

STATEMENT

BY

GEORGE I. LYTHCOTT, M.D.

ADMINISTRATOR, HEALTH SERVICES ADMINISTRATION

BEFORE THE

SUBCOMMITTEE ON HEALTH AND SCIENTIFIC RESEARCH

COMMITTEE ON LABOR AND HUMAN RESOURCES

UNITED STATES SENATE

WEDNESDAY, FEBRUARY 28, 1979

Mr. Chairman and Members of the Subcommittee:

My name is Dr. George Lythcott. I am the Administrator of the Health Services Administration which administers a number of health services programs, one of which is the subject of today's hearing: Emergency Medical Services. I am accompanied today by Dr. David Boyd, the Director of the Division of Emergency Medical Services of our Bureau of Medical Services; Dr. Kenneth Moritsugu, Director of the Division of Medicine, Bureau of Health Manpower, Health Resources Administration; and Dr. Larry Rose, Senior Research Manager, National Center for Health Services Research.

I am pleased to appear before you this morning to discuss the EMS program and our position on extension of the EMS authorities contained in Title XII of the PHS Act. I am familiar with your important contributions to the development of this program.

As you know, the Emergency Medical Services Systems Program has provided the mechanism and funds for States and communities to develop regional systems of emergency care throughout the Nation. This program was enacted by the Congress in 1973 and has provided the incentive for other Federal programs, States, and local agencies to undertake a nationwide effort to improve the care to our sick and injured citizens.

In the EMSS Act, some 15 components are identified to assist planners, coordinators, and operators of emergency medical services systems in the development of comprehensive areawide regional programs. The Health Services Administration, through the Division of Emergency Medical Services, has been the responsible administrative unit for implementing this program.

The central theme and intent of the EMSS Act was to develop systems of emergency medical care that could significantly decrease rates of death and disability. The goal of the national EMS Program has been to initiate regional planning and integration of the 15 component systems so that communities can provide essential and appropriate EMS care to all emergency patients.

The current EMS problem confronting the Nation is compounded by the 75 million encounters of patients to hospital emergency departments each year. Approximately 80 percent of these patients cannot be considered true medical emergencies. These patients are those seeking primary care and using emergency facilities to access the health system. Another 15 percent of encounters are real, but not life-threatening, emergencies which require urgent care for minor trauma, infectious diseases and other acute general medical and surgical problems. The remaining five percent of encounters are for the critically-ill and injured patients who are in a life-threatening or near life-threatening situation. The emphasis of the EMS Program has been to develop a regional system of care directed at this five percent of critically-ill and injured patients, and to develop adequate resources, procedures and implementation techniques which can save the lives of this five percent of the total emergency workload. Through this system, improved care can be provided to the other less urgent patients who also require emergency services.

Program Accomplishments

Mr. Chairman, I would like to discuss what has been accomplished, thus far, and what impact these emergency medical services systems have had in reducing injury and death, which was the original purpose of the program.

As a result of the interest of Congress in this program and the administration support, $184,000,000 have been appropriated through fiscal year 1979 to provide grants to plan, establish and improve emergency medical services systems. About $22,000,000 have been appropriated to undertake an EMS research program. These activities have tended to explore applied research problems related to many of the regional concerns of emerging emergency medical services systems.

As you know, the current EMS law provides for three distinct levels of activity. The first funding year is directed toward developing a program plan for a regional system. The following two years are the operational or establishment years which will produce a basic life support system. This system meets the national criteria by an integration of prehospital emergency medical personnel (to include emergency medical technicians), ambulances meeting national specifications, two-way voice communications, and equipment recommended by the American College of Surgeons. Effective basic life support can provide patient stabilization, airway management, hemorrhage control, shock management with initial wound care, fracture stabilization and, under medical control, specific non-invasive treatment. Transportation of the patient is provided to the closest most appropriate hospital that has been preselected through a categorization program. The patient is received in the hospital emergency department staffed by physicians, and, if required, admitted to a critical care unit specific to his disease or injury.

The current EMS law provides for two additional funding years during which the regional community may improve or expand the regional system to upgrade

services to advanced life support. At the advanced life support level, mobile prehospital units are equipped with intervenous fluids, drugs, some form of bioelectrical communication, and they are staffed with paramedics with proper physician backup to perform expert diagnoses, treatment and triage of critical conditions.

With the award of grants in fiscal year 1979, it is estimated that 291 of the 304 National EMS Regions will have received funding under the EMS Program. It is further estimated that 66 regions will have completed the funding process, another 140 will be in the developmental phase and 85 regions will have completed the planning process. This will leave 13 regions that have not participated in the program. Within the 140 regions that are in the development phase, 131 will be in the basic life support portion of the program and 9 will be just instituting the advanced life support program.

The program has been in existence since fiscal year 1974. The results, through fiscal year 1978, have continued to support the contention that emergency medical services can be a major contributing factor to saving lives. For example, fifty-one projects in the EMS program, within metropolitan communities with populations of over 100,000, are providing prehospital advanced support for cardiac care. Various projects have reported in the literature describing 20 to 60 percent field conversion of ventricular fibrillation. This is a lethal condition when it occurs outside the medical system. With the advent, however, of advanced life support in EMS systems, it is coming under medical control. We have had projects reporting as high as 33 percent long-term survival rate for this patient group. This means that the patient was alive at the time of hospital discharge. The advent of CPR, or cardio pulmonary resuscitation, by citizens has also been

a major contributing factor to saving many of these heart attack patients until the emergency medical service arrives on the scene.

One of the more exciting areas of EMS has been the area of poison care. Major emergency medical services systems are building and incorporating poison care as one of the critical patient categories. In those locales where there are designated regional poison control centers, such as Baltimore, Boston, Pittsburgh, Denver, Salt Lake City, Grand Rapids, and San Diego, there has been a 40 to 60 percent reduction of poisoning encounters in the emergency departments. This has been attributable to outreach information programs and the management of a poison episode within the home through intervention of poison control centers. This early intervention, provided by experts, prevents inappropriate use of the expensive emergency department resources, and results in the most appropriate care for those patients that do incur a life-threatening poisoning episode. This means a cost saving to the community. Inappropriate use of the emergency department is reduced and appropriate care of emergency patients is enhanced.

Program Coordination

The emergency medical services program of the Department of Health, Education, and Welfare has worked exceedingly well with other components of the total health care delivery system and other programs that are related to emergency medical services. These include some of the activities of the Health Resources Administration's Bureau of Health Manpower; the National Center for Health Services Research, OASH; the National Institutes of Health; the Food and Drug Administration; the Indian Health Service, and the Bureau of Community Health Services both of the Health Services Administration.

EMS Research

The National Center for Health Services Research (NCHSR) administers the program in Emergency Medical Services (EMS) research authorized under Section 1205 of the Public Health Service Act. Since fiscal year 1974, $22.4 million has been appropriated for EMS research, supporting 66 grants and 19 contracts. Twenty-five projects are presently being funded under Section 1205, and 18 additional EMS-related studies are being supported under the NCHSR general research authority (Sec. 305). The Federal program to establish EMS systems has been implemented vigorously with emphasis on compliance with required systems configurations. The applied research program is focused on ways to obtain credible evidence about the effectiveness and efficiency of this mandated model, and on appropriate and economical alternatives.

NCHSR has been working very closely with the Division of Emergency Medical Services (DEMS), Health Services Administration, to gain greater understanding and interaction between the research community and those who use research results--EMS system managers, advisors, and policymakers.

NCHSR's EMS research program has been developing and testing methods to evaluate system performance, such as measures of EMT performance, protocols for diagnosing and treating medical emergencies, and ways to audit the quality of care in Emergency Departments. Our research indicates that, even in communities with "mature systems," serious dangers are not being detected due to inadequate monitoring of systems performance.

As the Federal contribution is phased out, communities, particularly in rural and remote areas, will need, more than ever, valid information on which to

base decisions about safe alternatives. One alternative demonstrated by a NCHSR-supported project to be safe and cost effective, is the substitution of properly trained EMTs for Paramedics in resuscitating many heart attack victims. A study now being designed by NCHSR and DEMS to use survival rates from critical medical emergencies to evaluate the effectiveness of mature systems will help EMS systems after Federal funding has been discontinued.

Six research projects have been completed during this fiscal year providing insight into: strengths and weaknesses of central dispatcher performance, including guidance on training needs; methods to identify patients who seem to benefit more from rapid transportation than from elaborate pre-hospital care; advantages and problems with using public safety personnel, such as police officers, in the delivery of EMS; use of specially-trained assistants guided by protocols to improve handling of pediatric emergency telephone calls to an emergency room; evaluation of the effectiveness of burn treatment protocols as an educational device to improve the quality of care delivered to burn patients; and problems with development and use of an injury/illness severity index to classify emergency patients and evaluate the effectiveness of their care.

EMS research can help policymakers to make sound decisions about allocating scarce health resources. Measures now being developed will permit accurate assessment of system costs, benefits, and alternatives.

While the primary mission of the National Institutes of Health is basic biomedical research, much of this research is indirectly related to emergency medical services (EMS). The National Heart, Lung, and Blood Institute (NHLBI), the National Institute of Neurological and Communicative Disorders and Stroke

(NINCDS), and the National Institute of General Medical Sciences (NIGMS) each fund research programs in their program areas related to EMS. These Institutes and others coordinate closely with the Health Services Administration through such efforts as the Interagency Technical Committee, research center grants in EMS, NIH contract review of applications for HSA burn demonstration programs, and regional burn care systems whose research grants are supported by NIH and demonstration contracts by HSA. Still broader based transfer activities related to EMS were sponsored by NIGMS in 1978 when the Institute sponsored a Consensus Development Conference on Supportive Therapy in Burn Care. In attendance were burn specialists from 33 States and 7 foreign countries, representatives from 10 Federal agencies, and the news media. Consensus was reached and the results widely published on a number of critical issues, including the amount and type of fluid resuscitation, the use of steroids in the treatment of smoke inhalation, the use of antibiotics to curb infections, and nutritional support following burn injuries.

EMS Training

The Emergency Medical Training program, authorized under Section 789 of the Public Health Service Act, provides grants and contracts to appropriate schools and other entities to assist training programs in the techniques and methods of providing emergency medical services. In addition to institutional grants, financial assistance is provided to medical students who plan to practice or specialize in emergency medicine. Of the amounts appropriated, at least 30 percent is used to train physicians in emergency medicine. Since 1974, $18,700,000 has supported the training of approximately 92,600 emergency care providers.

The Emergency Medical Training program has been successful in providing support for expanding emergency medical care. However, continued financial assistance for the training of allied health professions in EMS should continue to be financed at the local level to coordinate the supply of providers with the local need. Also, medical schools now recognize the need to educate physicians in EMS training and are offering training experience in EMS, primarily at the residency level. Emergency medicine is a growing physician specialty. For all of these reasons, there is no need to continue Federal financial support for EMS training.

Administration Proposal

Mr. Chairman, as I indicated earlier, at the completion of fiscal year 1979 funding, 95.7 percent of the emergency medical services regions will have received assistance under Title XII of the Public Health Service Act. Eighty-five (85) regions will have completed the planning phase covering a population of 59,500,000; 140 regions will be in some phase of operational development, serving a population of 98,000,000; and 66 emergency medical services regions serving a population of 52,100,000 will have completed their eligibility under Title XII.

Within the next few days, we will be submitting to the Congress proposed legislation for continuation of the EMS Program for another three years. We propose that this be the final extension of the EMS legislation with a planned phase-out of the program in 1982. For the period 1980 through 1982, the program priority will be placed upon completing those regional systems that are currently (F.Y. 1979) in the process of developing an advanced life support system. The major emphasis will be given to completing the

greatest number of EMS systems through the basic life support capability. For the period 1980 to 1982, no planning will be initiated and no new systems previously not involved in the program will enter into the program. Through this approach, we anticipate that approximately 83 percent of the total 304 regions will be able to achieve either a basic life support or advanced life support capability by the completion of the program in 1982. Approximately 17 percent of the regions will have received no support or only planning support.

Essentially, we believe that the provision of care in emergencies is a local and State responsibility. The basis for funding for ongoing emergency services should come primarily from medical care reimbursement systems, i.e., insurance programs, Medicare and Medicaid, and other financing programs. There has been a need, however, to stimulate the establishment of systems, the installation of equipment and the coordination of the multiple agencies which must participate. The Federal Government has appropriately financed a major share of assistance during this capacity-building period. It is not appropriate, however, for the Federal Government, in our view, to indefinitely finance the operation of these systems or to bear the cost of the complete development of all the systems across the country. As noted, State and local responsibility is primary.

As you know, Mr. Chairman, both the Administration and the Congress are currently confronting the difficult choices required to slow the inflationary impact of Federal spending. Clearly, every valid social objective cannot be addressed at an optimal level. The EMS program has, we believe, reached that point of development where States and local communities have an

appreciation of the importance of the program. We believe that the EMS Program has accomplished the objective of increasing State and local awareness of the need to improve emergency medical services, and that the systems' approach has been shown to be successful. We believe that it is most appropriate, in view of continuation of State and local efforts and in terms of the Federal health priorities, that this program be extended only for a period of three years with a planned phase-out in 1982. This phase-out period will provide an interval of transition for States and local communities to pick up their responsibility. It will also provide a period of alert for States and local communities to complete that portion of the Federal program which will be funded through 1982.

In summary, Mr. Chairman, we have been able to collect information from our EMS systems' grantees which indicates that EMS has, directly and indirectly, contributed to the reduction of death and serious injury. We feel that there is an improved awareness by citizens of the need for emergency medical services. There is an improved awareness by government officials of this need, and there has been an increase in local and State spending to support the development and continuation of emergency medical services. We therefore feel that this is an appropriate Federal program to complete in the immediate future, so that we can devote our existing resources to other health initiatives having a greater need for Federal support.

Thank you Mr. Chairman for your time. I will be happy to answer questions.

Senator CRANSTON. Thank you very, very much. I appreciate your brief and direct statement of your main points.

The legislation we have introduced would not retain the earmark of funds appropriated for planning grants after fiscal year 1979. However, dropping the earmark would still permit the Administration to support first-year planning grants, as well as any second-year planning grants which the Department finds eligible and justified.

If Congress made it clear that it contemplated a 6-year period before termination of the program, would the Administration plan, as a matter of policy, to fund planning grants in fiscal year 1980 and 1981 where eligible applications are submitted?

Dr. LYTHCOTT. At the present time, sir, our plan is not to do that.

Senator CRANSTON. I am asking, if Congress enacted legislation providing for that, what would the Administration do?

Dr. LYTHCOTT. I am sorry, sir; I misunderstood you. Of course we would do it.

Senator CRANSTON. One of the major changes made in the 1976 EMS Amendments was in the role of the EMS Division in coordinating the EMS services, research and training grant programs, and providing technical assistance for grant applicants and grantees. The law requires the Department to allocate sufficient funds and personnel to that unit to enable it to carry out these responsibilities. In addition, the Labor-HEW Appropriations Act for fiscal year 1979 specified that HEW was to increase the personnel for the EMS unit by 30 positions in fiscal 1979.

Would you please indicate briefly what additional funds and staff positions have been allocated to the unit in fiscal years 1977, 1978, and 1979? If you do not have that information available, you could give it to us for the record.

Dr. LYTHCOTT. There are currently 42 members of the staff at this time; there are 13 at the national office and 29 in the regions. Actually, Mr. Chairman, the dollars for the 30 positions were used for the pay raise for EMS and for the rest of the agency, in keeping with the OMB directive that the programs absorb the pay raise this year, again in keeping with the President's request for a tight budget.

Senator CRANSTON. Would you submit for the record, figures on additional funds and staff for those 3 years, 1977, 1978, 1979?

Dr. LYTHCOTT. We will, sir.

[The information referred to follows:]

ADDITIONAL FUNDS AND STAFF FOR FISCAL YEARS 1977, 1978, AND 1979

The number of permanent staff has remained constant over the past three fiscal years: 13 positions in the EMS administrative unit in HEW and 29 positions in the Regional Offices. However, in fiscal year 1978, the 13 positions in the EMS unit and program support funds previously provided by the patient care activity were formally transferred to the EMS unit.

There have been modest increases in program support funds over the three years. The major increase in fiscal year 1979 was for consultant services. A breakdown of the increase by fiscal year follows:

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EMS PROGRAM SUPPORT—FUNDS AVAILABLE

	1977	1978	Estimated 1979
Headquarters	$186,816	$113,493	$459,029
EMS unit	[1](199,399)	[1](307,631)	[1](80,000)
Subtotal	386,215	421,124	539,029
Regional offices	863,184	1,015,507	1,130,971
Total	1,249,399	1,436,631	1,670,000

[1] Funds provided to EMS from budget of Division of Hospitals and Clinics, BMS, HSA.

Senator CRANSTON. Would you also please give us for the record, again, not verbally now, detailed information on numbers and functions of personnel and operational funding allocations for the EMS unit in HEW and for each of the regional offices for the past 3 fiscal years?

Dr. LYTHCOTT. Yes, sir.

[The information referred to follows:]

NUMBERS AND FUNCTIONS OF PERSONNEL AND OPERATIONAL FUNDING ALLOCATIONS FOR LAST 3 FISCAL YEARS

In each of the past three fiscal years, there have been 13 permanent positions in the EMS unit in HEW and 29 permanent positions in the Regional Offices.

The major functions of personnel in the EMS unit may be summarized as follows:

Program Direction and Maintenance.
Regional Workshops and National Symposia for Grantees.
Technical Assistance to Grantees and Nongrantees.
Monitoring EMS Grants Program.
Grants Administration.
Burn Injury Projects.
National EMS Clearinghouse.
Support for the Interagency Committee on EMS.

The 29 positions in the Regional Offices have been allocated as follows:

TYPE OF PERSONNEL

DHEW region	Professional	Support	Grants management	Total
I	1	1	.....	2
II	2	.....	1	3
III	2	1	.....	3
IV	2	1	.....	3
V	2	1	.....	3
VI	1	1	.....	2
VII	2	.....	.....	2
VIII	2	1	2	5
IX	2	1	.....	3
X	1	1	1	3
Total	17	8	4	29

The major functions of Regional Office personnel may be summarized as follows:

Technical Assistance to State and Grantees.
Monitoring of Grants.
Grants Management.
Collection of Program EMS Progress.

EMS PROGRAM SUPPORT—FUNDS AVAILABLE

DHEW regions	Fiscal Year— 1977	1978	1979
I	$49,300	$67,450	$78,949
II	88,700	103,509	108,720
III	95,380	108,994	126,231
IV	123,200	132,021	140,457
V	92,400	110,624	123,958
VI	64,000	71,392	76,522
VII	64,045	73,504	95,768
VIII	125,200	152,669	164,796
IX	79,359	97,563	107,339
X	81,600	97,781	108,231
Subtotal regions	863,184	1,015,507	1,130,971
Headquarters	[1] 386,215	[1] 421,124	[1] 539,029
Total	1,249,399	1,436,631	1,670,000

[1] Funds provided by the Division of Hospitals and Clinics, BMS, HSA for fiscal year 1977—$199,399, fiscal year 1978—$307,631, and fiscal year 1979 estimated at $80,000.

Senator CRANSTON. Concerning the Interagency Committee on Emergency Medical Services, to what extent have the activities of the committee improved the coordination of Federal agency grant programs in jointly supporting EMS systems or in coordinating grant programs in the same geographical areas?

Dr. LYTHCOTT. I am pleased to say, Mr. Chairman, that the Emergency Medical Services Interagency Committee has gotten off to a great start, and with the coordination and cooperation of the several agencies involved, things are going very well. I have a whole list of accomplishments that we feel that the committee has been involved in, and I would like to submit this for the record, unless you would like for me to read them to you.

Senator CRANSTON. If you would give it to us for the record, that would be great.

[The material referred to follows:]

EMERGENCY MEDICAL SERVICES—INTERAGENCY COMMITTEE ON EMERGENCY MEDICAL SERVICES

The Interagency Committee on Emergency Medical Services (IACEMS) and its work groups play an important role in the coordination of Federal agency's efforts in EMS. If Federal agencies are to reduce duplication, to move toward more effective funding efforts, and to promote government-wide standards, some forum must exist to accomplish these tasks. The IACEMS has fulfilled this role of coordination and information exchange among the member Federal agencies. Accomplishments to date include:

Reviewed and endorsed the EMS Evaluation Workbook.

Approved, published, and distributed, "Federal Program Resources Guide for Emergency Medical Services Systems".

Studied the status of primary transportation capability and future demand.

Prepared, published and distributed the Guidelines for Developing an EMS Communications Plan.

Developed EMS biomedical telemetry standards.

Made general and specific recommendations to the Federal Communications Commission on dockets up for review and consideration.

Made general and specific recommendations to the Department of Transportation on the adequacy of their dispatcher training course for EMS communicators and on the technical content of a film on EMS Communications.

Reviewed and approved the Emergency Medical Technicians-Paramedic training course and guidelines for Grants for Training in Emergency Medical Services.

Explored satellite potential and their communications capability in EMS.

Provided consultation and advice on Federal Aviation Administration criteria for air ambulances.

Made general and specific recommendations on joint funding of EMS projects utilizing multiple sources of funding from Federal agencies. Also considered implementing specific projects for combined Federal funding.

Participated in the proposed development of a pilot program with Department of Labor and other agencies in the training of Handicapped Veterans as EMS dispatchers.

Prepared "tasking statement" for an EMS Communications Operations Guide Booklet.

Provided consultation and advice on inter-State and intra-State EMS communications.

Discussed the Memorandum of Understanding between the Department of Transportation and the Department of Health, Education, and Welfare.

Explored the problem of care for emergency patients in national parks and is currently developing specific guidelines to improve care.

Assisted in the Lakes area EMS (Buffalo, NY) discussion with Canada in the resolution of co-channel licensing problems with stations in Canada and those in the United States along the Canadian Border areas.

Senator CRANSTON. I understand that the Secretary has suggested that the charter for the Interagency Committee not be renewed. What are the reasons for this suggestion and the current status of this committee?

Dr. LYTHCOTT. I think, sir, that is not the case; it is a matter of procedure, and not substance. I think, like a lot of other rechartering of committees, it has been a little late. We will miss the March meeting, because it has not been rechartered, but I have every reason to believe that within 6 weeks we will be meeting again and the committee will have been rechartered. I have no evidence that it is not to be rechartered.

Senator CRANSTON. Regarding assurances of financial support by local communities, you will recall that the GAO study in 1976 showed that although communities were able to upgrade their EMS resources as a result of the EMS legislation, there was a great deal of inconsistency in the support provided the EMS system by the participating local governments. As a result, the law was amended to require EMS systems to provide assurances of support, including financial support, for maintaining the systems at the levels achieved with Federal grant support.

I understand that regulations implementing this requirement, as well as any of the new provisions in the 1976 amendments, were not issued until November of last year. Would you please, again for the record, submit a report indicating why there was such a delay and showing a chronology of the steps taken in the process of issuing those regulations?

Dr. LYTHCOTT. We will, sir.

Senator CRANSTON. Thank you.

[The information referred to follows:]

A CHRONOLOGY OF THE STEPS TAKEN IN THE PROCESS OF ISSUING EMS REGULATIONS

October 21, 1976, EMSS Amendment Enacted.
December 31, 1976, Complete Regulation Development Plan.
February 1977, Draft specifications to PHS/OGC.
April 1977, HEW Under Secretary approved going to Final Regulations.
June 1977, Draft Regulations to PHS/OGC.
January 10, 1978, PHS/OGC submitted Regulations to PHS.
June 28, 1978, PHS submitted Regulations to DHEW.
June 30, 1978, DHEW submitted Regulations to OGC.
July 11, 1978, OGC returned Regulations with comments.
July 17, 1978, EMS responded to OGC.
August 24, 1978, OGC requests "common sense" changes.
September 18, 1978, Meeting with OGC to make changes.
October 2, 1978, Final changes submitted to OGC.
November 3, 1978, Final Regulations published.

Senator CRANSTON. In your ongoing evaluations of the EMS systems, have you assessed how each of these systems will be continued when Federal grant support is terminated?

Dr. LYTHCOTT. We have not made an assessment of each of them, Sir, but we have every reason to believe that there will be a positive influence throughout, from the point of view of continuing the completed systems.

Senator CRANSTON. There would be what?

Dr. LYTHCOTT. There will be a positive influence in general in the continuation of these, but there are some problems. One of the things we have done is to get the University of Pennsylvania to review this issue entirely and to give us advice, so that we can use that to influence our technical assistance to the grantees as we go along. We do not have that information as yet, but we are working toward it, because it is important.

Senator CRANSTON. As you get that, if you would submit information to us, that would be helpful.

Dr. LYTHCOTT. All right.

Senator CRANSTON. To what extent have State governments been able to provide assurances of financial support to regional systems, and do you believe that the States can be a source of continued support for regional systems after Federal support terminates?

Dr. LYTHCOTT. I believe, in general, many of them will; I think it is going to be spotty, Mr. Chairman. I would like to ask Dr. Boyd to say a few words about this, because he has been a lot closer to it than I have and I think he can give you a more accurate response.

Senator CRANSTON. Dr. Boyd?

Dr. BOYD. I think the picture is not as grim as always believed. States are coming up with dollars to match, and we think we are getting at least a 1-to-1 dollar match at the State level now, and probably a 20-to-1 dollar match at the local level. So far we have not seen any diminution of our program. We have some 29 other programs in the pipeline; everyone of these has been supported at least at the level of the Federal commitment.

The city of San Diego, after the Federal program, enacted a $4.5 million levy to support paramedics in that area in California, even in the Proposition 13 era. So I think we are doing better than all of the social programs. We do not have hard data across the board, but the States of West Virginia and Pennsylvania have come up with hard dollars to support the program in areas where we do not have grant dollars and built programs like ours. So I think there is

a good, strong commitment by those States, as we get more people involved, show what the systems are, and make a better educational effort. I think the picture here is a lot better than people would think.

Senator CRANSTON. I am surprised that the administration sought to terminate EMS training programs on the grounds that local communities are providing the training.

Would you please summarize now, and give us more detail for the record, the data on local community training programs on which you based that conclusion?

Dr. MORITSUGU. Senator, we would be happy to submit for the record certain pieces of data which would tend to support this. However, I would like to make three or four points which would support this.

The thesis is substantiated by the following explanation of sources of funding for the various EMS manpower categories. A substantial amount of the training of emergency physicians is obviously centered in clinical experiences in emergency rooms, and while no hard data exist, many of the educational experiences of residents in emergency rooms are service reimbursable. The training of emergency nursing personnel was addressed under section 789 through grant and contract support which was directed solely toward continuing education. It has been the Department's and the Agency's thesis for several years that continuing education for health manpower professionals is primarily the responsibility of the professionals themselves.

Regarding the training of emergency medical technicians, paramedics, a large proportion of the training programs currently exist in junior colleges, collegiate or university environments. Tuition and fees are currently being charged to the paramedics themselves. It is anticipated that a paramedic training program can continue to be a viable training program under tuition and fees.

Finally, many of the EMT ambulance training programs are voluntary and viewed, to a large degree, as a community service. It is anticipated that there is a minimal need at this point in time to continue the EMT ambulance training program, and that those needs can be addressed by volunteerism and community support.

Senator CRANSTON. Thank you very much. I look forward to receiving more details.

[The information referred to follows:]

BHM-L
4/12/79

State, Local, and Voluntary Support of Emergency Medical Services

A survey for fiscal year 1978 shows that $306,479,171 were provided from State and local government funds for the support of emergency medical services, including training of personnel as appropriate. This figure has increased significantly over the past four years, as shown below.

Emergency Medical Services
State and Local Government Funds

Fiscal Year	Source of Funds		
	State	Local	Total
1975	19,846,273	189,744,871	209,591,144
1976	29,902,517	200,389,021	230,291,538
1977	30,914,371	234,346,879	265,261,250
1978	35,687,486	270,791,685	306,479,171

Voluntary efforts have been notable in the training of ambulance crews, among other types of emergency medical service personnel. The following article from "Emergency" for December 1978 describes the role of volunteers in the provision of training emergency medical service personnel for Durand-Vernon Township, Michigan.

Michigan Volunteers Tap Federal Funds

DURING 1977, the U.S. Department of Health, Education and Welfare made several million dollars available through grants for the training of allied health-care personnel. A small volunteer ambulance organization in Michigan applied for some of those funds — and was funded. In successfully applying, Durand-Vernon Ambulance, Inc. became the first and only volunteer ambulance group to ever tap HEW's money all by itself.

But the story of Durand-Vernon Ambulance — DVA, as it is known locally — starts much earlier and reflects the organization's tradition of "can do." In 1966, Durand, Michigan (pop. 4,000) faced a double blow to its limited emergency medical and ambulance services. The local hospital closed its doors for good and, a few months later, the local funeral director decided to get out of the ambulance business.

Within days, a group of citizens presented the City Council with the idea of forming a volunteer ambulance service. On May 18, 1967, the City Clerk invited all interested parties to a meeting to discuss the feasibility of such a proposal. Community response was positive and a committee was formed to represent Durand-Vernon Township and the Village of Vernon. The funeral director's phase-out was rapidly approaching and the committee lost little time in developing a formal plan.

The plan called for incorporation of a membership ambulance service, with memberships priced at $10 per family. Subscribers or their family members requiring ambulance service would be charged only for mileage. Soon, with the cooperation of many citizens and local civic groups, a door-to-door fund-raising campaign began. Meanwhile, Durand Police Chief Ford White, the only Red Cross Instructor in the area at that time, started training the first group of 24 volunteers in a 16-18 hour first aid course.

DVA went into operation on July 1, 1967 with 24 volunteers, a 1963 ambulance, and $7 to spare. To mark the event, the local newspaper in a neighboring community printed a letter to the editor warning those who were investing time and money in the new enterprise. "Volunteerism may last for awhile," said the letter, "but they are not going to succeed."

For a headquarters building, DVA was given an old garage which badly needed renovation. The varied talents of the volunteers offset the lack of funds and the renovation was begun immediately. Electrical circuits were rewired and the two-bay garage was painted. Another area of the building was panelled, painted, and bunk beds were installed.

During the first month of operation, DVA volunteers answered 23 ambulance calls and at the same time were transforming the old garage into a symbol of local pride. Citizens came forth with chairs, tables and other items — gestures of a community love affair that has lasted for more than a decade.

Before 1967 had ended, news of the Durand-Vernon Ambulance service had spread throughout Shiawassee County and the service area of the volunteer organization had grown. A second ambulance was purchased and additional volunteers were signed up, including the first female members. As other Michigan communities found themselves suddenly without ambulance service, DVA provided advice, assistance and encouragement to those in other locales.

The excitement and challenge of the first six months generated much of the spirit that would feed the growth and improvement of DVA over the years. In addition to their ambulance duties and building renovation, many of the members began to teach their newly learned first-aid skills to others. Eventually, the volunteer membership would include several first aid and CPR instructors, CPR instructor-trainers, and an EMT instructor-coordinator. Responding gratefully to the increasingly skilled service of the volunteers, the City of Durand offered to supply dispatching services through its police department.

In 1969, DVA's primary coverage area was still growing and its training requirements were increasing. The organization was able to buy its first new ambulance. In 1970, DVA volunteers paid $1 for a used school bus. Before long, Shiawassee County had its first disaster unit — complete with running water, power and radio communications.

As DVA reached its third anniversary, it was far advanced from the original $7 bank balance. Volunteers numbered 60, family memberships had grown to 1,600, instructors were increasingly busy, and many of the members were enrolled in some of the first EMT courses to become available in Michigan. As with most volunteer ambulance organizations, those people who were working so hard to make DVA a success were also holding down regular jobs and managing family responsibilities.

In 1970, assets of the hospital which had closed in 1966 were disbursed and DVA was among the beneficiaries. The organization received land on which to build a new headquarters and one-third of the construction costs necessary for the new building. Durand-Vernon Ambulance, Inc. moved into its new quarters in February, 1971.

With 1973 came a new age of sophistication for DVA's volunteers. The organization acquired some very special friends who were named honorary volunteers. Nancy Furstenberg, M.D., Robert Rathburn, M.D., and Respiratory Therapist Bill Caskey began to donate many hours to training programs. In addition to becoming good friends of the DVA family, they introduced the volunteers to a whole new world of information and training.

Also in 1973, the disaster bus was retired and replaced with a new rescue unit which could serve the dual purposes of disaster unit and back-up ambulance. Eight local government agencies in the DVA service area contributed funds for the purchase of special rescue equipment, including the Hurst Rescue Tool, air packs and multi-purpose saws. Immediately the volunteers — male and female alike — jumped into training programs to learn how to use their new tools.

Through the years, community appreciation has not waned and the volunteer ambulance organization has received many important gifts from civic groups and memorial funds. In turn, the volunteers have reached out to offer the community more than just high-quality ambulance service. DVA facilities are used for bi-monthly immunization clinics and the Red Cross Bloodmobile. The headquarters building is used for drop-in blood pressure screening and monitoring, and DVA members take various safety programs into schools and community organizations within their service area.

Community respect was apparent in 1977 when the regional Health Systems Agency (HSA) notified Durand-Vernon Ambulance of the forthcoming competition for HEW allied health training funds. In most areas, HSA officials would not be inclined to consider their local volunteer ambulance service as eligible for such monies. But DVA has never been typical. They responded to this new challenge.

Glenda Dolehanty, R.N., DVA's assistant commander and a mother of four teenagers, took on the grueling task of writing a federal grant application. The organization didn't ask for much — just enough money to buy the training equipment needed to take their EMS and first aid education programs to area fire departments, nursing homes and the general public. In September, 1977, Ms. Dolehanty, a school nurse in the Durand area and also a certified EMT instructor-coordinator, received official word from Washington. Durand-Vernon Ambulance, Inc. was among the successful grant applicants! "In a way, it is a 'thank you' to all those who have supported DVA for so many years," she said.

Success breeds success, and in 1978 the Michigan Office of Highway Safety Planning awarded DVA a grant for communications equipment. "At long last, we will now be able to communicate directly with the hospitals we serve," Ms. Dolehanty said.

In its 11 years, the volunteers of Durand-Vernon Ambulance, Inc. have proven the early critics wrong. Volunteerism has succeeded in Shiawassee County, Michigan. From a used ambulance and a $7 bank account, this exemplary organization of dedicated people has grown to serve the population of a 167 square mile area. With support from the population and law enforcement agencies, the original roster of 24 has grown to 70, including 14 of the original members.

Glenda Dolehanty sums up the 11-year success story: "To us, 'DVA' is just another definition of 'challenge.' " □

Senator CRANSTON. In a recent report, the administration indicated that it was making progress in developing methods of evaluating the effect of emergency medical services systems on reductions in death and disability due to accidents and emergency illnesses.

What is the status of our ability to measure the effectiveness of emergency medical services?

Dr. LYTHCOTT. Dr. Rose, would you like to speak to that point?

Dr. ROSE. Senator, if I may, I can speak briefly to it.

Senator CRANSTON. Fine.

Dr. ROSE. The area of evaluating performance in EMS, as in most other areas, is not easy. We have been working hard on items like the severity index; we are examining the mix of patients who arrive at emergency systems, treatment protocols, so that we can get some idea as to the adequacy of care that they receive, and measures other than just mortality of the effectiveness of these systems. We have made some progress, in that some of the research and results are ready for field testing. We are planning for a large-scale evaluation; we hope to get the first phase of it started this spring.

Dr. LYTHCOTT. Mr. Chairman, if I might add to that, we do have many anecdotal statements reflecting the impact of this system. We have many impact statements—again, for the record, we could include many of these from all over the country.

Senator CRANSTON. Fine. We would like to have that information.

We are now in the third year of support for demonstration programs in burn treatment. Would you please summarize any findings made to date, including the extent to which those findings have indicated the present scope of burn treatment resources in the country. Have these findings given you any idea of deficiencies in those resources toward which efforts should be directed at this time?

Dr. LYTHCOTT. Mr. Chairman, I do not think we have any defined information, on the studies so far. Phase 3 will be funded in September of 1979; the contractors will complete their work by September of 1980, and we will have available to the Congress by February of 1981, probably, a complete report.

Do you have any remarks to make, Dr. Boyd?

Dr. BOYD. I would only add that the program is on target. We do have the common data base set; we have the training program; data is being collected. We will make the first interim report available to you in the very near future.

Senator CRANSTON. Thank you very much. That completes my questions, and I thank you for the directness, the brevity and the informed nature of your responses where you had the information.

Dick, do you have any further questions?

Senator SCHWEIKER. Yes, sir. Just following up that last question on the burn support, did we not rescind the $3 million for burn support in this year's program?

Dr. LYTHCOTT. No, sir, you did not.

Senator SCHWEIKER. Are we spending it?

Dr. LYTHCOTT. We are spending it to collect the data as a result of the work that has gone on in the previous years.

Dr. BOYD. It has been very close to $3 million per year.

Senator SCHWEIKER. Will you be needing it next year?

Dr. BOYD. This is the last year. It was a 3-year program, and the third phase of the contract will be let in September 1979.

Senator SCHWEIKER. So it is coming to an end this year?

Dr. BOYD. Right.

Senator SCHWEIKER. You are also saying, from the previous question, that I guess we do not know whether we are going to get support or pick it up from the local communities or State and local governments in terms of carrying it on until a study is completed; is that right?

Dr. BOYD. The burn demonstration program is a study program to look at the in-depth magnitude of the epidemiological system, rehabilitation, and societal impact of this problem called burns. We were asked by the Congress what is the burn problem and how many burn centers we would need, and our response, backed by the American Burn Association, was that we really did not know; we needed an in-depth study, which you mandated, and we are in the process of doing that.

We will come back to you with our report, and I think some policy decisions will be made on what we need in capital development programs, training programs, and research in this area. The programs are definitely on target, and I think it is a very solid study program.

Senator SCHWEIKER. Dr. Lythcott, is it correct that the Administration plans to phase-out the emergency medical service program over the next 3 years?

Dr. LYTHCOTT. That is correct, sir.

Senator SCHWEIKER. OK. Now, why are we doing that?

Dr. LYTHCOTT. Senator Schweiker, it is a year of tight dollars, as you know better than I. We have to make judgments with respect to programs. We are involved in zero-based budgeting, and other programs received a greater priority than the EMS program over the next 3 or 4 years.

Senator SCHWEIKER. Do we have any evidence that the phaseout will coincide with community, local and State support which will make up the difference?

Dr. LYTHCOTT. We have no concrete, hard evidence that that will happen, but those of us who have been in the EMS business for a period of years and have watched the increase in interest and enthusiasm among State and local goverments have every reason to believe that they will do their very best to continue.

It is a very popular program, but we do not have hard evidence that they will do it.

Senator SCHWEIKER. Was this phaseout an HSA recommendation?

Dr. LYTHCOTT. It was not an HSA recommendation.

Senator SCHWEIKER. Was it an OMB recommendation?

Dr. LYTHCOTT. No, sir.

Senator SCHWEIKER. I am trying to find out whose recommendation it was.

Dr. LYTHCOTT. I think it might be the Department's recommendation.

Senator SCHWEIKER. What does that mean, then, for the ensuing years? You have $40 million requested, approximately, for this year, 1980.

Dr. LYTHCOTT. It would be $36.6 million in 1980, $26.5 million in 1981, and $13.2 million in 1982.

Senator SCHWEIKER. Well, presently, you project that if you have the $37 million, plus, support, you are going to get 85 percent of your EMS regions to achieve a basic life support capability. My question is, what reason do we have to believe that you are going to reach that goal of 85-percent basic life support capability if we keep lowering the level a third each year? That means an expansion of the program, obviously, from sources other than the Federal.

Dr. LYTHCOTT. It means an expansion in some areas and a reduction in others. Dave, do you want to speak to that?

Dr. BOYD. The program plan for dollars, by the administration's estimates, will be: 25 percent complete for advanced life support programs; 58 percent complete for basic life support programs; 17 percent of the programs will be left in the plan phase, and I think 5 percent will not participate in the grant program.

So in terms of total impact of the program, only 25 percent of the country will be covered by advanced life support efforts.

Senator SCHWEIKER. If funds are available, can more reach that level than the percentage that you mention, if Federal funds are available? What was that percentage again?

Dr. BOYD. At the administration dollar budgetary recommendation, in 1982, 25 percent will have completed a 4-year program to have advanced life support in their communities; 58 percent will have completed the basic life support program; 17 percent will be in planning; 5 percent will not participate.

Senator SCHWEIKER. So 25 percent can reach it. In real terms, what does that mean? Who will not get service? In other words, the difference between the quality and comprehensiveness of emergency medical care from the 25 percent to the 58 percent, in a nutshell, is what, Dr. Boyd?

Dr. BOYD. Well, I think we have to admit that the cardiac patients and others that are in shock or serious trauma are best assisted by the advanced-type support program. I think we would have to say we do not make an impact on the cardiac ventricular fibrillation patient in the basic life support program.

So, in my professional opinion, we are excluding cardiac patients from the program if we limit the program to basic life support. Drug overdose and other kinds of diseases that need injections and therapies will not be improved by basic life support efforts.

Senator SCHWEIKER. So we would be shortchanging our cardiac victims. What percent of your total emergency medical cases is your cardiac victim case, the kind you described?

Dr. BOYD. There are some 600,000 cardiac patients every year, half of which received, prior to the program, no medical care whatsoever. We are seeing a 26-percent field conversion of these patients, and possibly, in some areas, 33 percent. So we have had an impact on the cardiac patient.

In the trauma area, there are 110,000 accident deaths in this country a year; 50,000 of these from vehicles, and we think that

through these programs, we can save up to 50 percent of these with an effective EMS system.

There are 5 million poisonings in this country; 5,000 people died from poisoning. We think we can eradicate that disease with effective regional programs.

Senator SCHWEIKER. You mention in your testimony your new poison program. What are the several top leading causes of poisoning today that this program is capable of handling?

Dr. BOYD. Poison really comes in two categories: Pediatric poisoning, which is the ingestion of pills in the home by children between the ages of 2 and 4, which is a very correctible condition by having prevention programs, consumer access where mothers learn to be more responsible in the home, and public education programs, to intercede in the home.

The other group is the drug overdose, which is an older, young adult group, which is tougher to tackle; it has a higher mortality and is one that needs greater study.

Senator SCHWEIKER. And what will a cutback of one-third, one-third, and zero do to your poison program in the next 3 years?

Dr. BOYD. I think it would remain just as it is.

Senator SCHWEIKER. It would poison it, right? [Laughter.]

Dr. BOYD. It will be a toxic dose for the poison program, right.

Senator SCHWEIKER. We really ought to have the OMB people up here to see about their poisoning process.

Dr. BOYD. I hope you realize that the EMS Act, because of its full and comprehensive approach, does not mean to provide operational dollars to poison control centers. We provide communication and technical assistance, public education programs, linking them into the poison information centers across the country.

We do not provide, under the current EMS Act, operational dollars. It takes about $250,000 in the poison centers for nurses or pharmacy students, or whatever, to answer the phones from the mothers at home. Good programs, such as San Diego, Pittsburgh, and Denver, do that. Where we have done this we have seen some major changes in various epidemiological factors in the community as a whole.

We think that because of the intervention program, we can lower health care costs, with the community actually paying for the poison center once it is set up.

Senator SCHWEIKER. I think what we need from this hearing is an emergency medical rescue crew to rescue the poisoning and cardiac programs from OMB; that is what we really need. [Laughter.]

That is all I have, Mr. Chairman.

Senator CRANSTON. That was very fine; I wish you had more.

Thank you very much for your testimony. I have additional questions and will appreciate your written responses for inclusion in the hearing record.

[The material referred to follows:]

Answers Submitted by the Department of Health, Education, and Welfare, in Response to Questions Submitted by Senator Cranston

EMERGENCY MEDICAL SERVICES

PHASEOUT OF E.M.S.

Q. Please submit for the record a list of each of the 304 designated E.M.S. systems and the projected operational stage it would achieve if the Department were to phase out the E.M.S. program by 1982 as you have proposed?

Please submit for the record that same information if the program were to be phased out over a six-year period with funding at the current level with increments for inflation.

A. It is impossible to predict, how far any given system will progress by 1982 or by 1985. First, EMS grants are awarded competitively. Second, there are always more applicants requesting more funds than there are available for systems development. Therefore, we have no way of knowing which specific applicants will be successful in obtaining funds under the EMSS Act.

However, given annual levels of funding over a specified number of years, we can project fairly accurately the number of systems that will achieve each of the five stages of development. The attached chart shows the number and percentage of regions by section of the EMSS Act that will achieve each stage at the conclusion of (A) the phase out by 1982, which emphasizes BLS, and (B) a six-year period of funding at the current level (1985), which emphasizes ALS.

Attachment

STATUS OR REGIONAL EMS SYSTEM DEVELOPMENT

A. PHASE-OUT in 1982
B. SIX-YEAR PERIOD OF FUNDING (1985)

Showing Number of Regions by Operational Stage

Operational Stage		A - Phase Out by 1982		B - Six-Year Period (1985)	
Section of Act	Description of Activity	Emphasis on BLS Number	Percent	Emphasis on ALS Number	Percent
No Activity	No funding under title XII	13	4	5	2
1202	Feasibility Studies and Planning (To determine the feasibility of and prepare plans for the development of a basic life support system.)	40	13	15	5
1203 First Yeat	Establishing and Initial Operation (To begin development of a basic life support system.)	0	0	0	0
1203 Second Year	Establishing and Initial Operation (To complete development of a basic life support system.)	176	58	26	8
1204 First Year	Expansion and Improvement (To begin development of an advanced life support system.)	0	0	0	0
1204 Second Year	Expansion and Improvement (To complete development of an advanced life support system.)	75	25	258	85
Total		304	100	304	100

EMERGENCY MEDICAL SERVICES

PHASEOUT OF E.M.S.

Q. Would you submit for the record what your current estimates are of the costs each of the next three years for support of the development of an E.M.S. system at each of the 5 stages?

A. Our current estimates of the costs for development of a typical regional EMS system at each of five stages are as follows:

Section of Act	Cost for a Typical Region
1202(a)	$ 60,000
1202(b)	40,000
1203(1)	400,000
1203(2)	600,000
1204(1)	400,000
1204(2)	300,000
Total	$1,800,000

During an analysis performed at the time our Annual Report to Congress for fiscal year 1977 was being prepared, we found that the actual developmental costs were in substantial compliance with these estimates.

However, these estimates together with our long-range financial projections are based on the current value of the dollar. Therefore, they are subject to inflationary impact. The funds support personnel, equipment, training, and other objects we equate to the average inflationary increase. The longer it takes to complete the program, the more impact inflation will have on the ultimate cost.

EMERGENCY MEDICAL SERVICES

E.M.S. IDENTIFIABLE UNIT

Q. The Joint House/Senate Committee Explanatory Statement on the compromise agreement for the 1976 amendments stated, in explaning the role of the E.M.S.unit in the Development of the regulations, guidelines, funding priorities, and applications forms, and its role in advance consultation on grant awards and contracts with respect to the E.M.S. research program and training program, and the burn injury program:

> "The Committees believe that the process of full participation in the development and promulgation of the regulations should include full involvement of the E.M.S. division staff in developing the regulations and the submission of the proposed interim and final regulations to the E.M.S. Division Director in such a way as to give the Director adequate time to submit prepublication comments to the Secretary."

Please provide a description of the procedures followed in ensuring the E.M.S. Director's participation in these processes in terms of the above legislative history.

A. The Director's participation in these processes in terms of the legislative history may be summarized as follows:

A. Training Program

The coordination as intended by Congress was carried out. The Director and staff of DEMS were actually involved in the development of guidelines, regulations, application materials and determining where best to commit resources for section 789 - Grants for Training in Emergency Medical Services.

The priority preference support of training programs in areas receiving support for EMS systems was again observed in F.Y. 1978. Over 90% of the section 789 awards were made in areas with title XII support.

B. Burn Injury Program

The coordination intended by the Joint House Senate Committee was carried out under the Burn Injury Program. The services requested on the Burn Injury Program were obtained through the contract procurement mechanism. However, coordination with other agencies was affected through inclusion of representatives of these agencies in the contract review

mechanism. A proposal submitted under the Burn Review Program was reviewed by representatives of the Division of Emergency Medical Services; the Office of Planning, Evaluation, and Legislation of the Health Services Administration; the National Center for Health Services Research and the National Center of Health Statistics, both of the Office of the Assistant Secretary for Health; the Bureau of Health Manpower for the Health Resources Administration; and the National Institute of General Medical Sciences for the National Institutes of Health. All of these representatives participated in the evaluation of proposals and since the evaluation of proposals have been kept informed as to the progress of the National Burn Injury Program.

C. Research Program

The Director and staff of the DEMS also have been more involved with the EMS research program (section 1205) this past year. Several staff meetings have taken place to discuss priorities, applications, and progress results of the research program. Also, two formal meetings were held this past year to bring together EMS systems grantees and consultants with the EMS research grantees to discuss the topics, direction, and problems of EMS systems as related to the research program.

EMERGENCY MEDICAL SERVICES

E.M.S. IDENTIFIABLE UNIT

Q. When the E.M.S. legislation was amended in the 94th Congress, language was added encouraging the development of uniform funding cycles for training grants and grants for the development of E.M.S. systems. Please describe the efforts made to establish such uniform funding cycles.

A. Due to circumstances beyond the control of programs concerned (i.e., timing in F.Y. 1977 and the lack of a competitive training grant cycle in F.Y. 1978) a uniform funding cycle for Titles XII and VII grants could not be established until F.Y. 1979.

The project period for new training applications approved for funding in F.Y. 1979 will begin July 1 and end June 30, 1979. The budget period for those projects requesting a competing extension or renewal will begin October 1 and terminate June 30 (i.e., a nine month budget period).

EMERGENCY MEDICAL SERVICES

E.M.S. IDENTIFIABLE UNIT

Q. One of the functions of the EMS unit is to be responsible for collecting and disseminating useful information for the development and operation of EMS systems, including data derived from review of EMS systems supported under Title XII.

Please summarize the unit's activities in this area, noting the extent to which data from EMS systems has been utilized and experiences of these systems shared where they would be instructional.

A. Program information on the development and operation of EMS systems has been collected and made available to grantees and other interested parties basically through (1) Regional Workshops and National Symposia where model projects have been presented as teaching examples for other developing systems and (2) through the submission, analysis and distribution of abstracts based on project activities. These abstracts are taken from project information, most of which is required in the grant application and describes programmatic activity in terms of completion of component implemenation and impact on patient care services provided within the EMS region. These data have been a main thrust of the DEMS technical assistance program.

Abstracts that included data were requested from EMS Regions in January 1978 and December 1978 as well, prior to an Evaluation Symposium held in July 1978. The results of the review of the January 1978 abstracts were distributed to the Regional Program Consultants for further distribution to grantees from that level. The same methodology for distribution of review results is being utilized for results of the review of the December 1, 1978 abstracts. 183 EMS regions responded by submitted abstracts. The first review results were forwarded to Regional Program Consultants on February 23, 1979 with updates of the review to be forwarded periodically. Along with the review sheets, exceptional abstracts for each of the component and clinical areas was distributed to Regional Offices for further dissemination to grantees.

Prior to the July 1978 Evaluation Symposium, EMS regions submitted abstracts on a competitive basis so that a selection could be made of papers of merit for presentation at that Symposium. 230 component and 324 clinical abstracts were received. From these, 104 papers were presented at that Symposium. All abstracts received were published and given to each participant.

EMERGENCY MEDICAL SERVICES

E.M.S. IDENTIFIABLE UNIT

Q. The EMS unit is also responsible for publishing suggested criteria for collecting information necessary for the evaluation of programs and projects funded under title XII. Please describe the criteria which have been developed pursuant to this requirement.

A. DEMS has developed an evaluation strategy which follows a classic evaluation methodology to include (1) structural and descriptive characteristics; (2) process and functional activities; and (3) patient impact/outcome analysis. In each of the 15 components, some basic uniform required measurements and reporting elements have been described (e.g., the number of ambulance runs, the number of EMTs trained, etc.). Projects have been given direction on the collection and utilization of this information in order to report on and to establish baseline data for more indepth analysis (e.g., effectiveness of paramedics in field resuscitation, etc.). In the patient care categories of trauma, burn, spinal cord injury, poisonings, cardiac, high risk infants and behavioral emergencies, specific tracer patient populations have been evaluated. In the area of trauma, the tracer group are those patients sufferring from vehicular accidents with central nervous system injuries which are readily identifiable and easily tracked through the EMS system. Each of the target patient groups have a specific tracer that utilize standard hospital discharge classification nomenclature. It is a project requirement to trace these patients through the system in order to measure the compliance or program performance in identifying, treating, and transferring these critical patients to appropriate treatment centers within the EMS region.

These same patient groups are being considered as reportable conditions by appropriate professional organizations. The outline of the DEMS evaluation strategy as published within the Evaluation Symposium Program and Abstract Document, July 1978 is attached.

EMERGENCY MEDICAL SERVICES SYSTEMS EVALUATION

David R. Boyd, M.D.C.M.

Considerable improvements are now being made in the delivery of emergency medical care, with major advances being the result of the development of a "systems approach" and the integration of standardized vehicles, communications and medical equipment, training programs, emergency facilities, and critical care unit capabilities. Advances in on-site care by physician agents (Emergency Medical Technicians-Ambulance and Paramedics) in radio telecommunications with medical professionals have been shown to be effective in improving care for a wide variety of critically ill and injured patient categories, especially those suffering from acute myocardial infarction and major trauma.

Between 1970 and 1973 pioneering programs in Miami, Florida; Nassau County, New York; Charlottesville, Virginia; Seattle, Washington; San Diego, California; and Illinois, have illustrated the necessary systems design, treatment protocols, technical adaptations, facilities orientation, and organizational structure that are required for successful program development.

With the initiation of the Emergency Medical Services Systems Act of 1973, some 278 of the designated 300 EMS regions have initiated planning, basic life support implementation and/or expansion toward advanced life support.

At this time, after five years of effort under the Emergency Medical Services Systems Act of 1973 (and as amended in 1976), some 185 regional EMS projects are well on the way towards establishing an organized EMS program along the intent of the Act with the integration of the 15 components and directing their specific planning and operational efforts to decrease death and disability in the target patient categories.

This Evaluation Symposium (July 11-13 in Seattle, Washington) is the third National conference dealing specifically with evaluation strategies, methodologies, and analytic techniques to better evaluate, monitor, and document the development of EMS systems and their impact on improving services for emergency and critical patients.

The first evaluation conference, held in San Diego in 1975, attempted to identify those experts, resources and methodologies that could be utilized to evaluate the EMS systems being initiated at that time. While there was considerable interest shown at the San Diego conference, it was obvious that few individuals or EMS programs really understood the nature of systems evaluation in either the component or clinical areas. Most of the presentations at that meeting dealt with ambulance reporting methodologies and data processing techniques and were not oriented toward EMS systems evaluation.

In fact, very few individuals and programs had effectively conceptualized and/or configured and implemented their EMS system so that a sound evaluation strategy could be developed.

This first evaluation conference did, however, point out the current state-of-the-art in EMS systems conceptualization and evaluation capabilities and gave a basis for the direction that the National EMS Program would need to take in order to develop and document the effectiveness of comprehensive, regional EMS systems.

A second National effort to develop methodologies for system evaluation of regional EMS programs funded by HEW was held in New Orleans in 1977. This conference utilized a structured approach with a three tiered methodological approach as follows:

1. structural/narrative/descriptive;
2. functional/process/intermediate outcomes and
3. outcome and/or impact analysis.

This approach has been constructed for each of the relevant EMS study component areas and clinical target patient areas. The evaluation parameters for the component methodologies were extracted primarily from the Evaluation Workbook, developed by Arthur Young and Company under contract to DEMS, HEW. The evaluation parameters for the target patient impact studies were developed from a consensus of physician experts in each of the clinical areas.

Inpatient care evaluation for each clinical group, a general population at risk was identified, within which a more specific tracer patient group was selected for indepth regionwide studies. The general and tracer (sub-group) patient groups have been identified, a conceptual and descriptive program plan has been developed from which impact evaluation can now be based. These patient categories will provide the framework for current and future program effectiveness in decreasing death and disability by EMS systems.

Emergency Medical Services Systems have progressed from a "good idea" based on faith, through a necessary "dog and pony show" phase, to the occasional case study, testimonials, and isolated selected short series and/or clusters of good cases report to the present status of a standardized, regionwide evaluation effort utilizing comparable data, similar analysis, and reporting techniques. The National EMS Systems Evaluation Program is still in its infancy. A concensus of those key parameters that need to be studied and the core body of information that is required for sequential evaluation within any EMS region, for cross-site comparisons and to document the progress of the National EMS effort have at least been established.

While many methodological, statistical, and validation issues remain, a very significant analytic approach to individual, regional, multi-regional, and the overall National EMS Program has been established.

It is now quite apparent that significant improvements in the care of all types of emergency patients can be realized if a sound integration of all of the essential components of an EMS system are logically structured and directed towards delivering ideal care to "real" patients in need. Heretofore, some argument has existed as to which EMS component or subsystem was the most important. Current consensus is that only a comprehensive EMS program, logically planned and staged, will develop and mature so that all patients in need will receive the most appropriate care in the pre-hospital, hospital, inter-hospital, critical care, and rehabilitation phases. An EMS system must, therefore, design a rational sequence of comprehensive program activities on a regional basis if the needs of all potentially emergent patients are to be properly anticipated and adequately met.

A major thrust of technical assistance efforts in developing the National EMS Program and specifically the evaluation component eminated from these two previous evaluation conferences in San Diego and New Orleans.

Over the past several years, specific component parameters and clinical impact groups have been emphasized. A call for program evaluation abstracts was made in January 1978 from all EMS projects and all systems components and clinical areas. These were then resubmitted and have been competitively reviewed in May, and from these, selection for paper presentations at the Seattle Evaluation meeting were made. At this Symposium, clinical and component papers, from EMS regional programs, will be presented during the "closed sessions" which follow the program guidelines and evaluation strategy. In a subsequent "open session", component and clinical papers from other sources relevant to EMS systems and not limited as those above will be presented. Some of these "open session" papers come from projects funded under Section 1205, EMS Research, and others are from local and other Federal research activities.

The goal of this third evaluation symposium is to further define the most practical and instructive evaluation methodologies in order to best describe and document program success (and failures) of EMS systems development and, in addition, to definitively establish a positive attitude for sound analytical procedures of evaluation in existing and future EMS programs.

The passage of the EMSS Act of 1973 and as amended in 1976, provided the mechanisms and funds for communities to develop regional EMS delivery systems across the nation. With the passage of the Act, Congress stipulated that if emergency medical care programs are to be funded with Federal dollars, they must plan and implement a "systems approach" for the provision of emergency response and medical care. In the EMSS Act, some fifteen mandatory component requirements have been identified to direct systems planners, coordinators, and operators in their attempts to establish comprehensive EMS programs.

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While an EMS system must respond to every declared emergency call within its assigned geographic region, including the non-emergent 80%; the truly emergency 15%; and the critical 5%, there has been a special program emphasis on those easily identified critical patient groups whose survival depends on a competent system of care. It is to the survival of these critical patients (trauma, burn , acute cardiac, high risk infants, poisonings, and behavioral, emergencies) that the "systems" concept efforts and evaluation methodologies must be directed toward, in order to insure the development and documentation of sound, medically competent, and comprehensive EMS systems.

The central theme and intent of the Act is to develop systems of emergency medical care that will significantly decrease current death and disability rates. The goal of the National EMS Program is to initiate regional planning and operations which address the fifteen mandatory components so as to provide essential and appropriate emergency and critical care services to all emergency patients.

A regional EMS system is described geographically by existing natural patient care flow patterns. It must be large enough in size and population so that definitive care can be made available to most general emergency and critical patients. Where sophisticated medical resources are not available within the region, arrangements must be formalized for providing these patients with services in an adjoining region. Since counties and cities will need to be grouped together, an EMS region tends to be larger than conventional local governmental boundaries. Critical patient origin and distribution studies are essential to defining regional EMS boundaries.

The development of an EMS system usually starts with an initial upgrading of existing resources and then progresses through periods of increasing sophistication. Following the establishment of a basic life support (BLS) system within the region, there usually is a progression to an advanced life support (ALS) system to increase the capabilities of the EMS region. Evaluation methodologies must be sensitive to these progressive changes in order to be able to describe relative impacts in clinical and cost-effective terms.

Prior to this time, it was impossible to determine how many lives are being saved and the amount that disability is being reduced because of a given EMS system. To date, most evaluations of the EMS programs have been geared toward inventories, surveys of resources inventories, and collecting data on subsystems (e.g., transportation, training, etc.). Much better studies are now being conducted to evaluate the component and clinical activities of EMS systems. These analyses can now be used for programmatic decisions as to the appropriate utilization of facilities, personnel, and equipment, and will further permit examinations of the effectiveness of clinical treatments and cost-efficiencies of various system configurations.

Even with the current progess, the state-of-the-art of systems evaluation is relatively primitive across the country. This is consistent with the relative developmental stage of most EMS systems at this time. EMS projects must be able to grapple with the multiple system components, organizational changes, clinical requirements, and they must also cope with the basic concepts of the prescribed standardized evaluation strategy.

The following is the outline of the EMS Program Evalution Strategy and the Specific Study Parameters for EMS Components and Clinical Impact Evaluation.

EMS Component Evaluation Strategy

a. Development of a conceptual and narrative description of the EMS system operational components, their design and implementation is a key evaluation task for each program element to describe changes expected as the EMS system develops. This essential component cannot be overlooked and must precede steps b, c, and d described below.

b. Structural development analysis: Descriptions of the key implementation steps (radios installed, ambulances placed, etc.) are well recognized features of an EMS system. These descriptions must include aspects of organization and management, for the fifteen components with at least one study parameter in each component.

These inventory assessments and projections will describe key structural phenomena and provide some accuracy of each measure (implementation of 911, dispatch, categorization, etc.) as well as sources for process (functional) information. Some of these measures will be of state or National significance.

c. EMS functional activities or processes: Those structural components now implemented (e.g. communications, 911 dispatchers, ambulances, trauma units, etc.) all have activity levels which can be counted using operational and management data, such as numbers of trauma victims admitted to a designated trauma unit, or numbers of calls via the central access number. With this approach, a program will be able to monitor elemental process features of each system from the very beginning, and in future years will be able to provide rates of change, other indices, and correlations within or between system components.

Utilization rates and appropriate cost benefit data can subsequently be developed. These assessments will also contain some measures of national significance, but are especially valuable for the actual operation, management, and expansion of each system.

d. Program outcome and impact: In this step, important system questions must be enunciated, and the evolution from simple to complex evaluation methods will parallel each system's growth and maturity. In these, system component activities can be correlated with clinical outcomes (e.g. decreased death rates with response times and accuracy; with cost effectiveness of an individual system's component or to other systems components configurated differently. In fact, an almost unlimited field of systems analysis, modeling and operations research questions can be generated from this level of component evaluation.

EMS Clinical Impact Evaluation Strategy

In the clinical areas, again a similar structural, functional and outcome stratification has been developed as outlined below.

a. Development of a narrative description of organization and operation of the "clinical sustems" design and implementation. A key evaluation task for each program will be to describe changes implemented and projections met as the EMS system develops. This essential component cannot be overlooked and must precede steps b, c, and d described below:

b. Structural analysis. Descriptions of some of the key implementation steps (treatment and triage protocols) that are well recognized features of an EMS system. These descriptions must include aspects of organization, management and operations, at least for the six specified clinical groups with at least one study parameter measured for each general and specific tracer population.

This inventory assessment will describe key structural phenomena and provide some clues as to the accuracy of each measure (trauma center, categorization and designation, etc.) as well as sources of functional information. Some of these measures will be of State or National significance.

c. EMS activities or processes. Those structural comoonents now implemented (e.g. helicopter response, trauma center admissions, etc.) all have activity levels which can be counted using operational management data, such as numbers of trauma victims admitted to a designated trauma unit, or poison deaths from vital statistics. With this approach, a program will be able to monitor elemental process features of the system from the bery beginning, and in future years will be able to provide radios, indices and correlations within or between systems components.

Utilization rates and appropriate clinical and cost benefit data can subsequently be developed. These assessments will also contain some measures of national significance, but are especially valuable for the actual operation, management, and expansion of each system.

d. Patient outcomes and program impact. In this step, important clinical questions must be enunciated, and the evolution from simple to complex evaluation methods will parallel each system's growth and maturity. There are at least four types of impact evaluations essential to documentation of a comprehensive and successful system:

1. Compliance studies: The care of a patient at the scene, during transport to a facility following a described program narrative, e.g., critical major trauma, sent to a trauma center can be counted at the center and with surveys for similar patients in nondesignated facilities will give patient "fit" or compliance to a prior "care system" set. The first such patient and all subsequent patients "test" the system in this tracer method.

2. Death and disability impact can be measured by national norms, peer judgments, or using newly developed indices on morbidity. Interest here will obviously be along the lines of hard data (e.g. lives, deaths), and these can only be attributed to the system's effectiveness if in fact the patient was responded to and "processed" appropriately through the system according to established protocols.

3. Studies of death and disability on a regional basis will be necessary to show that these changes in death rate for a certain emergency are operative throughout the entire geographic region.

4. Evaluation of treatment effects, therapy alternatives, program options, phases of implementation, and other experimental studies, will be possible in regional programs as the level of maturity and sophistication progresses.

RESEARCH

Prior to this time, most system's medical directors and managers have been involved with the major undertakings of developing regionwide EMS systems from basic to advanced life support efforts following the National HEW/EMS Program Guidelines. These same individuals are now in the enviable where they can appreciate significantly relevant program issues and can generate the most appropriate inquiries on important operational problems.

Likewise, these same individuals can be effective conduits for research interests and evaluation techniques development from outside their operating system and more willingly be able to provide their EMS systems as laboratories for other investigators.

In this regard, the National Center for Health Services Research has brought together for two invitational seminars for EMS system leaders in order for them to become better acquainted with the current goals and direction of EMS research at the National Center.

The initial invitational seminar dealt with principles of EMS research design in service settings, the second dealt with methods for measuring system performance for EMS systems. Future seminars will cover data management, accounting practices, severity ratings and other relevant issues.

During the next and subsequent years, existing and developing EMS regions will be informed about other EMS related programs to include: the Burn Demonstration Project (Section 1221); the NIH Head (CNS)/Trauma Study; the Rehabilitation Services Administration's spinal cord injury program; NIH's Trauma/Burn Research Program; the Poison Information and Clearinghouse function with FDA and other related programs to include the Center for Disease Control; the National Center for Health Statistics; and the National Center for Health Services Research.

The EMS program has identified several major categories together with a specific tracer population that can be used for assessing the effectiveness of the emergency medical services systems through changes in process and impact data for these types of patients.

The emphasis of the program has been on identifying those categories of patients who present emergent conditions within the health delivery system and those patients representing a condition which is identifiable and has importance to the success or failure of the developing emergency medical services systems.

The emergency patient groups that have been selected by the Program are realistic for regional emergency medical services systems' development because:

They represent real and significant emergency medical problems.

They are easily identified and can be utilized for planning, operations and evaluation models.

The most critical of these groups will benefit to the greatest extent from a "systems approach" specifically developed for their needs.

These patient care categories are in effect "models" which may be utilized for other similar patient types with like needs for impact study and reporting. They may have a natural ripple effect to emergency patients of less severity or with less well identified acute illnesses.

These patient groups are now being tracked through the system and lend themselves to a variety of evaluation potentials, while carrying forward the intent of Congress to decrease death and disability of emergency patients.

SUMMARY

Based on a concensus of professional testimony, the Congress of the United States in 1973 and 1976 has supported the Emergency Medical Services Systems Acts' "systems approach" and adopted the fifteen mandatory components, including: manpower, training, communications, transportation, facilities, critical care units, public safety agencies, consumer participation, accessibility to care, transfer of patients, standard recordkeeping, consumer information and education, evaluation, disaster linkage and mutual aid agreements. The EMS system of care is designed to attend to the emergencies of seventy-five million Americans a year. It touches on every medical discipline, such as cardiac care, trauma, burns, spinal cord injuries, neonatal problems, poison control, and drug abuse because each has its own emergency problems. It reaches all levels of care from the innocent bystander to the Emergency Medical Technician (EMT), to the rural hospitals, to critical care areas and on to rehabilitation. It is the one SYSTEM that involves both public and private health and safety providers at all social sectors and governmental levels.

Emergency Medical Services has to be a system because of the response/delivery demands inherent in this area. EMS is now an established public health responsibility (pre-hospital, hospital, inter-hospital/rehabilitation) for total comprehensive and continuous care.

As a model for a national health care delivery system, EMS has the following attributes:

1. It has been developed as a national program.
2. There are wall-to-wall regions across the nation which outlines responsibility and forces responsiveness; regardless of age, color, creed, or socio-economic status.
3. After the Federal initiative, it is locally operated and funded.
4. It is based on consensus guidelines.
5. There is maximum local and regional flexibility and decision-making on health policy matters.
6. It has established intra-regional coordination of all health, safety and governmental interests.
7. It offers a way to control costs.
8. It is the only way to ensure access and availability.
9. It is the only way to assure quality of care.
10. It works!

EMS constitutes the first total population services system. It is available to all citizens around the clock, whether at home or away. It is totally responsive and totally competent for all types of conditions and, as stated previously, it provides access for all needy individuals. It develops critical pathways for advanced treatment and rehabilitation (primary-secondary-tertiary care).

The emergency medical services systems have shown that by identifying a certain target group, such as trauma, cardiac, pediatrics, poison and the like, that interdisciplinary programs can be coordinated through a regionwide EMS system. Therefore, categorical programs are not running in competition. Each specific clinical discipline has access to and utilizes the system in concert and sometime specifically for its own needs. It is now the responsibility of all EMS interested individuals, programs, associations and agencies to document there effectiveness in some standardized and therefore comparable manner so that EMS progress and impact can be justified as a bonafide essential public safety and health responsibility of our society.

References

1. Public Law 93-154: Emergency Medical Services Systems Act of 1973. 93rd Congress, 5.2410. 1973 as amended by Public Law 94-573.

2. Emergency Medical Services Systems: Program Guidelines. U.S. Department of Health, Education, and Welfare, Health Services Administration, Division of Emergency Medical Services. Revised 1975 (HSA-75-2013).

3. W. Pizzano, B.A. Flashner, and S. Adams, Evaluation Workbook for EMS. Washington, D.C.: Arthur Young and Company 1976.

EMERGENCY MEDICAL SERVICES

EMS IDENTIFIABLE UNIT

Q. To what extent have the Regional Offices been able to provide meaningful technical assistance to potential and actual grantees?

A. In each Regional Office, the EMS Program staff have been able to meet at least once with each current grantee. In addition, the same staff have been able to make onsite visits to most of the current grants. The program physicians and communication consultants have participated in many of the Regional Office and onsite meetings.

Regional Office staff have also been able to meet with current and potential grantees at the four regional workshops and the three national symposia.

Q. To what extent has the unit been able to encourage States to implement the recommended uniform standards for emergency medical equipment and training recommended by the Interagency Committee?

A. A comprehensive set of EMS standards is being developed under ageis of the Interagency Committee on Emergency Medical Services. On January 11, a letter was sent to the Federal agencies, professional associations, and others interested in the development of EMS components and the delivery of services to critical patients, requesting their suggestions on EMS standards. Over 50 responses have been received. A draft of the recommended standards will be available in April reflecting standards of Federal agencies and national associations.

During the interim, both the original and revised Program Regulations, Grants for Emergency Medical Services Systems, and the Program Guidelines, Emergency Medical Services Systems, specify standards which must be met to qualify for Federal support. These standards cover EMS components such as ambulance design; ambulance equipment; training for EMT-Ambulance, EMT-Paramedic, and first responder; and personnel requirements such as two EMT's on each ambulance and at least 24 hour physician coverage in category II hospitals.

EMERGENCY MEDICAL SERVICES

EMS IDENTIFIABLE UNIT

Q. To what extent has the unit been able to achieve, at the regional level, greater coordination of federal grant programs related to emergency medical services?

A. The Regional Offices have assisted State, local communities, and grantees to seek EMS funds from Federal programs, rather than the Title XII EMS system program. The Regional Offices report good coordination with the Department of Transportation, the Highway Traffic and Safety Program, the Appalachian Regional Commission, the EMS training program of the HEW Health Resources Administration, and the Rural Health Initiative Program of the Health Services Administration.

Q. To what extent has the unit been able to achieve, at the local level, greater coordination of E.M.S. systems with public safety agencies such as fire departments, highway patrols, and police departments in terms of shared communications and first-response personnel trainning?

A. Ninety-four of 152 abstracts received to date from regional EMS systems show involvement of Public Safety Agencies in the planning of EMS systems. Eighty-nine of these abstracts indicate actual sharing of personnel, equipment, and facilities. Sixty-two percent of reporting projects utilize the universal access number "911" which is coordinated to provide access to police, fire and EMS. Fifty-five of 152 abstracts revealed 55,733 public safety personnel completed the Crash Management Injury Course on first Responder Training Program.

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EMERGENCY MEDICAL SERVICES

EMS IDENTIFIABLE UNIT

Q. What is the status of the Memorandum of Understanding between the Department of Transportation and the Department of Health, Education, and Welfare setting forth respective responsibilities for the development of E.M.S. systems?

A. The Memorandum of Understanding was signed by the Secretary of Health, Education, and Welfare and DOT on October 26, 1978 (copy attached).

Since the signing DOT and HEW have cooperatively developed programs of implementing the concepts of Joint Funding for communications systems and are presently working towards unified standards for communications systems and close program cooperation in future National Technical Assistance Symposia.

Plans are being made to set up a series of Technical Assistance Memoranda as instructions to field personnel of both Departments in order to coordinate their efforts. These Memoranda would include guidelines for coordination of projects within each DOT and DHEW Region, preparation of policies agreeable to both agencies in the areas of ambulance funding, communication funding, coordination of EMT training at all levels and coordination of emergency preparedness.

Attachment

MEMORANDUM OF UNDERSTANDING
BETWEEN THE UNITED STATES DEPARTMENT OF TRANSPORTATION
AND THE
UNITED STATES DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
FOR PROCEDURES RELATING TO
EMERGENCY MEDICAL SERVICES SYSTEMS

The Department of Transportation (DOT), under the Department of Transportation Act (49 U.S.C. 1651 et seq) and the Highway Safety Act of 1966 (23 U.S.C. 401 eq seq) has authority to provide financial and technical assistance for the transportation phases of Emergency Medical Services. The Department of Health, Education, and Welfare (DHEW) is authorized to provide technical assistance and funds in the form of grants and contracts for Emergency Medical Services Systems under Title XII, Part A, of the Public Health Service Act (42 U.S.C. 300d et seq).

For the purpose of assuring a clear understanding by State, Regional, and local officials responsible for the implementation and administration of emergency medical services programs, it is essential that the primary areas of responsibility between DOT and DHEW be defined. Therefore, DOT and DHEW agree, pursuant to their respective statutory authorities, to the terms of this Memorandum. In carrying out this Memorandum, the goals of DOT and DHEW will be to develop, establish, and implement consistent and comprehensive national uniform standards, criteria, procedures, technical assistance, related requirements and to avoid duplication of effort.

Section 1206 of the Public Health Service Act identifies 15 components of an emergency medical services system. These component requirements are used in this document solely to delineate responsibilities of DOT and DHEW for the development of program standards and procedures.

A. DOT RESPONSIBILITIES

In coordination with DHEW, DOT will develop uniform standards and procedures for the transportation phases of emergency care and response as follows:

1. Manpower - EMS administrative personnel involved in the transportation phases of emergency medical services (EMS).

2. Training - First responders (fire, police, etc.) Emergency Medical Technicians - Ambulance and Paramedics, communications dispatchers, and system coordinators and administrators.

3. Communications - Telecommunications systems in areas of citizen access, central dispatch, ambulance to emergency department (ED), field resource management of EMS systems including utilization of basic and advanced telecommunications technology.

4. Transportation - Ambulances and special transportation vehicles (air, surface, water) and equipment both carried and installed (extrication, communications, medical), including emergency and safety specifications.

5. Facilities - The transportation and care of emergency patients to the appropriately categorized and/or otherwise designated facilities.

6. Critical Care Units - Transportation and care to such designated units.

7. Public Safety Agencies - Integration and improved utilization of all personnel, facilities, and equipment.

8. Consumer Participation - The opportunity for private citizens to participate in making policy for the transportation phases of an EMS system.

9. Accessibility to Care - Transportation response and extra-hospital EMS care without prior inquiry as to patients' ability to pay.

10. Transfer of Patients - Inter-hospital transport and care of critical patients to advanced treatment centers.

11. Coordinated Medical Recordkeeping - Record systems utilized during the transportation phases (e.g., dispatcher and ambulance data forms and processing).

12. Consumer Information and Education - Education and training of private citizens along with dissemination of program information relating to training and educational concepts, principles, standards, and criteria for the transportation phases of EMS systems.

13. Review and Evaluation - Evaluation of the extent and quality of pre-hospital and inter-hospital emergency response and care services provided in the system's service area as it relates to emergency transportation.

14. Disaster Linkages - Coordination of pre-hospital and inter-hospital EMS transportation response and care services during mass casualties, natural disasters, or national emergencies.

15. Mutual Aid Agreements - Setting requirements for pre-hospital and inter-hospital EMS transportation response on a reciprocal basis.

B. DHEW RESPONSIBILITIES

DHEW will develop, in coordination with DOT, medical standards and procedures for initial, supportive and definitive care phases of EMS systems as follows:

1. Manpower - EMS personnel involved in all phases of EMS.

2. Training - First responders, private citizens, Emergency Medical Technicians - Ambulance and Paramedics, communications, EMS hospital communicators, emergency nurses and physicians, EMS medical directors and system coordinators and administrators.

3. Communications - Telecommunications systems in areas of citizen access, central dispatch and field resource management of EMS systems. DHEW emphasis would be in the areas of medical communications and control for vehicle to hospital communications for both basic and advanced life support as well as hospital to hospital communications for advanced technology.

4. Transportation - Patient care standards for ambulances, special transportation vehicles (surface, air, water) to include equipment and treatment specifications.

5. Facilities - Development and implementation of regional hospital categorization programs.

6. Critical Care Units - Appropriate designation of critical care capability.

7. Public Safety Agencies - Integration and improved utilization of personnel, facilities, and equipment in day-to-day EMS and in major disaster operating procedures.

8. Consumer Participation - The opportunity for private citizens to participate in making policy for the EMS system.

9. Accessibility to Care - Care without prior inquiry as to ability of patient to pay.

10. Transfer of Patients - Inter-hospital transfer agreements for critical patients to advanced treatment centers in order to provide maximum follow-up care and rehabilitation.

11. Coordinated Medical Recordkeeping - Establishing and operating record systems utilized during transportation phases (e.g., dispatcher and ambulance data forms and processing) as well as in-hospital emergency and critical care treatment phases.

12. Consumer Information and Education - Education and training of private citizens along with dissemination of program information relating to training and educational concepts, principles, standards, and criteria for the EMS system.

13. Review and Evaluation - Evaluation of the extent and quality of regional emergency medical response and care services provided within the system's service areas.

14. Disaster Linkages - Coordination of EMS response and patient care during mass casualties, natural disasters, or national emergencies.

15. Mutual Aid Agreements - Setting requirements for pre-hospital, hospital, and inter-hospital emergency medical care on a reciprocal basis.

C. RESEARCH AND DEMONSTRATION

DOT and DHEW will pursue research and demonstration activities in support of their respective program responsibilities as defined above. Joint efforts are encouraged where possible.

D. FUNDING AND TECHNICAL ASSISTANCE

DOT may fund those activities pertaining to its responsibilities outlined above under both Sections 402 and 403 of Title 23, U.S.C., Highway Safety Act of 1966. Under Section 402, it is recognized that in the apportionment of funds to the States for program implementation, DOT does not determine the priorities by which these funds will be applied to the transportation phases of the State's EMS system. Subject to applicable statutes and regulations and the availability of funds, DHEW may fund the full spectrum of eligible entities as defined in Section 1206 of the Public Health Service Act. When DHEW funds are expended for emergency ambulance vehicles and the training of Emergency Medical Technicians - Ambulance and Paramedics, DOT criteria as specified in EMS program regulations apply. DOT funds may be used to assist in the transportation phases of DHEW-funded projects. Both agencies will provide technical assistance as appropriate and as required in support of their program responsibilities.

E. INTERAGENCY COOPERATION

In addition to the statutory requirements pertaining to the Interagency Committee on Emergency Medical Services, DOT and DHEW will keep each other advised on a continuing basis and coordinate the development of standards within their respective responsibilities. With respect to communications systems, every attempt should be made to harmonize DOT-DHEW requirements to the maximum extent practicable.

F. EXCHANGE OF INFORMATION

Prior to the issuance of procedures, training manuals, regulations, funding or other information pertinent to the respective responsibilities, DOT and DHEW will exchange information, consult with, and assist each other within the areas of their special competence. Both Departments will actively maintain identified channels so as to share with each other, at both the central and regional office levels, all pertinent issuances to their respective staffs and clientele.

G. WORKING ARRANGEMENTS

DOT and DHEW will designate staff representatives and will establish joint working arrangements from time to time for the purpose of administering this Memorandum of Understanding. Pursuant to this Memorandum of Understanding, DOT and DHEW Regional Offices will promote coordination of DHEW-sponsored projects with DOT required State comprehensive EMS plans and programs through a mutually acceptable lead agency. These offices will also assist each other in the identification and application of all available resources to support EMS upgrading within the scope of such plans, programs and/or projects.

H. GENERAL

This agreement shall take effect upon the signing by authorized representatives of the respective Departments.

Nothing in this Memorandum of Understanding is intended to affect in any way the statutory authority of either Department.

For the Department of Transportation

Secretary

10/26/78
Date

For the Department of Health, Education, and Welfare

Secretary

10/26/78
Date

EMERGENCY MEDICAL SERVICES

EMS IDENTIFIABLE UNIT

Q. In the administration of the E.M.S. Program, you have relied heavily on Regional and National Symposia to discuss problems and develop solutions. Have you found this an effective mechanism for communicating with the regional staff as well as with those running the E.M.S. systems in the community?

A. The Regional Workshops and National Symposia have proven to be an essential and effective mechanism for providing technical assistance and support to the regional systems. The Regional Workshops and National Symposia provide the opportunity to discuss program requirements, procedures, methodologies, evaluation criteria, etc., with the current EMS grantees, potential applicants, as well as others interested in the EMS program. The Regional Workshops and National Symposia provide the opportunity for the regional systems to interact and exchange ideas and methods of developing their respective regional emergency medical services systems. Based on discussions of experiences and problems at the workshops and symposia, problems are resolved. Grant applications which have been submitted reflect adherence to the national strategy and criteria. This compliance has been attributed to the technical assistance provided to the regional workshops and national symposia.

EMERGENCY MEDICAL SERVICES

EMS IDENTIFIABLE UNIT

Q. Please describe the subject matter discussed at each of these symposium and any abstracts developed as a result.

A. The Regional Workshops provide technical assistance on the six critical care patients (trauma, burn, cardiac, poisoning, neonatal, and behavioral), and the 15 EMS components (manpower and training, communications, transportation, public information and education, evaluation, facilities/categorization, etc.). Workshops are provided on the development of grants (1202), implementation of grants (1203), and on the expansion of grants (1204). Individual meetings with grantees to provide specific guidelines and criteria for grants management and program guidelines are presented.

The National Symposia provide technical assistance on the six critical care patients (trauma, burn, cardiac, etc.) and the 15 EMS components (manpower and training, communication, transportation, etc.).

1. The following major symposia were conducted in F.Y. 1975:

   a. Regionalization
   b. Transportation
   c. Manpower
   d. EMS Systems Design and Implementation
   e. Evaluation
   f. Communications
   g. Systems Leadership Requirements

2. The following major symposia were conducted in F.Y. 1976:

   a. Categorization
   b. EMS Systems Design
   c. Rural/Wilderness EMS Systems
   d. Urban/Metro EMS Systems
   e. EMS and Traumatology

   At the EMS and Traumatology Symposium, abstracts were developed to provide a national and international experience and scientific information for the development of emergency medical services systems, and the improvement of care and management of trauma victims.

3. The following major symposia were conducted in F.Y. 1977:

   a. Legislation
   b. Evaluation
   c. Communications and Transportation
   d. Manpower

4. The following major symposia were conducted in F.Y. 1978:

   a. Policymakers
   b. Facilities/Categorization
   c. EMT's and Paramedics
   d. Evaluation
   e. Public Information and Education

   Abstracts were prepared for the Evaluation Symposium based upon the evaluation of current regional EMS systems.

5. The following major symposia have been conducted in F.Y. 1979:

   a. Progress, Perspectives, and Prospectives

EMERGENCY MEDICAL SERVICES

EMS IDENTIFIABLE UNIT

Q. The 1978 House Appropriations Committee Investigative Report reported that the annual cost of the workshops and symposia is in excess of $2.3 million of which about $1.9 million is from scarce H.E.W. grant and operational funds. As the E.M.S. systems move towards more sophisticated levels of development, do you see an opportunity to reduce the number of symposia you have been holding in past years making available some of these funds for systems development?

A. Yes, we have reached a point in the dissemination of basic information where categorical symposia have covered most of the critical issues. Only two symposia have been scheduled for 1979. One on Progress, Perspectives, and Prospectives was held in February. The other, Legislation, Funding, and Medical Accountability, will be held in July. The latter symposium will address the most critical current issues facing the developing EMS systems, future viability and self-sufficiency after their eligibility for funds under the EMSS Act has expired. In fiscal year 1980 we are planning only one symposium. It will be on program evaluation, Effectiveness and Future National EMS Policy. This symposium will solidify our evaluation strategy and produce significant impact data, especially on patient outcome. It will provide State and local entities with the direction for self monitoring and maintenance of there EMS programs.

However, we plan to continue our regional workshops, which have proven valuable in the past. These workshops will serve as the primary means of disseminating the latest information to new and progressing grantees on managerial and technical advances in EMS, alerting grantees and prospective applicants to any redirection or change in national program emphasis, and permit the cross fertilization of ideas among persons representing a homogeneous group of States.

EMERGENCY MEDICAL SERVICES

EMS IDENTIFIABLE UNIT

Q. I am very concerned that programs not be overburdened with paperwork. It is my understanding that some criticism has been made of the time required to prepare a grant application and of the sheer bulk of the materials required to support the application. It has been suggested that an applicant for the second year of a 1203 grant and for the second year of a 1204 grant should be able to update or supplement the submission for the first year grant in each case rather than repeating much of the same information. Would that work satisfactorily?

A. HEW Regional Offices have the responsibility for reviewing all grant applications. The review mechanism that is used by each Regional Office involves submission of the applications through the Emergency Medical Services program consultant, and then review of the application by other HEW personnel within the Regional Office, together with the physician technical assistant. The problem is that the HEW Regional Office personnel assigned to review applications each year is not necessarily the same personnel. In which case, applications submitted for second year grants under 1203 and 1204 may be rated lower than expected because the reviewer was not involved in reviewing the first year application for the same area.

We are attempting to resolve this problem or at least to reduce the significance of this problem through the new Guidelines which should be released during fiscal year 1979. These Guidelines will de-emphasize under sections 1203 and 1204, the amount of so called "boiler plate" material which is required to describe the capabilities that exist and the progress that has been made in the previous grant. Through this mechanism we hope to be able to reduce the bulk of material submitted by second year grantees under sections 1203 and 1204, but not lose the objectivity of the review.

EMERGENCY MEDICAL SERVICES

EMS IDENTIFIABLE UNIT

Q. A number of suggestions have been made that this committee consider authorizing special grant programs to develop regional trauma centers, poison control centers and spinal cord injury centers. I am aware there are a number of Federal programs already in existence which can assist in the development of such programs. Would you please provide the committee with information on any Federal programs now in existence, the agency in which they are located, and the elements of those programs that are related to trauma, poison control and spinal cord injury.

A. Each of the 300 regional EMS systems are developing regional systems of care delivery for the specific target patient groups to include, trauma, burn, spinal cord injury, poisonings, acute cardiac, high risk infants and behavioral emergency patients. In each of these systems, specialty care services in designated critical care centers at varying levels of sophistication are being established.

The EMS lead agency, the Division of Emergency Medical Services (DEMS), is the only Federal agency involved with the development of EMS systems of care delivery for the general emergency and the target critical care groups. It is working with appropriate National professional organizations to establish the standards for categorization of the various specialty centers, the actual designation of responsibilities for these centers, and the development of regional EMS systems of patient care delivery relevant to these identified specialty care centers.

The model trauma programs (i.e. Illinois and Maryland) have established a 3 echelon system for trauma centers to include regional, areawide and local centers where in-hospital trauma teams are ready to respond and care for critical patients selectively triaged to these centers. These proven model statewide echelon trauma care center programs are now being implemented nationally.

The National Institutes of Health, Institute for General Medical Sciences, has a program for developing biomedical research in selected areas of trauma and burn care. This program is administered by Dr. Emily Black. Also within NIH (Stroke and Trauma Program) there is a special program evaluating specialty care of central nervous system and spinal cord injury patients in terms of treatments and technology adaptations for improved care of CNS patients under the administration of Dr. Maury Hanson.

Emergency Medical Services

The Rehabilitation Services Administration has a program for development of spinal cord injury centers. The DEMS works cooperatively with this agency to improve the delivery of spinal cord injury patients to the 13 currently designated centers. Mr. Paul Thomas is project manager for this effort. It is estimated that there would need to be at least one major spinal cord injury center for acute, initial, and comprehensive rehabilitation in each of our major metropolitan areas. This would probably require the development of some additional 50 centers.

The necessity for developing special burn centers will be determined by the analysis of data collected under the Burn Demonstration Program under section 1221 of the EMSS Act. The number of burn facilities required in this country, meeting the American Burn Association standards (attached) would be similar to that for major trauma centers, but with varying configurations of burn centers and burn units as appropriate. A more definitive estimate of the need and distribution of burn centers and units will be forthcoming with the analysis of the Burn Demonstration Program currently underway.

The National Clearinghouse for Poison Control Centers, within the FDA's Bureau of Drugs, currently has the responsibility in the Federal Government for the dissemination of poisoning information, incident reporting and coordination activities with the local poison control centers. The Clearinghouse provides information and otherwise relates to some 600 local poison control centers designated officially by State health departments. The Clearinghouse also coordinates with the professional community within Government whose interests relate to poisonings, e.g., Consumer Product Safety Commission and the Occupational Safety and Health Administration.

EMERGENCY MEDICAL SERVICES

E.M.S. IDENTIFIABLE UNIT

Q. In extending the legislation in 1976, one question we asked was "is there evidence that good emergency care can prevent death and disability? The answer given then was that there were no good data which would provide the answer to that question. Consequently, P.L. 94-573 required H.E.W. to identify categories of critical care patients that should be included in a uniform reporting system with a view that the information from such a reporting system would be used to evaluate the effectiveness of emergency medical services systems and burn injury programs. The cirtical care areas identified by H.E.W. as a result of that study are: diseases of the heart, accidents (including motor vehicle trauma, falls and acts of violence, burns, and poisoning); infant mortality; and suicides.

What plans do you have to track these critical patient areas through the system?

A. The improvement of patient care and decreased death and disability will be made from studies relating to the target critical care patient categories and impact studies written in abstract form. These abstracts were submitted first on January 1, 1978 as a competitive activity for presentation in Seattle in July 1978 at the Evaluation Symposium and as a program requirement December 1, 1978. These abstracts are now under review. Some 183 regional EMS projects submitted abstracts in almost all of the clinical and component areas. A contract between the Office of Planning, Evaluation, and Legislation, HSA, and the Arthur Young and Company for the validation of these abstracts is underway.

Q. **Would such information be helpful in assessing the need for separate trauma, poison control, and spinal cord injury programs?**

A. **This patient monitoring program in abstract form is helpful for project monitoring and to assist in providing technical assistance to grantees for further development of EMS systems and will assist them in local planning efforts to initiate more indepth studies of the need for trauma, burn, spinal cord injury, poison centers, etc. by seeing the magnitude and distribution of limited critical patients and in obtaining some fix on the size and distribution of care capabilities. A more indepth national uniform evaluation system needs to be developed to better understand the many and complex issues of each of these and all other emergency and critical care patient groups as well as the overall effectiveness of the EMS systems program.**

This method is limited in scope and has variables in terms of site collection data and does not provide adequate information for planning and resource development decisions.

EMERGENCY MEDICAL SERVICES

E.M.S. IDENTIFIABLE UNIT

Q. The 1978 House Appropriations Committee Investigation also reported that, beginning in fiscal year 1977, the E.M.S. Division recruited and trained physician technical advisors for each of the 10 Regions to provide technical assistance at the Regional Office level. That investigation found that there was some concern that the E.M.S. Division was bypassing the H.E.W. Regions by working through these physician technical advisors "leaving the Regions 'out in the cold' and 'out of touch'".

A. Would you provide the Committee with information on the mechanisms whereby these physicians provide technical assistance, and to whom they provide it?

B. Are the physicians readily accessible to the E.M.S. systems?

C. How do they coordinate their work with the Regional Office personnel?

A. A Physician Technical Advisor (PTA) for EMS is available to each HEW Regional Office. Purchase orders have been negotiated with each physician for a maximum of 45 days of service in F.Y. 1979. Eight Regional Offices have negotiated this agreement. Two Regional Offices have not proceeded to negotiate an agreement due to delays in the procurement process.

The services of the PTA are ordered and coordinated with the HEW staff for EMS. A written letter report is most often submitted by the PTA after each assignment. In F.Y. 1979, the PTA's have provided between 12 and 30 days to grantees in the various Regional Offices.

Technical assistance to grantees given:

1. individual site visits, jointly or separate
2. regional grantee meetings on evaluation, program operation, clinical patient care areas regarding medical issues
3. review of grant applications with written comments

The PTAs have been selected because of their expertise in at least one of the clinical care areas and because of their experience in developing model (pioneering) regional EMS systems. These PTAs have been extremely effective in providing technical assistance through the measures outlined above.

Unfortunately, they only have a limited amount of time to provide their services due to all of them having medical, surgical, and teaching, etc., commitments.

EMERGENCY MEDICAL SERVICES

REQUIREMENTS

Q. A. Please describe your experience in requiring E.M.S. systems to be able to communicate in the language of predominant population groups with limited English-language capacity in the service area, as well as in requiring a capability to communicate with individuals with auditory handicaps.

B. Please submit copies of directives or memoranda implementing these requirements.

A. A. The revised program regulations, promulgated in the Federal Register on November 3, 1978, and our forthcoming revised Program Guidelines require systems to be able to communicate in the language of predominant population groups with limited English language capacity in the service area and to provide for access by those individuals with auditory handicaps. The application kits for fiscal years 1977 and 1978 also required this in the special requirements section resulting from the 1976 Amending Legislation (P.L. 94-573).

B. Attached are copies of the following documents:

1. Program Regulations - Grants for Emergency Medical Services Systems, 42 CFR 56a. Please see the following sections: 56a.102 "Capability to communicate in the language of the predominant population groups of limited English-speaking capability," 56a.103(c), 56a.305(b)(7), and 56a.406(b)(6).

2. Draft Program Guidelines - Emergency Medical Services Systems, page 41.

3. January 13, 1977 Memorandum to Regional Health Administrators, Notice to EMS applicants, page 3 of Amendments to EMS Law P.L. 94-153.

Attachments

48-284 O - 79 - 6

federal register

FRIDAY, NOVEMBER 3, 1978
PART II

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service

■

GRANTS FOR EMERGENCY MEDICAL SERVICES SYSTEMS

[4110-84-M]

Title 42—Public Health

CHAPTER I—PUBLIC HEALTH SERVICE, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

PART 56a—GRANTS FOR EMERGENCY MEDICAL SERVICES SYSTEMS

Grants for Emergency Medical Services Systems

AGENCY: Health Services Administration, PHS, HEW.

ACTION: Final rules.

SUMMARY: These rules amend the regulations governing the program of grant assistance for emergency medical services systems authorized by title XII of the Public Health Service Act. They are being adopted in order to implement recent, largely technical, amendments to title XII.

EFFECTIVE DATE: November 3, 1978.

FOR FURTHER INFORMATION CONTACT:

Mr. John Reardon, Deputy Director, Division of Emergency Medical Services, Health Services Administration, Department of Health, Education, and Welfare, 6525 Belcrest Road, Hyattsville, Md. 20782, telephone 301-436-6284.

SUPPLEMENTARY INFORMATION: Pub. L. 94-573 made a series of amendments to title XII of the Public Health Service Act, 42 U.S.C. 300d et seq., the program of grant assistance for projects for emergency medical services systems. These amendments are primarily technical in nature, although section 3(a) of Pub. L. 94-573 also expanded the grant program authorized by section 1202 of the Act by adding two types of planning grants. The amendments to part 56a of Title 42, Code of Federal Regulations, set forth below implement these statutory amendments. The salient features of the amendments are summarized below.

SUBPART A

1. Pub. L. 94-573 added several new requirements for emergency medical services systems. For example, such systems are now required to have the capability to communicate with persons with auditory handicaps and persons of limited ability to speak English. These new program requirements are implemented by the changes to § 56a.103(c).

2. New definitions have been added to implement the provisions of the new section 1202(b). The definitions of "advance life support services" and "basic life support services" in § 56a.102 accord, we believe, with common usage of those terms among such systems, while the definition of "medically underserved population" in § 56a.102 conforms to the definition of that term in other programs administered by the Public Health Service.

3. Several program requirements and definitions have been clarified or updated based on experience with the program and changing technical standards. See § 56a.102, definitions of "Appropriate training and experience", "Ground vehicles," and § 56a.103 (a) and (d).

4. In addition, a number of changes were made reflecting the technical amendments made by Pub. L. 94-573. See § 56a.102 with respect to definitions of "Section 1521 health planning and development agency", "Section 1515 health systems agency", and "Section 1513 health systems plan", and §§ 56a.103 (d), (k), 56a.106(f)(1).

SUBPART B

1. Pub. L. 94-573 revised the existing authority under section 1202 for feasibility and planning grants. Previously such grants were made for both studying the feasibility of and planning for the establishment and operation of emergency medical services systems "through expansion and improvement or otherwise." In practice, this has been interpreted to mean that a study and planning grant will be made for a project to establish and operate a system under section 1203 or expand and improve a system under section 1204. Section 1202(a) has been revised to clarify this (in sec. 1202(a)(1) (A) and (B) and in addition to provide for projects to study and plan for projects under sec. 1203 and sec. 1204 (sec. 1202(a)(1)(C)). The regulations reflect this statutory clarification, although the substantive program requirements remain essentially unchanged.

2. Pub. L. 94-573 added authority for projects to study the feasibility of or plan for advanced life support services for an emergency medical services system (sec. 1202(b)(1)(A)). As with grants made under section 1202(a), grantees are to produce a feasibility study or plan, as applicable, the requirements for which are similar to the analogous requirements under section 1202(a), except for the focus on advanced life support services. See § 56a.206(b).

3. Pub. L. 94-573 also added authority for grants to States to enable them to update the plans for a State emergency medical services system to improve the delivery of such services in rural areas and to medically underserved populations of the State. The regulations clarify the congressional intent, apparent in the legislative history (see S. Rep. No. 94-889 at 46), that such grants are to be made for statewide plans. They also spell out that the planning undertaken pursuant to the grant may, where appropriate, encompass other than rural areas and medically underserved populations. As with grants under section 1202(a) and 1202(b)(1)(A), the State grantees are required to submit comprehensive plans, similar to those required of the other grantees, at the close of the grant.

SUBPARTS C AND D

1. The major revisions to subparts C and D implement statutory amendments that require additional assurances of grantees. The assurances are designed to insure that grants will be made for projects with substantial financial community support in order to maximize project viability after grant support ends. The documentation and degree of governmental and community support which these regulations require grant applicants to show is responsive to this congressional concern. See, e.g., §§ 56a.303 (i), (j), and (k); §§ 56a.404 (k), (l), and (m).

2. Pub. L. 94-573 added authority to support certain basic and short-term training of certain emergency medical personnel under sections 1203 and 1204. The training which may be supported under these sections is defined at §§ 56a.305(b)(4) and 56a.406(b)(4).

3. New reporting requirements have been added to both subpart C and subpart D in response to the amendments reflected in sections 1203(f) and 1204(e) of the Act. The legislative history of these sections indicates that Congress enacted them because it was impressed with the usefulness of the information provided by grantees under section 1202 in the reports required by that section. Consequently, the new §§ 56a.306 and 56a.408 require grantees to provide a reasonably detailed picture of their operations under the grant.

In light of the essentially technical nature of these regulations and the need for them in order to implement section 1202(b), the Secretary has determined that public comment on them and delay in their effective date are unnecessary and would be contrary to the public interest and that good cause exists for their omission.

Dated: June 28, 1978.

JULIUS B. RICHMOND,
Assistant Secretary for Health.

Approved: October 19, 1978.

HALE CHAMPION,
Acting Secretary.

Part 56a of Title 42, Code of Federal Regulations, is revised to read as follows:

Subpart A—General

AUTHORITY: Secs. 1202, 1203, and 1204 of the Public Health Service Act (42 U.S.C. 300d-1, 300d-2, and 300d-3).

Subpart A—General Provisions

§ 56a.101 Applicability.

The regulations of this subpart apply to grants (a) under section 1202 of the Public Health Service Act (42 U.S.C. 300d-1) for projects which include both studying the feasibility of and planning for (1) the establishment and operation of emergency medical services systems, (2) the expansion and improvement of these systems, or (3) both; (b) for the establishment and initial operation of these systems under section 1203 of the Public Health Service Act (42 U.S.C. 300d-2); and (c) for projects for the expansion and improvement of these systems under section 1204 of the Public Health Service Act (42 U.S.C. 300d-3).

§ 56a.102 Definitions.

As used in this part:

"Act" means the Public Health Service Act.

"Adequate number of easily accessible emergency medical services facilities" means that in 95 percent of the cases, at least one facility which has the minimum capabilities required by the applicable method of categorization, as described in § 56a.103(e)(1), is within 60 minutes travel time from the scene of the emergency.

"Adequate number of health professions, allied health professions, and other health personnel" means sufficient numbers of health personnel to provide emergency medical services on a 24-hour basis within the service area of the emergency medical services system.

"Adequate number of necessary ground, air, and water vehicles and other transportation facilities" means sufficent vehicles to respond to 95 percent of requests for assistance in the emergency medical services system area within 30 minutes.

"Advanced life support services" or "ALS" means implementation of the requirements of § 56a.103 throughout the emergency medical services system to a level of capability which provides both noninvasive and invasive emergency patient care designed to optimize the patient's chances of surviving the emergency situation, such as sophisticated transportation vehicles with advanced equipment, a communications capability (two-way voice and/or telemetry) and staffed by Emergency Medical Technician-Paramedics (EMT-P) providing onsite, prehospital and interhospital mobile intensive care.

"Appropriate public safety personnel" includes police, firemen, communications and dispatch specialists, park rangers, lifeguards, and other public employees charged with maintaining public safety.

"Appropriate training and experience" means at a minimum:

(1) As applied to physicians (doctors of medicine and doctors of osteopathy), possession of appropriate State qualifications to practice medicine in the State in which they provide emergency medical services.

(2) As applied to nursing and allied health professions, licensure, certification, or registration as required by their respective professions and the State in which they provide emergency medical services.

(3) As applied to ambulance personnel, completion of training appropriate to the level or emergency medical care being provided in the system's service area, as follows:

(i) In an area where the level of emergency medical care being provided is at the Basic Life Support (BLS) level, training as an Emergency Medical Technician-Ambulance (EMT-A) in accordance with standards prescribed by the Department of Transportation (Basic Training Course/Emergency Medical Technician (2d Edition) Course Guide 1977 (DOT Pub. No. HS 802 534 through 536)); or an equivalent training program. A program will be recognized as "equivalent," only if the Secretary finds that at least 75 percent of the graduates of that program either pass the National Registry of Emergency Medical Technicians examination for Basic EMT-A within 6 months after graduation or meet applicable State requirements which are determined by the Secretary to equal or exceed Department of Transportation requirements.

(ii) In an area where emergency medical care is provided at the ALS level, training as an Emergency Medical Technician-Paramedic in accordance with a curriculum covering competencies outlined in the Course Guide, National Training Course, Emergency Medical Technician-Paramedic 1977 (DOT Pub. No. HS 802 437 through 452).

"Appropriate transportation" means a vehicle equipped to enable the emergency medical technician or more highly trained personnel to administer to the patient's needs at the scene and in transit.

"Basic life support services" or "BLS" means the implementation of the requirements of § 56a.103 throughout the emergency medical services system to a level of capability which provides noninvasive emergency patient care designed to optimize the patient's chances of surviving the emergency situation, such as universal access to and dispatch of national standard ambulances, with appropriate medical and communication equipment, operated by Emergency Medical Technicians-Ambulance, and availability of a hospital as described in § 56a.103(e)(2).

"Budget period" means one of the intervals of time (usually 12 months) into which the grant period is divided for budgetary and reporting purposes.

"Built-in equipment" means equipment which is permanently attached to the wall, floor, or ceiling or similarly restricted, including items which require (1) the modification of a facility for installation or removal, and (2) connection to utility services such as water, gas, steam, or the building ventilation system.

"Capability to communicate in the language of the predominant population groups of limited English-speaking ability" means that the system has immediate access to persons who are able to communicate in the primary languages of these population groups.

"Capability to communicate with individuals having auditory handicaps" means a system which has the sending and receiving capability of a device such as a teletypewriter through

which persons with hearing difficulties can gain access to the emergency medical services system.

"Continuing education" means courses which improve job-specific skills and knowledge, to which personnel devote more than 24 hours per year, whether or not a degree is awarded.

"Emergency medical services" or "EMS" means the services used in responding to a person's perceived need for immediate medical care in order to prevent loss of life or aggravation of physiological or psychological illness or injury.

"Emergency medical services system" means a system which provides for the arrangement of personnel, facilities, and equipment for the effective and coordinated delivery of health care services in an appropriate geographical area under emergency conditions (occurring either as a result of the patient's condition or of natural disasters or similar situations) and which is administered by a public or nonprofit private entity which has the authority and the resources to provide effective administration of the system. An "appropriate geographical area" means an area which the Secretary determines, on the basis of information contained in an application for a grant under this part and other information as he requires for purposes of this determination, to be of sufficent size, population, and economic diversity so that an efficient and economically feasible EMS system can be established, taking into consideration existing medical service areas and health service areas established under section 1511 of the Act.

"Emergency medical telephonic screening" means that the communications system is capable, under the direction of personnel with training and experience in the provision of emergency medical services, of (1) redirecting requests for assistance that appear to be non-emergent in nature; (2) directing patients to the emergency services that are most appropriate for their medical needs; and (3) dispatching the appropriate emergency resources as necessary.

"Equipment" means items which are necessary for the functioning of the EMS system, but does not include items of current operating expense or items consumed in use such as glassware, chemicals, food, fuel, drugs, paper, printed forms, books, pamphlets, periodicals, and disposable housekeeping items.

"Followup care and rehabilitation" includes physical and psychiatric care and vocational rehabilitation.

"Grant period" means any period with respect to which assistance is granted under the Act for a particular project.

"Ground vehicles" means (1) ambulances which meet the requirements in the proposed Federal specifications for emergency medical care vehicles (Federal Specification, Ambulance, Emergency Care Vehicle, General Services Administration, KKK-A-1822, June 25, 1975); and (2) vehicles suitably equipped to transfer both ambulatory and nonambulatory patients who do not need emergency care to appropriate destinations including health care, extended care, and rehabilitation facilities.

"Major repair" means those repairs to an existing building, excluding routine maintenance, which restore the building to a sound state and the cost of which is at least $100,000.

"Medically underserved population" means the population of an urban or rural area designated by the Secretary as an area with a shortage of personal health services or a population group designated by the Secretary as having a shortage of these services. Medically underserved areas will be designated by the Secretary through publication in the FEDERAL REGISTER from time to time, taking into consideration the following factors, among others:

(1) Available health resources in relation to size of the area and its population, including appropriate ratios of primary care physicians in general or family practice, internal medicine, pediatrics, or obstetrics and gynecology to population;

(2) Health indices for the population of the area, such as infant mortality rate;

(3) Economic factors affecting the population's access to health services, such as the percentage of the population with incomes below the poverty level; and

(4) Demographic factors affecting the population's need and demand for health services, such as percentage of the population age 65 and over.

"Modernization" means the alteration, major repair, remodeling, or renovation of existing buildings (including initial equipment of those buildings), or replacement of obsolete built-in equipment of existing buildings.

"Nonprofit," as applied to a private entity, means that no part of the net earnings of that entity benefits or may lawfully benefit any private shareholder or individual.

"Other appropriate emergency medical services systems" are those EMS systems in neighboring areas which might be involved in common disasters, those EMS systems which are contiguous with the system, and those EMS systems which have entered into agreements with the system.

"Predominant population group with limited English-speaking ability" means a group which is the majority population in one or more neighborhoods, districts, or other indentifiable portions of the system's area and which is primarily composed of persons whose limited English-speaking capability under stress or emergency conditions would impede their access to the system.

"Rural area" means any area not classified as an urbanized area by the Bureau of the Census (1970 Census of Population, Number of Inhabitants, Bureau of the Census, U.S. Department of Commerce, Dec. 1971).

"Secretary" means the Secretary of Health, Education, and Welfare or any other officer or employee of the Department of Health, Education, and Welfare to whom the authority involved has been delegated.

"Section 1521 State health planning and development agency" means the agency of a State designated under section 1521(b)(3) of the Act.

"Section 1515 health systems agency" means a health systems agency designated under section 1515 of the Act.

"Section 1513 health systems plan" means a health systems plan referred to in section 1513(b)(2) of the Act.

"Specialized critical medical care units" means facilities and services specifically designed for the care of critical patients (e.g., victims of trauma, including burns and spinal cord injury; acute cardiac conditions; poisoning; acute behavioral problems, such as acute alcohol intoxication, drug overdose and psychiatric emergencies; and high risk infants).

"State" means one of the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, American Samoa, the Northern Mariana Islands, or the Trust Territory of the Pacific Islands.

"Unit of general local government" means (1) a city, county, township, town, borough, parish, village, or other general purpose political subdivision of a State; or (2) an Indian tribe.

§ 56a.103 Project requirements.

An EMS system must:

(a) Include an adequate number of health professions, allied health professions, and other health personnel, including ambulance personnel, with appropriate training and experience.

(b) Provide for its personnel appropriate training (including clinical training) and continuing education programs which are coordinated with other programs in the system's service area which provide similar training and education, and emphasize recruitment and necessary training of veterans of the Armed Forces with military training and experience in health care fields and of appropriate public safety personnel in the service area. The

EMS system must use the "Military Experience Directed Into Health Careers" agency of the State or States in which it is located and the Veterans Employment Representative and the VA Hospital for the region in which it is located to recruit veterans of the Armed Forces with military training and experience in health care fields.

(c) Join the personnel, facilities, and equipment of the system by a central communications system so that requests for emergency health care services will be handled by a communications facility which uses emergency medical telephonic screening; uses (or, within the period required by the Secretary, will use) the universal emergency telephone number 911; will have direct communication connections and interconnections with the personnel, facilities, and equipment of the system and with other appropriate EMS systems; will have the capability to communicate with individuals having auditory handicaps and to communicate in the language of the predominant population groups with limited English-speaking ability in the system's service area; and makes maximum use of communications equipment and systems acquired under any highway safety program approved under chapter 4 of title 23, United States Code and of the equipment and system acquired under title I of the Omnibus Crime Control and Safe Streets Act of 1968 (42 U.S.C. 3701, et seq.). For the purposes of this paragraph:

(1) a "central communications system" means a system command and control center which is responsible for establishing those communication channels and providing those public resources essential to the most effective and efficient emergency medical services management of the immediate problem, and which has the necessary equipment and facilities to permit immediate interchange of information essential for the system's resource management and control. The essentials of a central communications center are that (i) all requests for system response are directed to the center; (ii) all system resource response is directed from the center; and (iii) all system liaison with other public safety and emergency response systems is coordinated from the center. Except to the extent provided in this section with respect to "emergency medical telephonic screening", the center need not direct or control medical care or treatment; and

(2) "maximum use" means that the applicant can show that it has acquired funds for the equipment and systems under the acts referred to in this paragraph.

(d) Include, making maximum use of vehicles acquired under any highway safety program approved under chapter 4 of 23 U.S.C., an adequate number of necessary ground, air, and water vehicles and other transportation facilities to meet the individual characteristics of the system's service area. These vehicles and facilities must meet appropriate standards relating to location, design, performance, and equipment; and the operators and other personnel for these vehicles and facilities must meet appropriate training and experience requirements.

(1) The personnel of these vehicles and transportation facilities must include during patient transport at least two attendants trained to the emergency medical technician level, one of whom may be the vehicle operator meeting State and local requirements for operating that type of vehicle.

(2) For the purposes of this paragraph, "maximum use" means that the applicant can show that it has acquired funds for this equipment under any highway safety program approved under chapter 4 of 23 U.S.C.

(e) Include an adequate number of easily accessible emergency medical services facilities within the EMS system's service area which are collectively capable of providing services on a continuous basis, which have appropriate nonduplicative and categorized capabilities, which meet appropriate standards relating to capacity, location, personnel, and equipment, and which are coordinated with other health care facilities of the system.

(1) The capabilities of accessible emergency medical services facilities must be categorized in accordance with a formulated method of classifying hospital emergency capabilities which is found by the Secretary to be acceptable for purposes of these regulations. Examples of acceptable methods of categorization are the guidelines developed by the American Medical Association (Recommendations of the Conference on the Guidelines for the Categorization of Hospital Emergency Capabilities, AMA, 1971) and systems of categorization having a similar purpose developed under applicable State law.

(2) The system's service area must contain at least one hospital which has a physician on duty in the emergency department 24 hours a day and which has a written working agreement with other hospitals offering greater emergency capabilities.

(f) Provide access (including appropriate transportation) to specialized critical medical care units in the EMS system's service area, or, if there are none of these units or an inadequate number of them in the service area, provide access to specialized critical medical care units in neighboring areas if access to those units is feasible in terms of time and distance.

(g) Provide for the effective use of the appropriate personnel, facilities, and equipment of each public safety agency providing emergency services in the EMS system's service area. For the purposes of this paragraph, "effective use" of personnel, facilities, and equipment of public safety agencies means the integration of public safety agencies into standard and disaster operating procedures of the areawide system, including the shared use of personnel and equipment particularly suited to use in medical emergencies, such as helicopters and rescue boats.

(h) Be organized in a manner that provides persons who reside in the EMS system's service area and who have no professional training or financial interest in the provision of health care with an adequate opportunity to participate in the making of policy for the system.

(i) Provide, without prior inquiry as to ability to pay, necessary emergency medical services to all patients requiring these services.

(j) Provide for transfer of patients to facilities and programs which offer followup care and rehabilitation as is necessary to bring about maximum recovery by the patient.

(1) The EMS system must provide a method for assuring that these transfers are consistent with accepted medical practice to serve the best interests of the patient and are not based on financial considerations alone.

(2) The vehicle used in the transfer of patients to these facilities and programs must be suitably equipped to meet the patient's intransit needs.

(k) Provide for a coordinated patient recordkeeping system. Patient records must cover the treatment of the patient from initial entry into the EMS system through his discharge from it, and must be consistent with patient records used in followup care and rehabilitation of the patient. For the purposes of this paragraph, a "coordinated patient recordkeeping system" means compatible records and forms throughout the EMS system's service area which facilitate the collection, organization, and storage of identified data elements. The forms must provide the data which the Secretary may require in guidelines, in the manner which the Secretary may require, for the purpose of obtaining comparable national data upon which to evaluate the impact of the Emergency Medical Services Systems Act (Pub. L. 93-154, as amended).

(l) Provide programs of public education and information in the system's service area (taking into account the needs of visitors to, as well as residents of, that area to know or be able to learn immediately the means of obtaining emergency medical services). These programs must stress the gener-

al dissemination of information regarding appropriate methods of medical self-help and first-aid and information regarding the availability of first-aid training programs in the area.

(m) Provide information as the Secretary may require to conduct periodic, comprehensive, and independent reviews and evaluations of the extent and quality of the emergency health care services provided in the EMS system's service area, and submit to the Secretary the results of any review or evaluation which may be conducted by the system of the extent and quality of these services in the service area.

(n) Have a plan to assure that the EMS system will be capable of providing emergency medical services in the system's service area during mass casualties, natural disasters, or national emergencies. The system disaster plan must be tested at least once before completion of each budget period of a grant under sections 1203 or 1204 of the Act.

(o) Provide for the establishment of appropriate arrangements with EMS systems or similar entities serving neighboring areas for the provision of emergency medical services on a reciprocal basis where access to these services would be more appropriate and effective in terms of the services available, time and distance. Any such arrangements among EMS systems or similar entities serving neighboring areas must be written agreements, signed by individuals authorized to act for the respective parties with respect to these agreements, and must be reviewed and reevaluated at least once a year.

§ 56a.104 Eligible applicants.

The following are eligible to apply for a grant under this part:

(a) A State;

(b) A unit of general local government;

(c) A public entity administering a compact or other regional arrangement or consortium; or

(d) Any other public entity and any nonprofit private entity.

§ 56a.105 Priority.

In considering applications submitted under this part, the Secretary will give priority to applications submitted by the eligible applicants described in paragraphs (a), (b), and (c) of § 56a.104.

§ 56a.106 Application.

(a) An application for a grant under this part must be submitted to the Secretary at the time and in the form required by the Secretary.

(b) The application must be made by an individual authorized to act for the applicant and to assume for the applicant the obligations imposed by the statute, the applicable regulations of this part, and any additional conditions of the grant.

(c) The application must contain a budget and narrative plan of the manner in which the applicant intends to conduct the project and carry out the requirements of this part. The application must describe the project in sufficient detail to identify clearly the nature, need, specific objectives, plan and methods of the project.

(d) The application must contain a description of the manner in which funds available under other Federal programs are being used to develop particular components of the EMS system and the manner in which these funds will continue to be used for that purpose.

(e) The application must contain a description of applicable provisions of law or regulations which restrict the full use of the training and skills of health personnel in the provision of emergency medical services.

(f) The application must contain or be supported by a written statement from the applicant that it agrees to maintain the records and make the reports to the Secretary and the Interagency Committee on Emergency Medical Services which are required by the Secretary in guidelines.

(g) The application must contain or be supported by assurances satisfactory to the Secretary that the applicant will conduct the project in cooperation with (1) each section 1515 health systems agency whose section 1513 health systems plan covers or will cover (in whole or in part) the service area of the project, and (2) any EMS council or other entity responsible for review and evaluation of the provision of emergency medical services in the service area of the project. For the purposes of this section, an Emergency Medical Services (EMS) council must be (i) a public agency, or (ii) a formally established or recognized advisory body of an eligible entity.

(h) The application must indicate that (1) the section 1521 State health planning and development agency, organization responsible for administration of the State EMS program, and State EMS Council of each State in which the service area of the EMS system for which the application is submitted will be located, (2) each section 1515 health systems agency whose section 1513 health systems plan covers or will cover (in whole or in part) the service area of the system, (3) any regional EMS or other entity responsible for review and evaluation of the provision of emergency medical services in the service area of the project, and (4) the appropriate clearinghouses under OMB Circular No. A-95, have had a reasonable opportunity of not less than 60 days (measured from the date a copy of the application was submitted to the agency or council by the applicant), to review and comment on the application. In addition, the section 1521 and 1515 agencies must be provided with a copy of the final application at the time the application is submitted to the Secretary. These agencies may submit comments concerning the application to the Secretary, with a copy of these comments to the applicant.

(i) In the case of an application submitted by a public entity administering a compact or other regional arrangement or consortium, the application must contain or be supported by assurances satisfactory to the Secretary that the compact or other regional arrangement or consortium includes each unit of general local government of each standard metropolitan statistical area (as determined by the Office of Management and Budget) located (in whole or in part) in the service area of the EMS system for which the application is submitted.

(j) In the case of an application submitted by an entity described in paragraph (d) of § 56a.104, the application must contain or be supported by assurances satisfactory to the Secretary that the entity:

(1) Has provided a copy of its application to each entity described in paragraphs (a), (b), and (c) of § 56a.104 which is located (in whole or in part) in the service area of the EMS system for which the application is submitted; and

(2) Has provided each of these entities a reasonable opportunity of at least 30 days (measured from the date a copy of the application was submitted to the entity by the applicant) to submit to the Secretary comments concerning the application.

(k) The application must contain or be supported by written statements which demonstrate to the satisfaction of the Secretary that there is broadly based community support for carrying out the project, including support from both providers and consumers of emergency medical services and from public safety agencies, health education institutions, appropriate private groups or other organizations in the service area of the project.

§ 56a.107 Grant payments.

The Secretary will from time to time make payments to a grantee of all or a portion of any grant award, either by advance or by way of reimbursement for expenses incurred or to be incurred to the extent the Secretary determines that these payments are necessary to promote prompt initiation and advancement of the approved project.

§ 56a.108 Inventions or discoveries.

A grant award is subject to the regulations of the Department of Health, Education, and Welfare as set forth in 45 CFR Parts 6 and 8, as amended. These regulations apply to any activity for which grant funds are in fact used whether within the scope of the project as approved or otherwise. Appropriate measures must be taken by the grantee and by the Secretary to assure that no contracts, assignments or other arrangements inconsistent with the grant obligation are continued or entered into and that all personnel involved in the support activity are aware of and comply with grant obligations. Laboratory notes, related technical data, and information pertaining to inventions and discoveries must be maintained for the periods, and filed with or otherwise made available to the Secretary at the times and in the manner as he may determine necessary to carry out these Department regulations.

§ 56a.109 Publications and copyright.

Where the grantee is not a State or local government as defined in 45 CFR 74.3, except as may otherwise be provided under the terms and conditions of the award, the grantee may copyright, without prior approval, any publications, films, or similar materials developed or resulting from a project supported by a grant under this part, subject, however, to a royalty-free, nonexclusive, and irrevocable license or right in the Goverment to reproduce, translate, publish, use, disseminate, and dispose of these materials and to authorize others to do so.

§ 56a.110 Royalties.

Royalties received by grantees from copyrights on publications or other works developed under the grant, must be accounted for as follows:

(a) Royalties received during the period of grant support may be retained by the grantee and, in accordance with the terms and conditions of grant, used in either or both of the following ways:

(1) Used by the grantee for any purposes that further the objectives of the Act.

(2) Deducted from the total project costs for the purpose of determining the net costs on which the Federal share of costs will be based.

(b) Royalties received after the completion or termination of grant support may be retained by the grantee, unless the terms and conditions of the grant or a specific agreement negotiated between the Secretary and the grantee provide otherwise except that any grantee that is a State or local government, as defined in 45 CFR § 74.3 which receives royalties in excess of $200 a year, must return the Federal share of the excess amount (computed by applying the percentage of Federal participation in the cost of the grant supported project to the excess amount) to the Federal Government, unless a specific agreement provides otherwise.

§ 56a.111 Grantee accountability.

(a) *Accounting for grant award payments.* All payments made by the Secretary must be recorded by the grantee in accounting records separate from the records of all other grant funds, including funds derived from other grant awards. With respect to each approved project, the grantee must account for the sum total of all amounts paid by presenting or otherwise making available evidence satisfactory to the Secretary of expenditures for direct and indirect costs meeting the requirements of this part. However, when the amount awarded for indirect costs was based on a predetermined fixed percentage of estimated direct costs, the amount allowed for indirect costs will be computed on the basis of the predetermined fixed-percentage rates applied to the total, or a selected element of the total, of the reimbursable direct costs incurred.

(b) *Accounting for interest earned on grant funds.* In accordance with section 203 of the Intergovernmental Cooperation Act of 1968 (42 U.S.C. 4213), a State will not be held accountable for interest earned on grant funds, pending their disbursement for grant purposes. A State, as defined in section 102 of the Intergovernmental Cooperation Act, means any one of the several States, the District of Columbia, Puerto Rico, any territory or possession of the United States, or any agency or instrumentality of a State, but does not include the governments of the political subdivisions of the State. All grantees other than a State, as defined in section 102, must return all interest earned on grant funds to the Federal Government.

(c) *Grant closeout—(1) Date of final accounting.* A grantee must render, with respect to each approved project, a full account, as described in paragraph (a) of this section, as of the date of the termination of grant support. The Secretary may require other special and periodic accounting.

(2) *Final settlement.* A grantee must pay to the Federal Government as final settlement with respect to each approved project the total sum of:

(i) Any amount not accounted for under paragraph (a) of this section;

(ii) Any credits for earned interest under paragraph (b) of this section; and

(iii) Any other amounts due under subparts F, M, and O of 45 CFR Part 74.

This total sum constitutes a debt owed by the grantee to the Federal Government and must be recovered from the grantee or its successors or assignees by setoff or other action as provided by law.

§ 56a.112 Additional requirements.

(a) *Applicability of 45 CFR Part 74.* The provisions of 45 CFR Part 74, establishing uniform administrative requirements and cost principles, apply to all grants under this part to States and local governments as those terms are defined in subpart A of 45 CFR Part 74. The relevant provisions of the following subparts of part 74 also apply to grants to all other grantee organizations under this part: 45 CFR Part 74

Subpart
A General.
B Cash Depositories.
C Bonding and Insurance.
D Retention and Custodial Requirements for Records.
F Grant-related Income.
G Matching and Cost Sharing.
K Grant Payment Requirements.
L Budget Revision Procedures.
M Grant Closeout, Suspension, and Termination.
O Property.
Q Cost Principles.

(b) *Confidentiality.* All information as to personal facts and circumstances obtained by the project staff must be held confidential, and must not be disclosed without the individual's consent except as may be required by law or as may be necessary to provide service to the individual. Information may be disclosed in summary, statistical, or other form which does not identify particular individuals.

(c) *Nondiscrimination.* Recipients of grants under this part are advised that, in addition to complying with the terms and conditions of these regulations, the following laws and regulations are applicable:

(1) Section 845 of the Act (42 U.S.C. 298b-2) and its implementing regulation, 45 CFR Part 83 (prohibiting discrimination on the basis of sex in the admission of individuals to training programs).

(2) Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d et seq.) and its implementing regulation, 45 CFR Part 80 (prohibiting discrimination in federally assisted programs on the ground of race, color, or national origin).

(3) Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794) and its implementing regulation, 45 CFR Part 84 (prohibiting discrimination in federally assisted programs on the basis of handicap).

(d) *Additional conditions.* The Secretary may with respect to any grant award impose additional conditions prior to or at the time of any award

when in his judgment additional conditions are necessary to assure or protect advancement of the approved project, the interests of public health, or the conservation of grant funds.

Subpart B—Grants for Feasibility Studies and Planning

§ 56a.201 Applicability

The regulations of this subpart, in addition to the regulations of subpart A of this part, are applicable to—

(a) Grants awarded under section 1202(a) of the Act for projects to study the feasibility of and plan for—

(1) The establishment and operation of an emergency medical services system;

(2) The expansion and improvement of such a system; or

(3) Both (1) and (2).

(b) Grants awarded under section 1202(b)(1)(A) of the Act for projects to study the feasibility of, or plan for, the expansion and improvement of such a system to provide for the use of ALS techniques therein.

(c) Grants awarded under section 1202(b)(1)(B) of the Act for projects to update the plan of a State emergency medical services system to improve the delivery of emergency medical services in rural areas and to medically underserved populations of the State.

§ 56a.202 Eligibility

(a) *Section 1202(a) grants.* A grant under section 1202(a) of the Act may be made to an entity described in section 1206(a) of the Act.

(b) *Section 1202(b) grants.* (1) A grant under section 1202(b)(1)(A) of the Act may be made to an entity described in section 1206(a) of the Act.

(2) A grant under section 1202(b)(1)(B) of the Act may be made only to a State for a statewide emergency medical services system for which a grant under section 1202(a) of the Act has already been made.

(c) *Limitations on succeeding grants.* (1) If the Secretary makes a grant under section 1202(a) of the Act or section 1202(b)(1)(A) of the Act for a particular geographic area, he may not make another grant under such section for a system for such area or for an area which includes such area in whole or substantial part.

(2) If the Secretary makes a grant under section 1202(b)(1)(B) of the Act for an emergency medical services system of a State, he may not make another grant under such section for a system which includes all or a substantial part of such State.

(3) For the purpose of this paragraph, a "substantial part" of any geographic area means more than 40 percent of such area.

§ 56a.203 Content of application—supporting information.

(a) *All grants.* In addition to meeting the applicable requirements of § 56a.106, an approvable application for a grant under section 1202 of the Act must contain the following:

(1) A narrative and graphic description of the area involved in the project, including geographical features, population, distribution of medical personnel, medical facilities (including critical care units and emergency departments), climate, epidemiological characteristics, socio-economic conditions, and any other relevant factors;

(2) A description of the staff of the project, including their qualifications, authority, functions, numbers, assignments, and the manner in which they are organized to carry out the proposed project;

(3) A description, appropriate to the type of grant applied for and in such detail as the Secretary may require, of the specific study and/or planning objectives which the project intends to accomplish, including specifically the development of an emergency medical services system which will meet each of the requirements of § 56a.103 of subpart A of this part;

(4) Information as to how the project plans to attain its study or planning objectives, including a description of the methods, personnel, facilities, budget, responsible operational unit, and work schedule which will be utilized in order to accomplish each stated objective;

(5) The following budget and staffing information:

(i) Identification of all actual and potential staff positions and the estimated compensation for such positions;

(ii) Identification of those costs for which Federal assistance under this subpart is requested and the amount thereof; and

(iii) The percentage of the budget which will be devoted to the needs of rural areas;

(6) Information which satisfies the Secretary that adequate facilities, equipment, and financial resources in addition to the grant requested will be available at the time of the grant award; and

(7) Any other statistical information which the Secretary may prescribe in guidelines, and in such form as the Secretary may so prescribe.

(b) *Section 1202(a) grants.* In addition to the requirements of paragraph (a), an application for a grant under section 1202(a) of the Act must contain information as to the existence and extent of the need for an emergency medical services system in the project area. The need of the area should be described in detail with particular reference to the requirements for an emergency medical services system as described in section 1206(b)(4)(C) of the Act and § 56a.103 of subpart A of this part.

(c) *Section 1202(b)(1)(A) grants.* In addition to the requirements of paragraph (a), an application for a grant under section 1202(b)(1)(A) of the Act must contain:

(1) Information, in such detail as the Secretary may require, as to the existence and extent of development of the emergency medical services system in the project area and the need for advanced life support services.

(2) A planning approach for development of data and analysis of the need to expand or improve emergency medical services in the project area to provide for advanced life support.

(d) *Section 1202(b)(1)(B) grants.* In addition to the requirements of paragraph (a), an application for a grant under section 1202(b)(1)(B) of the Act must contain a planning approach, in such detail as the Secretary may prescribe, utilizing emergency medical services within and outside of the rural areas and medically underserved populations to be served by the planned emergency medical services system.

§ 56a.204 Grant evaluation and award.

(a) Within the limits of funds determined by the Secretary to be available for such purpose, the Secretary may award grants under this subpart to those applicants whose projects will, in his judgment, best promote the purposes of section 1202 of the Act and the regulations of this subpart, taking into account:

(1) The extent of the need for emergency medical services in the service area of the proposed project;

(2) The capability of the applicant to carry out the proposed project;

(3) The reasonableness of the budget and the soundness of the fiscal plan for assuring effective utilization of grant funds;

(4) The extent of coordination with existing health planning agencies and groups in the service area of the proposed project;

(5) The potential of the project for accomplishing its objectives and fulfilling the purposes of the emergency medical services systems grant program; and

(6) The degree to which the proposed project addresses the needs of rural areas.

(b) The amount of any award under this part will be determined by the Secretary on the basis of his estimate of the sum necessary for a designated portion of direct project costs plus an additional amount for indirect costs, if any, which will be calculated by the Secretary either:

(1) On the basis of the estimate of the actual indirect costs reasonably related to the project; or

(2) On the basis of a percentage of all, or a portion of, the estimated direct costs of the project when there are reasonable assurances that the use of such percentage will not exceed the approximate actual indirect costs. Such award may include an estimated provisional amount for indirect costs or for designated direct costs (such as fringe benefit rates) subject to upward (within the limits of available funds) as well as downward adjustments to actual costs when the amount properly expended by the grantee for provisional items has been determined by the Secretary: *Provided, however,* That no grant will be made for an amount which exceeds:

(i) In the case of a grant under section 1202(a), $60,000;

(ii) In the case of a grant under section 1202(b), $30,000; except where the Secretary determines that a larger amount is necessary to support a project of special regional or national significance which would not be accomplished without a grant under this subpart in such larger amount.

(c) All grant awards shall be in writing, shall set forth the amount of funds granted, and the period for which support is recommended.

(d) Neither the approval of any project nor any grant award shall commit or obligate the United States in any way to make additional, supplemental, continuation, or other award with respect to any approved project or portion thereof.

§ 56a.205 Use of project funds.

Any funds granted pursuant to this subpart shall be expended solely for carrying out the approved project in accordance with section 1202 of the Act, the regulations of this part, the terms and conditions of the award, and the applicable cost principles prescribed in Subpart Q of 45 CFR Part 74.

§ 56a.206 Reports.

Each grant awarded pursuant to section 1202 of the Act shall be subject to the condition that the grantee shall file with the Secretary and the Interagency Committee on Emergency Medical Services such progress and other reports as the Secretary may require, including the following:

(a) Section 1202(a) grants.

(1) Report of feasibility study.

(i) At a time specified by the Secretary which shall be not later than three months after the award of the grant, the grantee shall submit to the Secretary a report of the feasibility study shall contain:

(A) A detailed statement indicating whether, in the judgment of the grantee, it is feasible to establish, expand, or improve; as applicable, an emergency medical services system in the service area of the project.

(B) Information derived from studies as to the organizational structure, current resources, geographical area, and existing and contemplated standards of the proposed emergency medical services system.

(ii) If the Secretary determines, on the basis of the report of the feasibility study and other information relevant to such determination, that it is not feasible to establish, expand, or improve, as applicable, an emergency medical services system for the project area, the Secretary may, after reasonable notice to the grantee, terminate the grant.

(2) *Final report.* Should the grantee determine that it is feasible to establish, expand, or improve (as applicable) an emergency medical services system for the service area of the project, the grantee shall, within 12 months from the date of the grant award, submit to the Secretary a final report, in the form of a planning outline, which contains the following information:

(i) A comprehensive description of the organizational structure which will manage the emergency medical services system;

(ii) a detailed description of current emergency medical services, resources and capability;

(iii) a narrative and graphic description of the project area, including geographic, demographic, climatological, epidemiological, and socioeconomic characteristics;

(iv) a description of actual and potential standards for emergency medical services, including methods and levels of performance;

(v) a description of the objectives of the project, identifying problems and needs and establishing priorities for achieving such objectives;

(vi) A description of the projected medical services capability that will exist at the completion of the plan, including types of services, status of subsystems, and nature of community involvement;

(vii) A detailed description of the methodology which will be employed in order to achieve each of the objectives of the project;

(viii) A schedule for the implementation of the plan;

(ix) A fiscal schedule containing estimated expenditures and justification therefor; and

(x) A description of the methods which will be used to evaluate the operation of the planned emergency medical services system and the effect of such system on the patients involved.

(b) Section 1202(b)(1)(A) grants.

(1) *Feasibility study grants.* The grantee shall submit within 12 months from the date of grant award a final report of the feasibility study which shall contain, in such detail as the Secretary may require, an assessment of whether it is feasible to expand or improve an emergency medical services system in the service area of the project.

(2) *Planning grants.* The grantee shall submit within 12 months of the date of grant award a final report, which shall include:

(i) A comprehensive plan, in such detail as the Secretary may require, to improve and expand the existing emergency medical services system to provide advanced life support services.

(ii) A cost effectiveness study projecting utilization of the improved advanced life support services and the sources of revenue available to support such services after the completion of Federal funding under this part.

(iii) A budget schedule for completion of the plan.

(iv) A time schedule for implementation of the plan.

(v) Approval of the plan by the regional emergency medical services system entity or entities, as appropriate, and each of the major public, private, and volunteer organizations to be involved in the implementation of the plan.

(c) *Section 1202(b)(1)(B) grants.* The grantee shall submit within 12 months of the date of grant award a final report, which shall include:

(1) A comprehensive plan, in such detail as the Secretary may require, to improve the delivery of emergency medical services in rural areas and to medically underserved populations of the State.

(2) A statement of assignment of responsibilities under the plan to governmental and other units within the State.

(3) A budget schedule for completion of the plan, including a statement of funding sources to be used to continue operation of the improved services after cessation of Federal funding under this Part.

(4) A time schedule for implementation of the plan.

(5) Concurrence in the plan of the major governmental units to be affected by the plan. For purposes of this subparagraph, "major governmental units" means counties, portions of a county with 50 percent or more of the county's population, and municipalities with populations of or over 50,000.

Subpart C—Grants For Establishment and Initial Operation

§ 56a.301 Applicability.

The regulations of this subpart, in addition to the regulations of subpart A of this part, are applicable to grants awarded pursuant to section 1203 of the Act for the establishment and initial operation of emergency medical services systems.

§ 56a.302 Project requirements.

(a) An application under this subpart will not be approved by the Secretary unless (1) the applicant demonstrates to the satisfaction of the Secretary that the emergency medical services system for which the application is submitted will meet each of the requirements specified in section 1206(b)(4)(C) of the Act and § 56a.103 of subpart A of this part within the total period of eligibility for assistance under this subpart; except that if the applicant demonstrates to the satisfaction of the Secretary the inability of the applicant's emergency medical services system to meet one or more of such requirements within such period, the period (or periods) within which the system must meet such requirement (or requirements) is such period (or periods) as the Secretary may require; and

(2) The applicant provides in the application a plan satisfactory to the Secretary for the system to meet each of the requirements specified in section 1206(b)(4)(C) of the Act and § 56a.103 of subpart A of this part within the period described in subparagraph (1) of this paragraph.

(b) *Provided*, That if an applicant submits an application for a grant under this subpart and demonstrates to the satisfaction of the Secretary the inability of the system for which the application is submitted to meet one or more of the requirements specified in section 1206(b)(4)(C) of the Act and § 56a.103 of subpart A of this part within any specific period of time, the prerequisites prescribed in paragraph (a) of this section shall not apply with respect to such requirement (or requirements), and the applicant shall provide in the application a plan, satisfactory to the Secretary, for achieving appropriate alternatives to such requirement (or requirements).

(c) In the approval of applications involving (1) the inability of an emergency medical services system to meet one or more of the requirements specified in section 1206(b)(4)(C) of the Act and § 56a.103 of subpart A of this part within the total period of eligibility for assistance under this subpart, or (2) the inability of such a system to meet one or more of such requirements within any specific period of time, the Secretary will take into consideration the effects such inability will have on the capacity of the system to provide effective emergency medical services.

§ 56a.303 Content of application—supporting information.

An approvable application for a grant under section 1203 of the Act shall contain the following information:

(a) A comprehensive description of the organizational structure which will manage the emergency medical services system;

(b) A detailed description of current emergency medical services resources and capability;

(c) A narrative and graphic description of the project area, including geographic, demographic, climatological, epidemiological, and socioeconomic characteristics;

(d) A description of actual and planned standards for emergency medical services, including methods and levels of performance;

(e) A description of the objectives of the project, identifying problems and needs and establishing priorities for achieving such objectives;

(f) A description of the projected emergency medical services capability that will exist at the completion of the project, including types of services, status of subsystems, and nature of community involvement;

(g) A detailed description of the methodology which will be employed in order to achieve each of the objectives of the project;

(h) A schedule for the implementation of the project;

(i) Assurances of the participation in and support of the system by the public, private, and volunteer organizations and entities which are associated with and involved in activities essential to the effective provision of emergency medical services in the system's service area.

(1) For the purposes of this section, an assurance shall consist of a document, signed by an official with full authority to act on behalf of the public, private, or volunteer organization and entity, committing resources to the operation of the emergency medical services system.

(2) For the purposes of this section, "public, private, and volunteer organizations and entities essential to the effective provision of emergency medical services in the system's service area" include, but are not limited to, providers of emergency medical services, such as emergency departments, critical care units, ambulance services, and public safety agencies.

(j) *First grants.* Applications for a first grant under this section must be accompanied by assurances from the executive or legislative governmental bodies of political subdivisions located in the system's service area which govern a substantial proportion of the population residing in such area, of each such bodies' support of and cooperation with the system.

(1) For the purposes of this paragraph, an assurance shall consist of a document, such as a formal resolution, proclamation, or other act of such governmental body, stating the body's intention to cooperate with and support the system.

(2) For the purposes of this paragraph, "political subdivisions located in the system's service area which govern a substantial portion of the population residing in such area" means political subdivisions which collectively govern a majority of the population within the EMS area; except that if the applicant demonstrates to the satisfaction of the Secretary that the support and cooperation of political subdivisions which serve less than a majority of the population within the EMS area will not adversely affect the future viability of the system, the Secretary may deem the requirement of this paragraph satisfied.

(k) *Second grants.* A second grant may be made under this subpart for an emergency medical services system if—

(1) The Secretary determines, after a review of at least its first 9 months' activities under the first grant, that the applicant is satisfactorily progressing in the establishment and operation of the system in accordance with the plan under section 1206(b)(4) of the Act; and

(2) The application for the second grant includes:

(i) A specific plan for the step-by-step achievement of compliance with each of the requirements of section 1206(b)(4)(C) within the period specified in section 1206(b)(4)(B)(i); and

(ii) Assurances, evidenced by copies of formal resolutions, proclamations, or other acts of the executive or legislative governmental bodies of political subdivisions located in the system's service area which govern a substantial proportion of the population residing in such area, of such bodies' continued support and cooperation with the system, and financial support of the system, in the year after the conclusion of the period of support under the grant, sufficient to maintain the system at the level at which such system is to be maintained during the period of the grant.

(A) For the purposes of this paragraph, "financial support of the system" means adequate funds for operation and maintenance of the State or regional entity responsible for the coordination, management, or operation of emergency medical services in the system's service area, and oper-

ation and maintenance of the operational and support components in both the prehospital and in-hospital phases of a total EMS system.

(B) For the purposes of this paragraph, "political subdivisions located in the system's service area which govern a substantial proportion of the population residing in such area" shall have the meaning given it in paragraph (j)(2) of this section.

(l) A fiscal schedule containing estimated expenditures and justification therefor;

(m) A description of the methods which will be used to evaluate the operation of the planned emergency medical services system and effect of such system on the patients involved; and

(n) Any other statistical information which the Secretary may prescribe in guidelines and in such form as the Secretary may so prescribe.

§ 56a.304 Grant evaluation and award.

(a) Within the limits of funds determined by the Secretary to be available for such purpose, the Secretary may award grants under this subpart to those applicants whose projects will, in his judgment, best promote the purposes of section 1203 of the Act and the regulations of this subpart, taking into account:

(1) The extent of coordination with statewide emergency medical services systems;

(2) The extent of the need for emergency medical services in the service area of the proposed project;

(3) The capability of the applicant to carry out the proposed project;

(4) The reasonableness of the budget and the soundness of the fiscal plan for assuring effective utilization of grant funds;

(5) The extent of coordination with existing health planning agencies and groups in the service area of the proposed project;

(6) The potential of the project for accomplishing its objectives and fulfilling the purposes of the emergency medical services systems grant program;

(7) The potential of the project for becoming a self-supporting emergency medical services system; and

(8) The degree to which the proposed project addresses the needs of rural areas.

(b)(1) The amount of any award under this part will be determined by the Secretary on the basis of his estimate of the sum necessary for a designated portion of direct project costs plus an additional amount for indirect costs, if any, which will be calculated by the Secretary either:

(i) On the basis of the estimate of the actual indirect costs reasonably related to the project; or

(ii) On the basis of a percentage of all, or a portion of, the estimated direct costs of the project when there are reasonable assurances that the use of such percentage will not exceed the approximate actual indirect costs. Such award may include an estimated provisional amount for indirect costs or for designated direct costs (such as fringe benefit rates) subject to upward (within the limits of available funds) as well as downward adjustments to actual costs when the amount properly expended by the grantee, for provisional items has been determined by the Secretary.

Provided, however, That such amount shall not represent a percentage of the total cost of the project as determined by the Secretary pursuant to these regulations which exceeds the applicable maximum percentage of Federal participation specified in section 1203(c)(4) of the Act. In determining the grantee's share of project costs, costs borne by Federal funds, or costs used to match other Federal grants may not be included except as otherwise provided by law.

(2) In determining the amount of any grant under this subpart, the Secretary will evaluate the availability of funds under Federal programs authorized by laws other than the Act to support any particular component of an emergency medical services system. Such Federal programs shall include programs under legislative authorities administered by other Federal agencies, such as the Highway Safety Act and the Omnibus Crime Control and Safe Streets Act. On the basis of such evaluation, the Secretary will provide assistance under this subpart only to the extent that assistance under such other legislative authorities is insufficient to enable the applicant to meet the qualitative and quantitative requirements for an emergency medical services system as described in section 1206(b)(4)(C) of the Act and § 56a.103 of subpart A of this part.

(c) All grant awards shall be in writing, shall set forth the amount of funds granted, and the period for which support is recommended.

(d) Neither the approval or any project nor any grant award shall commit or obligate the United States in any way to make additional, supplemental, continuation, or other award with respect to any approved project or portion thereof.

§ 56a.305 Use of project funds.

(a) Any funds granted pursuant to this subpart, as well as other funds to be used in performance of the approved project, shall be expended solely for carrying out the approved project in accordance with section 1203 of the Act, the regulations of this part, the terms and conditions of the award, and the applicable cost principles set forth in 45 CFR Part 74.

(b) Project funds may not be used for the following:

(1) Construction of new facilities.

(2) Acquisition of facilities.

(3) Purchasing built-in hospital equipment which will be used more than 25 percent of the time for non-emergency department purposes.

(4) Establishment, operation, or improvement of services or facilities involved in the care of patients in the normal hospital environs or in any other care facility, except for those which are customarily associated with the emergency department.

(5) Financial assistance to students for stipends, tuition and fees, per diem, or other reimbursement for food, lodging, etc. Domestic travel of trainees may be supported at the rate of eight cents per mile when justified as a necessary and integral part of an approved training program.

(6) Hospitalization costs normally borne by the patient.

(7) Acquisition of receiving and sending devices for particular individuals with auditory handicaps.

§ 56a.306 Reports.

Each grant awarded under section 1203 of the Act is subject to the condition that the grantee shall file with the Secretary and the Interagency Committee on Emergency Medical Services such progress and other reports as the Secretary may require, including the following:

(a) *Quarterly performance reports.* Within 30 days following the end of each calendar quarter (except when an annual performance report is required pursuant to paragraph (b) of this section), a quarterly performance report, which shall contain:

(1) A concise summary of the most significant achievements and problems during the grant report period.

(2) A comparison of progress with goals established for the quarter, using the grantee's implementation schedule; and where such goals were not met, a statement of why they were not met.

(3) Other pertinent information, such as changes in management organization, progress made in implementing the requirements of § 56a.103 of subpart A, regionalization of emergency medical services, relevant legislation, and appropriation of State and local funds for emergency medical services activities.

(b) *Annual performance report.* Within 60 days following the end of the budget period, an annual performance report, which shall contain:

(1) A summary of the major activities supported under the grant and the major accomplishments resulting from

activities to improve emergency medical services in the region.

(2) A narrative description of the system's status at the conclusion of the grant, including organizational, management and operational aspects of the prehospital and in-hospital activities.

(3) A description of the specific objectives included in the grant application and the accomplishments and failures resulting from the activities during the grant period.

(4) A review of the system's resources for basic and advanced life support services including levels of training, transportation vehicles, communications capability, emergency departments, and critical care units.

(5) A review of the basic process measures and changes in these measures associated with the operation of emergency medical services systems.

(6) A narrative statement describing compliance of the grantee's operations with the plans set forth in the application.

(7) A review and evaluation of the changes in patient care categories in terms of impact and outcome activities as appropriate to the grant support of activities.

(8) A review of how grant funds were used.

(c) *Final report.* No later than 1 year after the completion of the final grant under section 1203 of the Act, a final report, which shall contain a more substantive examination of the material required in paragraph (b)(1)-(8) of this section.

Subpart D—Grants for Expansion and Improvement

§ 56a.401 Applicability.

The regulations of this subpart, in addition to the regulations of subpart A of this part, are applicable to grants awarded pursuant to section 1204 of the Act for the expansion and improvement of emergency medical services systems.

§ 56a.402 Purpose.

The purpose of a project for which a grant is made pursuant to section 1204 of the Act shall be (a) the expansion and improvement of an existing emergency medical services system's capabilities to meet the requirements of section 1206(b)(4)(C) of the Act and § 56a.103 of subpart A of this part, or (2) the expansion of an existing system to cover geographical areas or population groups not previously served by such system.

§ 56a.403 Project requirements.

(a) An application under this subpart will not be approved by the Secretary unless (1) the applicant demonstrates to the satisfaction of the Secretary that the emergency medical services system for which the application is submitted will meet each of the requirements specified in section 1206(b)(4)(C) of the Act and § 56a.103 of subpart A of this part within the total period of eligibility for assistance under this subpart; except that if the applicant demonstrates to the satisfaction of the Secretary the inability of the applicant's emergency medical services system to meet one or more of such requirements within such period, the period (or periods) within which the system must meet such requirement (or requirements) is such period (or periods) as the Secretary may require; and

(2) The applicant provides in the application a plan satisfactory to the Secretary for the system to meet each of the requirements specified in section 1206(b)(4)(C) of the Act, and § 56a.103 of subpart A of this part within the period described in subparagraph (1) of this paragraph:

(b) *Provided,* That if an applicant submits an application for a grant under this subpart and demonstrates to the satisfaction of the Secretary the inability of the system for which the application is submitted to meet one or more of the requirements specified in section 1206(b)(4)(C) of the Act and § 56a.103 of subpart A of this part within any specific period of time, the prerequisites prescribed in paragraph (a) of this section shall not apply with respect to such requirement (or requirements), and the applicant shall provide in the application a plan, satisfactory to the Secretary, for achieving appropriate alternatives to such requirement (or requirements).

(c) In the approval of applications involving (1) the inability of an emergency medical services system to meet one or more of the requirements specified in section 1206(b)(4)(C) of the Act and § 56a.103 of subpart A of this part within the total period of eligibility for assistance under this subpart, or (2) the inability of such a system to meet one or more of such requirements within any specific period of time, the Secretary will take into consideration the effects such inability will have on the capacity of the system to provide effective emergency medical services.

§ 56a.404 Content of application—supporting information.

An approvable application for a grant under section 1204 of the Act shall contain the following information:

(a) A comprehensive description of the organizational structure which will manage the improved and expanded emergency medical services system;

(b) A detailed description of current emergency medical services system and capability;

(c) A short narrative and graphic description of the project area, including geographic, demographic, climatological, epidemiological, and socio-economic characteristics;

(d) A description of the existing standards for emergency medical services, including methods and levels of performance;

(e) A description of the objectives of the project, describing specifically which aspects of the emergency medical services system must be improved and expanded in order for the system to meet each of the requirements of section 1206(b)(4)(C) of the Act and § 56a.103 of subpart A of this part;

(f) A description of the projected emergency medical services capability that will exist after improvement and expansion of the system, including types of services, status of subsystems, and nature of community involvement;

(g) A detailed description of the methodology which will be employed in order to achieve each of the objectives of the project;

(h) A schedule for the implementation of the project;

(i) A fiscal schedule containing estimated expenditures and justification therefor;

(j) A description of the methods which will be used to evaluate the operation of the improved and expanded emergency medical services system and the effect of such system on the patients involved; and

(k) Assurances of the participation in and support of the system by the public, private, and volunteer organizations and entities which are associated with and involved in activities essential to the effective provision of emergency medical services in the system's service area.

(1) For the purposes of this paragraph, an assurance shall consist of a document, signed by an official with full authority to act on behalf of the public, private, or volunteer organization and entity, committing resources to the operation of the emergency medical services system.

(2) For the purposes of this paragraph, "public, private, and volunteer organizations and entities essential to the effective provision of emergency medical services in the system's service area" include providers of emergency medical services, such as emergency departments, critical care units, ambulance services, and public safety agencies.

(l) *First grants.* Applications for a first grant under this section must be accompanied by—

(1) A specific plan for the step-by-step achievement of compliance with each of the requirements of section

1206(b)(4)(C) within the period specified in section 1206(b)(4)(B)(i); and

(2) Assurances, evidenced by copies of formal resolutions, proclamations or other acts of the executive or legislative governmental bodies of political subdivisions located in the system's service area which govern a substantial proportion of the population residing in such area, of their support and cooperation with the system and endorsement and support of a specific financial plan which provides for the maintenance of the financial support of the system, after the conclusion of the grant, at the level of expanded or improved activity to be achieved during the period of the grant.

(i) For the purposes of this paragraph "political subdivisions located in the system's service area which govern a substantial portion of the population residing in such area" means political subdivisions which collectively govern a majority of the population within the EMS area; except that if the applicant demonstrates to the satisfaction of the Secretary that the support and cooperation of political subdivisions which serve less than a majority of the population within the EMS area will not adversely affect the future viability of the system, the Secretary may deem the requirement of this paragraph satisfied.

(ii) For the purposes of this paragraph, the financial plan shall include—

(A) A budget, with a breakdown of grant funds by system component and State or regional entity responsible for the coordination, management, or provision of emergency medical services in the system's service area;

(B) A summary, by source, of financial support for the system after grant support is ended; and

(C) Written endorsements of the plan from each projected source of financial support identified under subparagraph (ii)(B), signed by an official with full authority to act on behalf of such source.

(m) *Second grants.* A second grant may be made under this subpart for an emergency medical services system if—

(1) The Secretary determines, after a review of at least its first 9 months' activities under the first grant, that the applicant is satisfactorily progressing in the establishment and operation of the system in accordance with the plan under section 1206(b)(4) of the Act.

(2) The application for the second grant includes assurances, evidenced by copies of formal resolutions, proclamations, or other acts, of the executive or legislative governmental bodies of political subdivisions located in the system's service area which govern a substantial proportion of the population residing in such area; that substantial progress is being made toward achieving the financial plan described in paragraph (1)(2) of this section. For purposes of this subparagraph, "political subdivisions located in the system's service area which govern a substantial proportion of the population residing in such area" shall have the meaning given it in subparagraph (1)(2)(i) of this section.

(n) Any other statistical information which the Secretary may prescribe in guidelines, and in such form as the Secretary may so prescribe.

§ 56a.405 Grant evaluation and award.

(a) Within the limits of funds determined by the Secretary to be available for such purpose, the Secretary may award grants under this subpart to those applicants whose projects will, in his judgment, best promote the purposes of section 1204 of the Act and the regulations of this subpart, taking into account:

(1) The extent of the need for improved and expanded emergency medical services in the service area of the system;

(2) The capability of the applicant to carry out the proposed project;

(3) The reasonableness of the budget and the soundness of the fiscal plan for assuring effective utilization of grant funds;

(4) The extent of coordination with existing health planning agencies and emergency medical services providers, in the service area of the system;

(5) The potential of the project for accomplishing its objectives and fulfilling the purposes of the emergency medical services grant program;

(6) The potential of the project for becoming self-supporting; and

(7) The degree to which the proposed project addresses the needs of rural areas.

(b)(1) The amount of any award under this part will be determined by the Secretary on the basis of his estimate of the sum necessary for a designated portion of direct project costs plus an additional amount for indirect costs, if any, which will be calculated by the Secretary either:

(i) On the basis of the estimate of the actual indirect costs reasonably related to the project; or

(ii) On the basis of a percentage of all, or a portion of, the estimated direct costs of the project when there are reasonable assurances that the use of such percentage will not exceed the approximate actual indirect costs. Such award may include an estimated provisional amount for indirect costs or for designated direct costs (such as fringe benefit rates) subject to upward (within the limits of available funds) as well as downward adjustments to actual costs when the amount properly expended by the grantee for provisional items has been determined by the Secretary.

Provided, however, That such amount shall not represent a percentage of the total cost of the project as determined by the Secretary pursuant to these regulations which exceeds the applicable maximum percentage of Federal participation specified in section 1204(b)(2) of the Act. In determining the grantee's share of project costs, costs borne by Federal funds, or costs used to match other Federal grants may not be included except as otherwise provided by law.

(2) In determining the amount of any grant under this subpart, the Secretary will evaluate the availability of funds under Federal programs authorized by laws other than the Act to support any particular component of an emergency medical services system. Such Federal programs shall include programs under legislative authorities administered by other Federal agencies, such as the Highway Safety Act and the Omnibus Crime Control and Safe Streets Act. On the basis of such evaluation, the secretary will provide assistance under this subpart only to the extent that assistance under such other legislative authorities is insufficient to enable the applicant to meet the qualitative and quantitative requirements for an emergency medical services system as described in section 1206(b)(4)(C) of the Act and § 56a.103 of subpart A of this part.

(c) All grant awards shall be in writing, shall set forth the amount of funds granted, and the period for which support is recommended.

(d) Neither the approval of any project nor any grant award shall commit or obligate the United States in any way to make additional, supplemental, continuation, or other award with respect to any approved project or portion thereof.

§ 56a.406 Use of project funds.

(a) Any funds granted pursuant to this subpart, as well as other funds to be used in performance of the approved project, shall be expended solely for carrying out the approved project in accordance with section 1204 of the Act, the regulations of this part, the terms and conditions of the award, and the applicable cost principles set forth in 45 CFR Part 74.

(b) Project funds may not be used for the following:

(1) Construction of new facilities.

(2) Purchasing built-in hospital equipment which will be used more than 25 percent of the time for non-emergency department purposes.

(3) Establishment, operation, or improvement of services or facilities involved in the care of patients in the normal hospital environs or in any

other care facility, except for those which are customarily associated with the emergency department.

(4) Financial assistance to trainees for stipends, tuition and fees, per diem, or other reimbursement for food, lodging, etc. Domestic travel of trainees may be supported at the lesser of 10 cents per mile or the grantee's formal travel policy when justified as a necessary and integral part of an approved training program.

(5) Hospitalization costs normally borne by the patient.

(6) Acquisition of receiving and sending devices for particular individuals with auditory handicaps.

§ 56a.407 Acquisition of facilities.

The following provisions are applicable to the acquisition of existing facilities:

(a) Estimated costs of acquisition and remodeling: Suitability of facility. Each application for a project involving the acquisition of existing facilities shall include in the detailed estimates of the cost of the project the cost of acquiring such facilities to serve the purposes for which they are acquired. Such application shall demonstrate to the satisfaction of the Secretary that the architectural, structural, and other pertinent features of the facility, as modified by any proposed expansion, remodeling, renovation, or alteration, will be clearly suitable for the purposes of the program, and, to the extent of the costs in which Federal participation is requested, are not in excess of what is necessary for the services proposed to be provided in such facilities.

(b) Determination of necessary cost. The necessary cost of aquisition of existing facilities shall be determined on the basis of such documentation submitted by the applicant as the Secretary may prescribe (including the reports of such real estate appraisers as the Secretary may approve) and other relevant factors.

(c) Bona fide sale. Federal participation in the acquisition of existing facilities is on condition that such acquisition constitutes a bona fide sale involving an actual cost to the applicant and will result in additional or improved facilities for purposes of the program.

(d) Facility which has previously received Federal grant. No grant for the acquisition of a facility which has previously received a Federal grant for construction, acquisition, or equipment shall serve either to reduce or restrict the liability of the applicant or any other transferor or transferee from any obligation of accountability imposed by the Federal Government by reason of such prior grant.

§ 56a.408 Reports.

Each grant awarded under section 1204 of the Act is subject to the condition that the grantee shall file with the Secretary and the Interagency Committee on Emergency Medical Services such progress and other reports as the Secretary may require, including the following:

(a) *Quarterly performance reports.* Within 30 days following the end of each calendar quarter (except when an annual performance report is required pursuant to paragraph (b) of this section), a quarterly performance report, which shall contain:

(1) A concise summary of the most significant achievements and problems during the grant report period.

(2) A comparison of progress with goals established for the quarter, using the grantee's implementation schedule; and where such goals were not met, a statement of why they were not met.

(3) Other pertinent information, such as changes in management organization, progress made in implementing the requirements of § 56.103 of subpart A, regionalization of emergency medical services, relevant legislation, and appropriation of State and local funds for emergency medical services activities.

(b) *Annual performance report.* Within 60 days following the end of the budget period, an annual performance report, which shall contain:

(1) A summary of the major activities supported under the grant and the major accomplishments resulting from activities to improve emergency medical services in the region.

(2) A narrative description of the system's status at the conclusion of the grant, including organizational management and operational aspects of the prehospital and in-hospital activities.

(3) A description of the specific objectives included in the grant application and the accomplishments and failures resulting from the activities during the grant period.

(4) A review of the system's resources for basic and advanced life support services including levels of training, transportation vehicles, communications capability, emergency departments, and critical care units.

(5) A review of the basic process measures and changes in these measures associated with the operation of emergency medical service system.

(6) A narrative statement describing compliance of the grantee's operation with the plans set forth in the application.

(7) A review and evaluation of the changes in patient care categories in terms of impact and outcome activities as appropriate to the grant support of activities.

(8) A review of how grant funds were used.

(9) A review of the status of implementation of the financial plan described in § 56a.404(1)(2).

(c) *Final report.* No later than 1 year after the completion of the final grant under section 1204 of the Act, the grantee shall submit a final report, which shall contain a more substantive examination of the material required in paragraph (b)(1)-(9) above.

[FR Doc. 78-30410 Filed 11-2-78; 8:45 am]

MEMORANDUM

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
HEALTH SERVICES ADMINISTRATION

No. 77-4

TO: Regional Health Administrators
DHEW Regions I - X
Through: Administrator, HSA
Director, ORO/PHS

DATE: JAN 13 1977

JAN 19 1977

FROM: Director, Bureau of Medical Services

SUBJECT: Notice to EMS Applicants - F.Y. 1977

The purpose of this memorandum is to officially request that you inform current and prospective EMS grantees as to the requirements of the amended EMSS Statute, and to request that you return EMS applications (Section 1202 and 1203(1) not considered for funding in F.Y. 1976.

The Emergency Medical Services Amendments of 1976, Public Law 94-573, has been enacted to extend the EMS program for 3 years. The Joint House/Senate Committee Explanatory Statement on Compromise Agreement was published in the Congressional Record, October 1, 1976. In this Statement the Secretary was urged to inform grantees of the new requirements not later than January 1, 1977. Attached is a summary of the significant changes and additions to the EMSS law. It is requested that you provide this information to all current grantees and in all EMS application kits for F.Y. 1977. Copies of P.L. 94-573, Emergency Medical Services Amendments of 1976, have previously been sent to the R.O. EMS Consultant.

During F.Y. 1976 potential grantees were encouraged to submit applications under Sections 1202 and 1203(1) of the EMSS Act of 1973, with the hope that new legislation would be enacted which would permit them to compete for funding during the grant review session of F.Y. 1976. As we all know, no EMS legislation was enacted in F.Y. 1976.

At this time, we suggest you return the applications received last spring for Sections 1202 and 1203(1), together with the advisory comments of the Regional Office. This action is suggested so applicants can improve their applications for F.Y. 1977. The Division of Emergency Medical Services is presently revising the EMS Rules and Regulations. Draft regulations should be available to the R.O. no later than February 15, 1977. The EMS Guidelines

booklet is being revised to reflect changes in the regulations. Draft guidelines will be made available about March 1, 1977. Revised EMS Regulations and Guidelines will apply to applications considered to grant awards in F.Y. 1977.

We appreciate the difficult communications of developing new legislative guidance, informing potential grantees, and planning a grant review cycle. We will work closely with you during the next few months to provide you with up-to-date information.

James H. Erickson, M.D., M.P.H.
Assistant Surgeon General

Attachment

48-284 O - 79 - 7

AMENDMENTS TO FEDERAL EMS LAW - P.L. 94-573

On October 1, in the closing hours of the 94th Congress, legislation was passed by both houses to extend and amend Title XII of the Public Health Service Act which authorizes the Federal Emergency Medical Services Systems program. The new amendments were signed into law by President Ford on October 21, 1976.

The most important elements of the amendments include the following:

- The existing programs of EMS systems development, EMS research, and EMS training would be extended for the three additional years at the following authorization levels:

	F.Y. 1977	F.Y. 1978	F.Y. 1979
Systems Development	$45 million	$55 million	$70 million
Research	5 million	5 million	5 million
Training	10 million	10 million	10 million
	$60 million	$70 million	$85 million

- A new program relating to burn injuries would be established at the following authorization levels: $5 million for F.Y. 1977; $7.5 million for F.Y. 1978; and $10 million for F.Y. 1979. Grants and contracts with public or private nonprofit agencies would be authorized to support certain specified activities: (1) demonstration of the effectiveness of burn treatment and rehabilitation methods; (2) conduct of research in the treatment and rehabilitation of burn victims; and (3) provision of training in burn treatment and rehabilitation and in related research. Priority in awards under this new program would be

given to proposed programs which will provide services within an area not currently being adequately served and programs which are in or accessible to a service area of a Federally-designated EMS system.

- Second year planning awards to EMSS grantees are specifically authorized, but only for the purpose of updating existing plans with respect to either advanced life support systems or for States to plan systems in rural or underserved areas.

- A condition for securing continued support in Sections 1203 and 1204 now requires a formal statement by units of local government stating their continued cooperation and support will have to be submitted with the application for Federal funds.

- A requirement added as a condition for securing continued support in Sections 1203 and 1204 is assurances of system participation by the public, private, and volunteer organization essential to the delivery of emergency care.

- The cost matching requirements required for Sections 1203 and 1204 are the same as previously set forth by the EMS Program Guidelines.

- The Report requirements for Sections 1202, 1203, and 1204 are the same as previously set forth by the EMS Program Guidelines.

- EMS systems requires including the capability to communicate in a language other than English where appropriate, and to communicate with individuals having auditory handicaps.

- The component requirement for an independent review and evaluation has been changed to reviews and evaluation as HEW may require.

- The EMS research authority would be modified to emphasize the application of research findings to the delivery of services, especially in rural areas.

- The requirement that applicants for EMS training grants must first be turned down by HEW's health manpower program is largely eliminated.

- Thirty (30) percent of the amounts available for EMS training support would be earmarked for training of physicians in emergency medicine, and hospitals would be added to the list of entities eligible to receive training grants or contracts.

- The new provisions are effective October 21, 1976, except for the reporting requirements for Sections 1203 and 1204 which were effective June 1, 1976.

EMERGENCY MEDICAL SERVICES

REQUIREMENTS

Q. A What steps have you taken to implement the requirement in title XII, as amended in 1976, to require EMS systems to make maximum use of communications and transportation equipment and systems made available under the Highway Safety Act and the LEAA.

B Please submit copies of any Directives or Memoranda implementing this requirement.

A. A The revised regulations include the new emphasis requested by the Congress in 1976. The revised guidelines will also include specific instructions to grantees to seek DOT and LEAA funds prior to requesting EMS support under title XII.

B Attached is a copy of the program regulations, Grants for Emergency Medical Services Systems, which implement these requirements. Please note sections 56a.103(c), 56a.103(c)(2), 56a.103(d), and 56a.103(d)(2). All applications must ensure the nonavailability of support under these other authorities before funds are awarded under title XII. Program guidelines enforcing these requirements are in preparation. They will reinforce and amplify the legislative and regulatory requirements.

" See page — for referenced program regulations.

Attachment

EMERGENCY MEDICAL SERVICES

15 REQUIREMENTS

Q. In 1976, modification was made in the requirement that an EMS system provide for a coordinated patient recordkeeping system rather than a standardized recordkeeping system. Has this modification resulted in improved capacity for recordkeeping by the systems?

A. A modification in the requirement was made by changes in the EMSS Act as amended in 1976. The rationale for this was that there was no uniform recordkeeping system to include pre-hospital, emergency department, hospital discharge records.

Utilizing available and developing new data collection devices (dispatch records, ambulance run records) coordinated information can be collected by grantees to be utilized for operating, managing and evaluating their program and to provide uniform abstract data for grant progression and multi-site comparisons.

In August, 1977, DEMS published an informational pamphlet entitled "EMS Handbook for Patient Recordkeeping and List of Minimum Data" and made distribution on a wide scale basis. During October, 1978 evaluators from EMS Regions were brought together for a two day training course so that evaluation information would be presented in a standardized format. These individuals were then utilized on a Regional level to train other grantees.

EMERGENCY MEDICAL SERVICES

REQUIREMENTS

Q. Likewise, the law's original requirement that an EMS system have the capacity for evaluation of its ability to provide emergency medical services was modified in 1976 to require the system to provide the Department with the information necessary for the Department to conduct the evaluations.

A. Please describe the impact of this change on the evaluation process.

B. Has it facilitated evaluation?

A. A. In the EMSS Act as amended in 1976, the requirement for independent evaluation was also removed because of the limited number of experts in the field of EMS system evaluation. Each EMS system has the responsibility for management and evaluation. The mechanism for providing this evaluation varies. All projects have accepted this responsibility and 183 EMS regions have submitted abstracts.

The State lead agencies haveprovided technical assistance in developing this evaluation strategy. This effort has improved project evaluation over the past two years.

Project abstract information has been utilized in National Symposia and Regional Workshops. The required abstracts are presently under analysis. An impact statement is presented for the record. As a footnote, it should be noted that this is program information and useful for program monitoring and cannot be considered as an in-depth scienfific analysis or that is is sophisticated enough to make in-depth National projections or comparisons.

B. In December 1978, 183 Regions submitted abstracts that are currently under review. The results of the initial analysis of these abstracts is described in the question, What Has That Evaluation Shown?

EMERGENCY MEDICAL SERVICES

REQUIREMENTS

Q. What has that Evaluation shown?

A. System component progress is shown in the data below.

The impact statements listed below are from data collected from Regional EMS Projects. All grantees were invited to submit competitive project abstracts for the Seattle Evaluation Symposium (July 1978). There were 230 components abstracts and 324 clinical abstracts submitted.

Because of the success of this mechanism for obtaining impact data, a program requirement for the submission of abstracts, developed from the data necessary to meet grant application requirements, was instituted, with a submission date of December 1, 1978. Each project was requested to submit an abstract for the 15 mandatory components, 7 clinical areas and 1 on organization and management.

183 regions have responded to all or most of this requirement for the above mentioned abstracts. 17 projects currently funded did not submit abstracts. 3 projects which have never received Federal grant dollars, did submit abstracts.

The data listed below was compiled from these Regional EMS Program monitoring abstracts.

Manpower/Training (1 & 2)

The impact on EMS personnel trained through EMSS Act funds is as follows:

Type of Training	Number Trained
Public CPR	1,899,972
First Responder (Public Safety)	55,733
EMT-A	132,668
EMT-Intermediate	2,680
EMT-P	8,705
E.D. - RN	6,940
Physicians	3,070
Communications/Dispatcher	914

Communications (3)

The impact of the communication system development under the EMSS Act is as follows:

62% of reporting projects utilize 911 for universal access; this covers 18.5% of the Nation; and 34.1% of the population.

40% of the Regional Projects utilize central dispatch with the effect that 60% of all operational ambulances are centrally dispatched.

Medical Control with physician supervision of EMT-paramedics is provided to over 48% of patients being transferred.

Transportation (4)

Transportation abstracts were submitted by 151 regional EMS systems. The data submitted showed:

- 13,790 ambulance vehicles in these regions
- 60-65% of all reported vehicles meet Federal Standards
- 81 regional systems reported an ALS vehicle capability
- 72 regional systems reported some type of air ambulance capability
- Average urban response reported were all less than 10 minutes, with the most frequent response of 3 to 5 minutes. Rural response times were much longer with a most frequent range of 15 to 30 minutes.
- 1/3 of the EMS systems reporting, reported a 50% decrease in response times since beginning an EMS system.
- The Lexington, Ky. Region, a BLS system, showed 10.7 dead on arrival per 10,000 ED visits as opposed to 29.5 dead on arrival per 10,000 visit for that portion of the region not serviced by an EMS system

Categorization of Hospitals (5, 6, and 10)

Utilizing National criteria for specific categorization of hospitals for trauma, burn, spinal cord injury, poisoning, cardiac, high risk infants and behavioral emergencies, has been accomplished in over 91% of the projects.

Transfer agreements providing for effective triage and transportation of critical patients to the most appropriately categorized hospital has been implemented in 82% of the projects.

Critical Care Unit plans addressing the regional capability for specific critical care patient categories have been developed in 82% of the projects. Specific critical care physician committees have been established to plann and implement these patient transfer and triage plans in 79% of the regions.

Use of Public Safety Agencies (7)

51% of the projects have programs which utilize public safety agencies.

Consumer Participation (8)

99% of the projects have developed a mechanism for consumer participation in Regional EMS systems planning. This is usually an EMS Advisory Council.

Access to Care (9)

82% have a satisfactory plan for this requirement to insure the access-ability of care for all citizens.

Coordinated Medical Recordkeeping (11)

One-third of the projects have acceptable coordinated medical record-keeping programs with dedicated funds and personnel to accomplish the task. These same projects have developed strong linkages to the area universities and schools of higher education. There is a high correlation with quality of reporting from these projects.

Consumer Information and Education (12)

96% of all projects have acceptable public education projects. All of the advanced life support (ALS) projects are providing resources for citizen CPR training.

Review and Evaluation (13)

All active EMS regional programs have implemented an evaluations program following the program guidance. The abstracts of this impact statement are developed by this component.

Disaster Linkages (14)

63% of the projects have disaster linkages between the day-to-day EMS system operations and the area disaster preparedness plans.

Mutual Aid Agreements (15)

Mutual aid agreements have been developed by ambulance services locally and between advanced level care burn centers in distant regions so that systems over-loading can be anticipated and prepared for.

Management and Organization

160 projects submitted an abstract describing their Administrative and management plans with comments on the financial plan for continued local funding in 1204 projects.

EMERGENCY MEDICAL SERVICES

INTERAGENCY COMMITTEE ON EMERGENCY MEDICAL SERVICES

Q. As you know, the legislation enacted in the 94th Congress restated congressional recognition of the need for an Interagency Committee and mandated several new tasks. These tasks were based on the G.A.O. findings of the serious failure of Federal agencies to coordinate their programs that impacted on emergency medical services. Three responsibilities were given to the committee:

A. The development of a Federal Funding and Resource Sharing Plan to coordinate the effectiveness of Federal, State, and local funding of programs related to emergency medical services;

B. A description of the sources of Federal support for the purchase of vehicles and communications equipment and for training; and

C. Recommended uniform standards for E.M.S. equipment and training programs.

Please submit copies of materials developed as a result of these requirements.

A. Materials for all three of these responsibilities are still in preparation. The Federal Funding and Resource Sharing Plan is to be completed about April 15, 1979. The revised Roles and Resources for an EMS booklet is scheduled to be submitted for publication about April 30, 1979. The survey of current Federal and professional standards relating to EMS will be completed in May 1979. We will submit copies to the Committee when these documents are published.

EMERGENCY MEDICAL SERVICES

INTERAGENCY COMMITTEE ON EMERGENCY MEDICAL SERVICES

Q. Please also submit a summary of other accomplishments of the Interagency Committee.

A. The Interagency Committee on Emergency Medical Services (IACEMS) and its work groups play an important role in the coordination of Federal agency's efforts in EMS. If Federal agencies are to reduce duplication, to move toward more effective funding efforts, and to promote government-wide standards, some forum must exist to accomplish these tasks. The IACEMS has fulfilled this role of coordination and information exchange among the member Federal agencies. Accomplishments to date include:

* Reviewed and endorsed the EMS Evaluation Workbook.

* Approved, published, and distributed, "Federal Program Resources Guide for Emergency Medical Services Systems".

* Studied the status of primary transportation capability and future demand.

* Prepared, published and distributed the Guidelines for Developing an EMS Communications Plan.

* Developed EMS biomedical telemetry standards.

* Made general and specific recommendations to the Federal Communications Commission on dockets up for review and consideration.

* Made general and specific recommendations to the Department of Transportation on the adequacy of their dispatcher training course for EMS communicators and on the technical content of a film on EMS Communications.

* Reviewed and approved the Emergency Medical Technicians-Paramedic training course and guidelines for Grants for Training in Emergency Medical Services.

* Explored satellite potential and their communications capability in EMS.

* Provided consultation and advice on Federal Aviation Administration criteria for air ambulances.

* Made general and specific recommendations on joint funding of EMS projects utilizing multiple sources of funding from Federal agencies. Also considered implementing specific projects for combined Federal funding.

* Participated in the proposed development of a pilot program with Department of Labor and other agencies in the training of Handicapped Veterans as EMS dispatchers.

* Prepared "tasking statement" for an EMS Communications Operations Guide Booklet.

* Provided consultation and advice on inter-State and intra-State EMS communications.

* Discussed the Memorandum of Understanding between the Department of Transportation and the Department of Health, Education, and Welfare.

* Explored the problem of care for emergency patients in national parks and is currently developing specific guidelines to improve care.

* Assisted in the Lakes area EMS (Buffalo, NY) discussion with Canada in the resolution of co-channel licensing problems with stations in Canada and those in the United States along the Canadian Border areas.

EMERGENCY MEDICAL SERVICES

ASSURANCES OF CONTINUED FINANCIAL SUPPORT OF E.M.S. SYSTEMS BY THE LOCAL COMMUNITY

Q. I understand that a number of systems have developed innovative methods of raising revenues to support the system -- which vary from establishing a mill system, earmarked for emergency services, to the regional entity providing a joint purchase and billing system. As various income-generating mechanisms are developed, does H.E.W. have a mechanism for circulating reports on them to other systems?

A. Several methods are available, both general and specific information.

On July 24-26, a National EMS Symposium on Legislation, Funding and Medical Authority will be held in Anaheim, California. The funding portion of the symposium will discuss the importance and the most effective approaches in obtaining State and local funds for implementing and operating regional EMS systems to enable them to be self-sufficient. The symposium is intended to inform elected officials, governmental officials, and professional associations, of their role and responsibilities in assisting Regional EMS systems development and operation. This symposium will discuss the involvement of private foundations and other Federal programs in EMS, including the approaches to obtaining support from local and regional foundations.

The funding topic has also been discussed in several Regional Workshops and other EMS Symposia. The EMS Clearinghouse is also collecting information on funding to make available to grantees.

Q. Please ask each Regional Office to submit, for the record, an assessment of the potential of (and timetable for) the system in their regions to be financially self-supporting.

A. In a recent survey, the Regional Offices were requested to estimate the potential and timetable for self-sufficiency for the regional EMS systems.

For those regions that would complete an advanced life support (ALS) capability by 1980, it was estimated that 90% or better would achieve self-sufficiency. For the remaining EMS systems currently in the 1203 phase, the Regional Offices estimated 90% or better would achieve self-sufficiency for an ALS capability during the period 1980 to 1986. No individual region estimated lower than a 75% capability to achieve self-sufficiency.

EMERGENCY MEDICAL SERVICES

TRAINING

Q. PLEASE SUBMIT INFORMATION ON THE NUMBERS AND TYPES OF PERSONNEL TRAINED UNDER THE AUTHORITIES OF SECTION 789, THE TYPE OF INSTITUTION IN WHICH THE TRAINING WAS PROVIDED, THE TOTAL COST PER TRAINEE, AND THE SECTION 789 SHARE OF THAT COST.

A. The following table shows the training of personnel for EMS systems accomplished during the three years for which grants for training in EMS have been supported through BHM under sections 776 and 789.

	FY 1974	FY 1977	FY 1978	Totals
Physicians	1,200	3,134	4,618	8,952
Nurses	4,000	6,510	11,709	22,212
EMTs	25,000	9,635	13,279	47,914
Other	6,000	1,825	5,714	13,539
	36,200	21,104	35,313	92,617

Information on institution type is not available for all years of support under the section 789 authority, however, the following analysis was completed on Fiscal Year 1978 programs which is representative of the distribution of grant support:

Type of Grantee	No.
Medical School	7
University/College	13
Community College	3
Technical School	4
Hospital	3
State Agency	8
Local Jurisdiction	2
Other *	6
	46

* Including multi-county EMS configurations and private, non-private organizations.

Section 789 grants for training in emergency medical services for fiscal years '74, '77, and '78 totaled $18,425,981. Per trainee cost figures are not available.

EMERGENCY MEDICAL SERVICES

TRAINING

Q. HOW MANY EMERGENCY MEDICINE RESIDENCY PROGRAMS HAVE BEEN ESTABLISHED WITH SECTION 789 TRAINING FUNDS?

PLEASE PROVIDE THE LOCATIONS OF SUCH PROGRAMS, THE FUNDS COMMITTED TO EACH, AND THE NUMBER OF RESIDENTS EACH IS CAPABLE OF TRAINING.

A.

Grantee	FY 1978 Award	No Residents
Albert Einstein College of Medicine Bronx, New York	145,979	6
Geisinger Medical Center Danville, Pennsylvania	75,435	12
Medical College of Pennsylvania Philadelphia, Pennsylvania	185,616	17
Boman Gray Medical School Winston-Salem, North Carolina	67,540	12
Richland Memorial Hospital Columbia, South Carolina	152,793	9
UCLA Los Angeles, California	143,798	12
Charles Drew Medical Center Los Angeles, California	342,658	10
	$1,113,819	78

EMERGENCY MEDICAL SERVICES

TRAINING

Q. PLEASE DESCRIBE THE ELIGIBILITY REQUIREMENTS THE DEPARTMENT HAS ESTABLISHED (AS THE 1976 AMENDMENTS REQUIRED) FOR THESE RESIDENCY PROGRAMS.

A. The following are requirements for emergency medicine residency programs as presented in the Program Guide:

Applicants should explain how the instructional program will meet each general and special project requirement including the training of a resident to:

... Integrate and apply necessary knowledge, skills, and attitudes in emergency department settings. While in the emergency department (a) residents must be supervised by teaching faculty or attending physicians who are immediately available, and (b) supervision of the resident when serving outside of the emergency department must be provided so as to assure an adequate educational experience.

... Interact with the various organizations, agencies, and services that make up providers for the effective delivery of community emergency medical services, and to provide a leadership role in these services and monitor their quality control.

... Establish and maintain competence in the various emergency procedures through appropriate learning and teaching experiences.

... Plan, organize, and operate an efficient emergency department (e.g., including instruction in personnel management, business management, facility design and equipment, insurance and billing procedures, forensic medicine, and professional group management); and

... Understand the 15 components of an emergency medical services system as defined in Section 1206 of the Public Health Service Act and which include:

... Manpower
... Training
... Communications
... Transportation
... Facilities
... Critical Care Units
... Public Safety Agencies
... Accessibility to Care
... Transfer of Patients
... Standard Medical Record-Keeping
... Public Information and Education
... Evaluation
... Disaster Linkage
... Mutual Aid Agreements
... Consumer Participation

The residency program must be directed by:

- a physician director, who, through training and experience, is qualified in the supervision, teaching, practice and research aspects of emergency medicine and who is full-time in the emergency unit. The physician director may also be the training program director.

Collaborative Agreements:

Sharing of educational resources is encouraged. An explanation of instructional methods, structure and collaborative agreements/arrangements designed to effect such objectives should be considered in the development of a grant proposal, including Area Health Education Centers activities.

Standards and Guidelines:

Where such exist, the program is expected to meet standards and guidelines established by accredited bodies recognized by the Commission on Education, Federal and State Governmental Agencies and professional associations. As appropriate, reference should be made to the current accreditation/approval status of the training program (refer to Item "a" on page 16 of the Guide). Acceptable accrediting, approving/endorsing bodies are listed below:

Physicians *

American College of Emergency Physicians
University Association of Emergency Medical Services

Each resident receiving support from grant funds must:

- Be a citizen of the United States, a non-citizen national or a foreign national having in his/her possession a visa permitting permanent residence in the United States.

- Be a physician who has graduated from a school of medicine or osteopathy in the United States or Canada, or, if a graduate of a foreign medical school, must meet the criteria of the Liaison Committee on Graduate Medical Education or the American Osteopathic Association for entry into the program supported by this grant.

- Plan to complete the grant-supported program and engage in the practice of emergency medicine.

Direct financial assistance to residents may not be received concurrently with any other Federal educational award (fellowship, traineeship, etc.), except for educational assistance under the Veterans Readjustment Benefits Act ("GI Bill"). Loans from Federal funds are not considered Federal awards. Support of a resident will be provided for not more than three full-time equivalent years of training in a program.

* The Program Guide will be amended to include approval of the newly established American College of Osteopathic Emergency Physicians of the AOA for Osteopathic programs.

EMERGENCY MEDICAL SERVICES

TRAINING

Q. THE DEPARTMENT HAS JUSTIFIED THE TERMINATION OF SECTION 789 FUNDS BASED ON "STATE AND LOCAL" FUNDING. WHAT IS THE EVIDENCE AND DATA THAT THIS HAS OCCURRED?

A. Section 789 authorizes support primarily for training of four general types of emergency medicine professionals and each type has a somewhat different prospect for future funding. Each type is discussed below:

Emergency Physicians - A substantial amount of the training of emergency physicians is centered in clinical experiences in emergency rooms. Many of the educational experiences of residents in emergency rooms are service reimbursable (either third party carrier or direct patient reimbursement). It is anticipated that this service/training reimbursement environment will provide some funds for the educational expenses relating to the training of emergency medicine residents. It is unlikely that States would be able to assume funding of long-term type training as that required for residents in emergency medicine training programs.

Emergency Nursing Personnel - The training of emergency nursing personnel was addressed under Section 789 through grant and contract support. The training experiences under this support were directed mainly toward continuing education. It has been the Department's and Agency's thesis for several years that continuing education for paid health manpower professionals is the responsibility of the professionals themselves. Therefore, additional and further support for the continuing education of nursing personnel should be provided by the profession itself.

Emergency Medical Technicians-Paramedic - In a significant number of Paramedic training programs, tuition and fees are currently being charged to the paramedics themselves. It is anticipated that the paramedic training program can continue to be a viable training program under a tuition and fee arrangement between the potential paramedic and the university/college.

Emergency Medical Technicians-Ambulance - It has been the experience under the administration of Section 789 that many of the EMT ambulance training programs are voluntary and viewed to a large degree as a community service. It is anticipated that there is a minimal need at this point in time to continue the EMT Ambulance Training Program and that those needs can be addressed by volunteerism and community support. In addition States that place a high priority on EMT ambulance training may choose to allocate additional National Highway Traffic Safety Administration funds or State funds to support these training programs.

EMERGENCY MEDICAL SERVICES

RESEARCH

Question

When Title XII was amended in the 96th Congress, Section 1205, authorizing grants and contracts for research in Emergency Medical Services, mandated that special consideration be given to applications for research relating to the delivery of Emergency Medical Services in rural areas and particularly research that would identify ways to apply the results of that research to improving the delivery of Emergency Medical Services in rural areas.

What Research findings have been identified which would apply to rural areas and to what extent has this information been made available or actually been put into practice in rural areas?

Reply

A number of on-going and completed EMS research projects confirm the impression that, from the perspective of system planners, operators, and evaluators, the major problems in organizing an Emergency Medical Services (EMS) system in a rural setting are different in magnitude, but not in kind, from those of urban and suburban areas. For example, the greater geographic distances in rural settings becomes a problem of longer response times, which becomes in turn a matter of resources. How much is a one-minute reduction in response time worth in terms of lives saved or disabilities prevented? How much does it cost? How many EMTs can a small community afford to train and equip? How many patients must each EMT treat in a given time period to maintain his/her level of competence? How much will a community gain in terms of lives saved and morbidity reduced by establishing an Advanced Life Support system, and how much will it cost them? Because rural areas are likely to have fewer resources to draw upon and greater distances to cover, errors and extravagancies in system design are more consequential in these settings. Furthermore, safe and acceptable alternatives to prescribed standards are in greater demand in rural then in urban regions. Such differences do not describe a special kind of research approach, however, but rather dictate that results of any EMS research projects must be generalizable, timely, and credible.

Only a few EMS research projects are actually being conducted in rural settings. Because a certain number of events must be observed to be certain that differences are not chance happenings, it is usually more efficient and economical to collect data in more densely populated areas. Moreover, qualified research teams able to design and conduct applied research projects are often located in metropolitan

areas. Since results from well-designed study are generalizable to other settings, however, the research results are as useful to rural as to urban communities.

Projects supported under Section 1205 deal with subjects such as methods to measure the performance of EMS personnel, evaluate the benefits and the costs of Advanced Life Support systems, examine the impact of categorization efforts, determine the clinical significance of response time, and explore the consequences of alternative system configurations and procedures. Other projects are developing systems of quality assurance, designing and testing clinical algorithms, and examining the relationships between Emergency Departments and their parent hospitals (including rural-urban differences). Results of such studies will affect decisions in all regions, but are of particular concern to rural communities which usually have limited local resources to rely on as Federal funding is phased out.

All of the above issues have required the development of methods which are just beginning to become available from Section 1205-funded research. Measures of severity are necessary to design treatment protocols which are safe and effective; they are also required to estimate the impact of categorization or to determine the effectiveness of different EMS systems, components, or configurations. Recent advances in actually measuring the lifesaving effects of Advanced Life Support systems have been limited to cardiac emergencies, where severity is relatively easily controlled as a variable. Only quite recently has sufficient progress been made in other conditions such as trauma to permit consideration of studies of the effectiveness of Trauma Centers.

Research has been conducted on the training of citizens in cardio-pulmonary resuscitation and the contribution such training can make in a system of emergency cardiac care. Emergency cardiac care studies have led to the design of a planning model for use by a community in determining the consequences, in terms of cardiac victims saved, of different resource allocation decisions for emergency system components. Preliminary results from one project suggest that EMT's with a little additional training in defibrillation can resuscitate victims of cardiac arrest as successfully as can the far more expensive Paramedic units. Another project with special relevance to rural areas is evaluating the effectiveness of a program for identifying and training community volunteers as Emergency Medical Coordinators.

Although NCHSR cannot insure that the findings of research are utilized in program development and planning, NCHSR does believe that it has the obligation to disseminate the results of research activities as widely as possible and in a form that is likely to be acceptable to the various kinds of users. NCHSR has, therefore, developed a strategy for disseminating these results. First, all final reports must be accompanied by an Executive Summary that is not to exceed ten pages and is to be written in language that can be understood by individuals not familiar with research jargon or research methodology. Second, NCHSR publishes annually a document which provides an abstract, no longer than one page, of all research reports received in the previous year. This abstract identifies all publications that resulted from the project and indicates how the entire project report may be obtained. All final and some interim and selected presentations are available from the National Technical Information Service (NTIS). Third, for projects that appear to be particularly useful, NCHSR will develop a longer publication as part of its Research Summary Series. This document is again written in non-technical language and can be understood by the various kinds of potential users of the research.

NCHSR staff participate in all DEMS national symposia and regional workshops, all meetings of the Interagency Committee on EMS, and all meetings of the Committee on EMS of the National Academy of Science/National Research Council. Each year many Section 1205 projects are described at the Annual Meeting of the American Public Health Association. Investigators are also strongly encouraged to participate in other scientific and professional meetings, and to respond to any requests from Federal and regional officials whenever possible.

Three recent workshops organized by NCHSR were held for the specific purpose of describing to an audience EMS research tools and results which could be used to improve system performance. Reports of each of these meetings are being distributed to interested persons who were not in attendance. A conference on new needs for EMS research was recently conducted by the American College of Emergency Physicians under a grant from NCHSR.

Although the primary purpose of participation in these meetings is to disseminate research results, they also serve to inform the EMS research staff of current and continuing needs for new research. NCHSR is continually striving for methods to improve the availability of its research results, but has not established a program to provide direct counselling to system planners and managers. To introduce such a technical assistance function would be beyond the capability of so small an organization, in terms of staff and budget. Furthermore, it would risk interfering with the proper relationships between the Division of Emergency Medical Services to its grantees.

EMERGENCY MEDICAL SERVICES

RESEARCH

Question

A. In general, what findings of research supported under the Title XII Authority, have been put to practical use in emergency medical services systems?

B. Please provide concrete examples.

Reply

As noted previously, there is no systematic method for NCHSR to determine which particular research findings have been adopted by EMS systems. Furthermore, the most significant uses for research results, those related to policy, system design, and planning decisions cannot be counted. For example, if a developing system decides, based upon Bergner's results, that an Advanced Life Support capability is not necessary or affordable within its own resource limitations, it is not possible to identify or place a value upon this use of research findings. It is important to emphasize that the research program is primarily directed toward obtaining credible and useful information, rather than testing products which can be distributed, such as better ambulance records or improved audit techniques. Such products, or by-products, of research may indeed be useful, but they are of far less importance to system planners and operators than research results that permit communities to monitor system performance, examine the safety and acceptability of alternative configurations, produce evidence of system effectiveness, or allocate resources in a rational manner.

There are a number of examples of such by-products which are finding a place in EMS systems. A planning model for cardiac care, developed as a result of research in one county in the State of Washington, is soon to be adopted on a Statewide basis. The "mandated treatment" method of measuring EMT performance is being introduced in the State of Nebraska, and the adoption of a computer-based system for auditing EMT performance is being considered in Indiana and in Pennsylvania. A research project on citizen training in CPR in the schools is represented on the American Heart Association's "Working Group on CPR in the Schools," which is developing a program guide for secondary school teachers and administrators. The State of Georgia hopes to introduce the Emergency Medical Coordinator model in its rural communities, and the State of Maryland is using information gained and methodologies developed during the Medical Aid Vehicle (MAV) study for evaluation of the first aid training program for public safety personnel. EMS systems in Louisville, Kentucky, Broward County, Florida, Tuscon, Arizona and several other communities have used a set of guidelines for evaluating medical dispatchers to modify the training and monitor the performance of ambulance dispatchers.

Again, however, it is fallacious to attempt to count the number of "items" of this kind that have been applied in such ways or the number of systems which have used them and thereby to arrive at a valuation of the research. The value of an answer to the question of whether or not Trauma Centers can deal in a cost-effective manner with trauma, or whether or not EMT's trained to defibrillate can save victims of cardiac arrest, cannot be calculated.

EMERGENCY MEDICAL SERVICES

RESEARCH

Question

A. Has the research program supported studies on the effectiveness of trauma centers in saving lives and preventing disabilities?

B. (1) If so, what have those studies found?
(2) If not, why not?

Reply

During this past year a number of Emergency Medical Services (EMS) systems have completed their organizing and coordinating activities, and have established formal procedures for treating and transferring selected trauma victims to designated centers. Evidence regarding the extent to which these Trauma Centers, as opposed to other system improvements such as better training or shorter response times, contribute to lowered mortality rates can be obtained most efficiently in these "mature" systems. NCHSR, therefore, has been working intensively for the past 8 months with the Director, Division of EMS and with EMS Regional Technical Advisors to design a study comparing the results of the care of trauma victims in fully-developed systems against results in systems which are still in palnning stages. During the next 3 months, NCHSR will decide whether it is now feasible to undertake a large-scale, multi-site evaluation. Because the designation of particular institutions as Trauma Centers can have significant effects in areas such as construction and expansion, hospital mergers, manpower and training programs, allocation of equipment, reimbursement policies, and regional health planning efforts, we intend to provide the most credible information possible to help in decisions about how many Centers there should be, where they should be located, how they should be staffed and equipped, what kinds of patients they should care for, and what improvements in clinical results they should be expected to produce.

Planning this comparative study, has made it even more apparent that existing performance measures may be inadequate to the task. Several previous attempts (not part of the EMS research program) to determine the effectiveness of Trauma Centers have either failed or produced equivocal results. These unsatisfactory findings are due, at least in part, to the investigators' inability to account for differences in the severity of injury, the time to treatment, and the adequacy of resuscitative and definitive clinical care.

To determine the effectiveness of regionalized EMS systems and designated Trauma Centers in reducing mortality and morbidity, apart from the influence of factors such as improved highway design, lower speed limits, or better gun control procedures, the EMS research program continues to pursue the design and testing of better performance measures. Several investigators are developing, refining, and testing severity scales, and examining the extent to which delays in treatment affect severity. Methods to monitor the adequacy and effectiveness of prehospital and in-hospital trauma care are being tested. Standardized treatment protocols have been developed for injured patients and are being used to assess the acceptability and the quality of clinical management and its relationship to improved outcomes. Procedures used in highly sophisticated Critical Care Units have been organized into protocols, permitting comparisons between different institutions. Methods to classify clinical outcomes in terms of residual disability are also being examined. Because of the tremendous economic and clinical significance of the policy decisions which surround the designation of Trauma Centers, NCHSR intends to pursue the problem as vigorously and thoroughly as resources permit.

Senator CRANSTON. We will now proceed to a panel of representatives of organizations consisting of: Dr. George Podgorny, president, American College of Emergency Physicians; Dr. Ronald L. Krome, president, University Association for Emergency Medicine; Marta Prado, R.N., president-elect, Emergency Department Nurses Association; Jeffrey S. Harris, executive director, National Association of Emergency Medical Technicians; Dr. Gene Cayten, director of the Center for the Study of Emergency Health Services; and Chief James Shern, president, International Association of Fire Chiefs, and fire chief for the city of Pasadena, Calif.

I want to remind each of you of our time constraints. Please state briefly the highlights of whatever you wish to present; your full statement will go in the record as if read.

STATEMENT OF GEORGE PODGORNY, M.D., PRESIDENT, AMERICAN COLLEGE OF EMERGENCY PHYSICIANS, AND DIRECTOR, DEPARTMENT OF EMERGENCY MEDICINE, FORSYTH MEMORIAL HOSPITAL, WINSTON-SALEM, N.C.; RONALD L. KROME, M.D., PRESIDENT, UNIVERSITY ASSOCIATION FOR EMERGENCY MEDICINE, AND DIRECTOR OF EMERGENCY DEPARTMENT, DETROIT GENERAL HOSPITAL, DETROIT, MICH.; MARTA PRADO, R.N., PRESIDENT-ELECT, EMERGENCY DEPARTMENT NURSES ASSOCIATION, MIAMI, FLA.; JEFFREY S. HARRIS, EXECUTIVE DIRECTOR, NATIONAL ASSOCIATION OF EMERGENCY MEDICAL TECHNICIANS; C. GENE CAYTEN, M.D., M.P.H., DIRECTOR, CENTER FOR THE STUDY OF EMERGENCY HEALTH SERVICES, LEONARD DAVIS INSTITUTE, UNIVERSITY OF PENNSYLVANIA; AND JAMES H. SHERN, PRESIDENT, INTERNATIONAL ASSOCIATION OF FIRE CHIEFS, AND FIRE CHIEF, PASADENA, CALIF.

Dr. PODGORNY. I am George Podgorny, M.D., president of the American College of Emergency Physicians. I am a practicing emergency physician in Winston-Salem, N.C., where I am director of the Department of Emergency Medicine at Forsyth Memorial Hospital.

The American College of Emergency Physicians was formed in 1968 by a group of physicians responding to the growing public clamor and need for improved emergency medical care. Our primary goal is the improvement of the practice of emergency medicine as a specialty throughout the United States.

The strengthening of the nationwide EMS system is another guiding objective of our organization. We strongly supported the passage of Public Law 93-154, The Emergency Medical Services Systems Act of 1973, and at the time, we presented testimony when the law was amended in 1976.

We are here again to speak in support of this legislation, Mr. Chairman. This public law was enacted by Congress to achieve the objective of making the benefits of improved emergency medical care available to citizens in the entire Nation. In some parts of this country, this objective has not yet been reached. The basic groundwork must still be completed and, in other areas, development of sustained EMS capability is at a very crucial point. A gradual phaseout of Federal support starting in 1980, in my opinion and in the opinion of my colleagues, would be premature.

We therefore ask the committee to consider favorably a proposal to extend for 6 more years the provisions of this act, with funding at a level of no less than $50 million each year for the first 3 years and then a phaseout in the remaining 3 years. We believe that this would be to the great advantage of the citizens of this country.

In the process of reaching for the goals of this program, we believe that the physician has been and will continue to be the hub of this activity. In the EMS system, the physician knowledge and skill must be available to every component of the system, if the system is going to survive and to function well. It is our position that this skill and knowledge can most efficiently and effectively be provided by physicians who are specifically trained in emergency medicine.

This committee played an important role in the development of emergency medicine residencies when it added provisions for training in emergency medical services to the Emergency Medical Services Systems Amendments of 1976, section 789 of title VII. This provided training money for the three major manpower components of EMS—emergency physicians, emergency nurses, and emergency medical technicians and paramedics.

We are here to ask your committee to again include provision for funding of training in emergency medical services as part of this legislation.

I am pleased to bring to this committee up-to-date information on the approximately $4 million that has been appropriated during the last 2 years, that has been used directly or indirectly for training emergency medicine specialists.

In total, 29 programs received funds. In fiscal year 1978 alone, these programs were made available to almost 5,000 trainees in medical schools, emergency medicine residencies, and to physicians in continuing education programs. Of special interest are the 7 residency programs with 77 residents which received funds during the past year. These 77 physicians will join 408 who have already successfully completed such programs since 1970. These specialists will take key positions in the EMS system, where their contributions can be maximized in the steady upgrading of the system.

But, a total of 408 residency-trained physicians today does not nearly meet the need for these skilled practitioners in emergency medicine. Our college has a long-range target of placing residency-trained physicians in each position in the emergency departments that have or can support 24-hour physician coverage in this country. Based on the patient volume—which, by the way, based on the last full year that we have data, is 77 million visits to the emergency departments of this country—this works out to approximately 1,300 hospitals that have a full-time work force of emergency physicians of approximately 8,300 physicians. We believe that each of these positions should eventually be filled by residency trained physicians.

In addition, we have as a target the placement of residency-trained physicians in at least 1 of every 3 of the almost 4,000 emergency departments whose volume does not support or cannot support 24-hour, full-time physician coverage. We calculate that in this year of 1979 this will be approximately an additional 1,300 physicians.

Finally, we have a target of the placement of 500 residency-trained physicians in the 217 Federal hospitals across the country which, to my knowledge, at this time have none.

These targets alone yield a projected manpower need of over 10,000 residency trained emergency physicians that should have been here to satisfy the minimum standards of service that we adhere to for this year. Where is emergency medicine in its efforts to generate this number of residency trained specialists?

By June of last year, there were 48 programs in this country that provided education for 408 physicians. Projecting the current rate of resident output over the next two decades, we can optimistically hope for an output of no more than approximately 5,000 physicians to be specialists in emergency medicine. This would leave the profession with approximately 5,000 fewer than the target figure of 10,000 based on current needs.

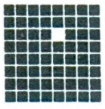
To meet the demands for specialists in emergency medicine as we move toward the 21st century, the American College of Emergency Physicians has set its sights on increasing the number of emergency medicine residencies by five in each of the next 5 years. This will allow emergency medicine to reach a manpower target of 10,575 residency graduates by the year 2010.

Senator CRANSTON. Doctor, may I ask that you summarize, rather than read the entire statement? We just have a terrible time problem, and we are not going to be able to complete our hearing.

Dr. PODGORNY. We are aggressively supporting, Mr. Chairman, the expansion and increase in the emergency medicine residency within the standards of quality that we have proposed, and we hope that section 789 can also and again be incorporated into this.

I thank the committee for allowing me the privilege of speaking to you.

[The prepared statement of Dr. Podgorny follows:]



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UNITED STATES SENATE

COMMITTEE ON HUMAN RESOURCES

SUBCOMMITTEE ON HEALTH AND SCIENTIFIC RESEARCH

Written Testimony

submitted by the

AMERICAN COLLEGE OF EMERGENCY PHYSICIANS

concerning

EMERGENCY MEDICAL SERVICES AMENDMENTS OF 1979

(S. 497)

FEBRUARY 28, 1979

1968-1978: ACEP's First Decade of Achievement

TESTIMONY OF THE AMERICAN COLLEGE OF EMERGENCY PHYSICIANS

CONCERNING

EMERGENCY MEDICAL SERVICES AMENDMENTS OF 1979

BEFORE THE

COMMITTEE ON HUMAN RESOURCES

SUBCOMMITTEE ON HEALTH AND SCIENTIFIC RESEARCH

UNITED STATES SENATE

FEBRUARY 28, 1979

Mr. Chairman, I am George Podgorny, M.D., President of the American College of Emergency Physicians and a practicing emergency physician in Winston-Salem, North Carolina where I am director of the Department of Emergency Medicine at Forsyth Memorial Hospital. In addition, I am a board-certified surgeon and president of the American Board of Emergency Medicine, the institution that has been organized to administer the board certification of physicians in the practice of emergency medicine. I currently serve on the North Carolina EMS Advisory Council and am an appointee to the North Carolina State Health Coordinating Council.

The American College of Emergency Physicians (ACEP) was formed in 1968 by a group of physicians responding to the growing public clamor for improved emergency medical care. Last year, as ACEP celebrated its first decade of service, our membership passed the 9,500 physician mark.

The primary goal of ACEP is the improvement of the practice of emergency medicine throughout the United States. We seek to accomplish this through a variety of aggressive, innovative programs primarily in the area of education. The College sponsors national and regional scientific meetings, conferences, and seminars for the exchange of professional information with leaders in

community emergency medicine. ACEP also makes available informed representatives to the local and national councils of government to assist in governmental efforts to formulate national policy.

The strengthening of the nationwide EMS system is another quiding objective of ACEP. We strongly supported the passage of Public Law 93-154, "The Emergency Medical Services Systems Act of 1973," and presented testimony when the law as amended in 1976.

We are here to speak again in support of this legislation.

Public Law 93-154 was enacted by Congress to meet a desperate need for improved emergency medical services. The objective was to make the benefits of improved emergency medical service available to citizens throughout this country. This was to be made possible through an arrangement of personnel, facilities and equipment in a coordinated and effective manner within and between logical geographic and demographic regions. We believe in, and are the strongest supporters of, this objective. We believe that the EMS system must be easily accessible to patients without financial, geographical or temporal barriers.

In some parts of the country this objective has not been reached. The basic groundwork must still be completed and in other areas development of sustained EMS capability is at a crucial point. A gradual phase-out of federal support starting in 1980 would be premature. We therefore ask the committee to consider favorably a proposal to extend for six more years the provisions of the EMSS Act with funding at a level of $50 million each year for the first three years. We support a phase-out in the final two years with federal funding ending with FY 1985.

In the six years since Public Law 93-154 established a federal agency to assist in the development and coordination of EMS systems, we have watched with increasing hope as communities have moved through successive stages of the

development of this EMS capability. We are pleased with the progress reported which shows that 75 of the 300 EMS regions will have achieved advanced life support levels in the next three years. An additional 176 regions will be providing a basic life support level of service in this same period.

However, these same figures show that 225 regions of the country will not have reached what we would consider the optimal level of EMS. Even more ominous is the fact that 49 regions will not meet even basic life support standards.

This is unacceptable and Congress cannot begin closing out its involvement in EMS at this stage and consider the six years and $200 million spent to date a record of success.

We believe that the target proposed by various EMS planners for the achievement of advanced life support level in 85 percent of the country's EMS regions by FY 1985 to be reasonable and an appropriate goal for this committee to consider as it decides on authorization level and the term of the EMSS Act extension.

ACEP urges you to vote favorably on a five year extension.

In the process of reaching for these goals, we believe the physician has been and will continue to be the hub. The emergency patient is commonly undifferentiated, has little or no available medical history, and frequently is at a crisis juncture with his or her medical problem. This places the highest premium on the physician's skill to rapidly and accurately diagnose the problem.

In the EMS system this skill must be available via radio and telemetry to the emergency medical technician. It must be available to community planners who are responsible for the overall design of an effective and efficient EMS delivery program for the community. It must be available to train the public and other professional participants in the EMS system. Above all, this medical skill must be available in the emergency department, or other sites that might be developed in the future, to provide diagnosis and treatment.

We are proud of the part emergency physicians, in particular ACEP members, have played in bringing the nationwide EMS system to the current level of maturity. This has been accomplished by physicians who by-and-large have achieved their level of skill in emergency medicine through years of experience and repeated exposures to the undifferentiated, crisis-state patient. The practice-training route is a time-consuming and inefficient approach to providing the EMS system with the kind of skills a good emergency physician can provide. How much better it would be to condense this experience to the extent possible into a concentrated training program. This was the reasoning which led to the opening of the first emergency medicine residency in Cincinnati in 1970.

This Committee played an important role in the development of emergency medicine residencies when it added provisions for training in emergency medical services to the Emergency Medical Services Systems Amendments of 1976, (PHS, Section 78a Title VII). This provided training money for the three major manpower components of EMS - emergency physicians, emergency nurses and emergency medical technicians.

We are here to ask the Committee to again include provision for funding of training in emergency medicine services as part of this legislation.

Section 789 authorized ten million dollars in training funds for Fiscal Years 1977, 1978 and 1979. In each of these years, Congress has seen fit to appropriate six million dollars. Others will be able to report on the positive impact of funds for training emergency nurses and emergency medical technicians. I am pleased to bring the Committee up to date on the approximately four million dollars appropriated during the last two years that have been used directly or indirectly for training emergency medicine specialists.

In total, 29 programs received funds for training. In fiscal year 1978 alone these programs were made available to 4,618 trainees in medical school, emergency medicine residencies and physician continuing education. This means

that almost 5,000 physicians were exposed to some aspect of emergency medicine training as a result of federal funding during the past year. Of special interest are the seven residency programs with 77 residents which received funds during this past year. They are of special interest because it is the residency-trained physicians to whom we are looking to take the leadership positions in emergency medicine in the years to come.

These 77 residents will eventually be added to the 408 who have graduated from residency programs since 1970. These specialists will take key positions in the EMS system where their contributions can be maximized in the steady upgrading of the system. These specialists will, of course, contribute their knowledge and skills in diagnosis and treatment. But equally important, they will lend their expertise to the upgrading of skills of the nurses and EMTs, who are the key partners of medicine in the provision of EMS, and to the upgrading of skills of the many other physicians, who are directly or indirectly involved with EMS.

But, a total of 408 residency-trained physicians today does not nearly meet the need for these skilled practitioners in emergency medicine.

Based on rough projections, there are at least 20,000 physicians who practice either full-time or part-time emergency medicine or who fulfil medical staff responsibilities in the emergency department.

These are the physicians who the public views as the "first line" of medical treatment in the event of medical crisis. These are the physicians who will be asked to treat the patient in crisis for whom there is little prior knowledge, often with the complication of drugs or alcohol, and for whom immediate life-and-death decisions must be made.

Many of these physicians are simply not equipped to meet the public's expectations or the standard we who have committed our careers to emergency medicine believe ought to be an acceptable level of capability.

In those hospitals that choose to staff their emergency department with medical staff on a rotation basis, crisis patients are in the hands of physicians who are highly trained in narrow aspects of medical specialties but these same physicians may frequently be at a distinct disadvantage in the treatment of many common emergency conditions.

Great strides have been made in introducing these physicians and others who have chosen emergency medicine as a second career to the methods and skills of dealing with emergencies. However, ACEP feels continuing medical education is not the solution. ACEP believes that the best solution is placement of residency-trained emergency physicians in strategic positions throughout the EMS system, primarily in emergency departments.

It is not our intention to set as a target the placement of residency-trained physicians in every position of every emergency department in the country. This is impractical and, further, we believe the profession is enriched by the flow of physicians from various specialties through the emergency departments. However, the College has established some targets which we feel will assure the emergency medicine patient the most dependable and consistent quality of care that is possible within the limits of cost effectiveness.

One of the College's long range targets is the placement of residency-trained physicians in each position of the emergency departments that have or can support 24-hour physician coverage. We calculate that in 1979 this works out to 1,283 hospitals. Based on patient volume in these hospitals, full-time physician work force of 8,366 is needed for adequate coverage. We believe that each of these positions should eventually be filled by residency-trained physicians.

However, this first target deals only with 1,283, or approximately 25 percent of the 5,238 emergency departments across the country. These are the emergency departments that are by-and-large in urban areas. The remainder are lower volume emergency departments that, while they perhaps cannot support 24-hour dedicated physician coverage, still are a vital link in the delivery of EMS. These emergency departments must have access to the leadership and skills contributed by residency-trained physicians.

ACEP has selected as a second target the placement of a residency-trained physician in at least one of every three of the 3,955 emergency departments whose volume cannot support 24-hour full-time physician coverage. We calculate that in 1979 this works out to a manpower need of 1,318 additional residency-trained physicians.

These 1,318 physicians will serve as directors of emergency departments and the principals in their hospitals' EMS programs. They will also serve as the focal point in critical locales for the nationwide EMS network. We believe they will be vital to the continuation of a coordinated nationwide EMS system once federal participation that currently serves as the glue is withdrawn.

A third target has to do with manpower needs for federal hospitals. Of the 77 million visits to emergency departments in 1977, 4.5 million were seen in federal hospitals. Despite this figure which accounts for six percent of all emergency department visits there are no residency-trained emergency physicians practicing emergency medicine in any federal hospital. This area of medicine cannot be neglected. ACEP has calculated that in 1979 there is a manpower need of 500 residency-trained emergency physicians to provide adequate emergency medicine specialist service in the 217 federal hospitals.

These targets alone yield a projected manpower need of 10,184 residency-trained emergency physicians to satisfy minimum standards of service for 1979.

How will these needs change over the next few decades? These are the years we must be considering as we plan training programs. Everything points to change. Some factors may work to decrease the need for emergency medical specialists but the weight of evidence leads us to anticipate a growth in need.

(a) Population growth by itself is certain to increase pressure on emergency departments.

(b) Growth in the aged population will increase the demand for care through emergency departments. Figures show that the population 65 years and older requires one-third more medical care.

(c) EMS leadership positions, especially on the state and regional levels, will become more important as the federal participation is withdrawn. These should be filled by residency-trained physicians who can assume leadership in the clinical as well as system sphere.

(d) Medical education process will need qualified educators for the training of emergency medicine residents as well as medical students in the skills and knowledge of emergency medicine. These will quite naturally come from the ranks of the emergency medicine residency graduates.

(e) Consolidation of emergency departments is certain as health providers, government agencies and the public look for ways to reduce the cost of health care delivery. ACEP recognizes that some emergency departments exist only because they represent

a point of entry for hospital admissions and are maintained for economic reasons even in situations where such service is duplicative and redundant. We expect this consolidation which will result in a concentration of emergency department visits. This should increase the number of hospitals that can support 24-hour physician coverage of emergency departments. As a result we expect this to actually increase the need for residency-trained physicians.

(f) The developing phenomenon of "free standing" or non-hospital-based emergency care centers represents another way emergency medicine may change in the next decades. If this phenomenon catches on, we will see a shift from an exclusive hospital-based delivery of emergency medicine. ACEP is examining the full ramifications of this phenomenon in terms of cost and quality of care. We urge the Congress to do the same. However, we do not expect this phenomenon to have a significant impact on manpower needs.

(g) We caution against overzealous estimation of the percentage of emergency department visits that may be diverted from the emergency department as alternatives are found for delivering primary care that is often provided in the emergency department. Emergencies cannot be categorized until after the diagnosis is made. A patient determines whether or not there is an emergency and selects the site of care based on this determination. An inappropriate visit can only be one in which the emergency

department is chosen in lieu of other more appropriate, less expensive sites of care solely on the basis of convenience.

Where is emergency medicine in its efforts to generate this number of residency-trained specialists?

Since 1970 we have seen a steady growth in the number of emergency medicine residencies. By June 1978, these were 48 programs which had produced a total of 408 emergency resident graduates. The growth can be seen in the following figures:

Year	Emergency Medicine Residency Programs	Emergency Medicine Residents in Training
1970	2	3
1971	5	11
1972	7	24
1973	16	42
1974	26	72
1975	32	165
1976	39	293
1977	42	302
1978	48	399

By the year 2000 we expect to see the beginning of a major exodus of practice-trained physicians due to retirement who currently occupy most positions in emergency medicine. Projecting the current rate of resident output over the next two decades, we can optimistically hope for an output of no more than 5,200 residents. This would leave the profession with approximately 5,000 fewer than the target figure of 10,138 based on current needs.

To meet the demands for specialists in emergency medicine as we move towards the Twenty-First Century, ACEP has set its sights on increasing the number of emergency medicine residencies by five in each of the next five years. This will allow emergency medicine to reach a manpower target of 10,575 residency graduates by the year 2010.

We anticipate that about this time the total number of residency-trained emergency physicians will begin leveling off as the early residency-trained emergency physicians begin leaving practice through retirement. We further expect a stabilization of the number of residency-trained practitioners in the field by 2020 with a total of approximately 13,000 residency-trained emergency physicians.

But it is impossible to approach this target with the current output of graduating residents. ACEP is aggressively supporting the expansion and increase in the emergency medicine residency within the strict standards of quality which the Department of Health, Education, and Welfare has endorsed. We ask this Committee and Congress to join us in this effort by extending for another three years the provision of Section 789, Title VII of the Public Health Services Act that would authorize ten million dollars peryear for EMS training activities.

I thank the Committee for allowing me the privilege of speaking to you.

Senator CRANSTON. Thank you.

Dr. KROME. Mr. Chairman, my name is Ronald Krome. I am a board-certified general surgeon and chief of the section of emergency medicine at Wayne State University in Detroit. I have been engaged in the full-time practice of emergency medicine since 1970 and am the director of the emergency department at Detroit's General Hospital, our city-county institute.

I appear here because of my position as president of the University Association for Emergency Medicine, an international organization of physician-educators with more than 400 members in the United States. Our goal is to improve the quality and accessibility of emergency medical care by assuring that effective programs of education and research are organized and maintained. We are in our ninth year as an organization working together to collect, analyze, and disseminate information regarding the delivery of cost-effective, patient-oriented emergency care.

This is the third time our organization has had representatives before Congress supporting the EMSS Act and the manpower training acts.

Quality emergency care requires that, as Dr. Podgorny has said, residency trained emergency physicians be available. Currently, we have only 48 residency training programs that are training such physicians to assume leadership roles and provide health care. Now is not the time to reduce our efforts in this arena, not when the impetus for success is accelerating. We encourage the committee to recommend extending for 3 years section 789 of title VII of the Public Health Services Act at least at its current level of funding, so that programs can continue for the training of all health care professionals in emergency medical care.

The University Association for Emergency Medicine is dedicated to the development of appropriate research efforts in this field. Perhaps no other area of emergency medical services requires greater support than research into the design of treatment protocols: the improvement of methods for measuring results, and the collection, analysis, and distribution of data concerning traumatic injuries and life-threatening problems.

We have made significant progress in this area with previously federally funded programs, but we will lose the momentum for continued success if there is no support for new research activities, especially those new activities in trauma which will permit us to study the influence of systems on the mortality and morbidity of patients. Fluctuating levels of support for research create a situation which inhibits and hinders research productivity. Sound scientific research is incompatible with on-again, off-again financial support, and this is especially true in EMS and trauma, where system impact may now be felt for 1 or 2 years after implementation.

We need to know more about the persons who use the system, the providers of those systems, and the outcome of the services provided. It is essential that we have information about the morbidity and mortality of patients who enter the system. There must be some centralized arena for the accumulation of such data relevent to the incident and the patient and the therapy rendered to the patient, so that we can safely assess the impact of EMS on health care in this country.

We who are involved in emergency medical services programs of education and research commend your committee for past support, but we are concerned that in its desire to reduce the rising costs of health care, Congress may nip in the bud a flourishing growth of programs that will ultimately provide real, lasting answers to questions about how to provide cost-effective emergency care. We encourage you to continue, at the highest level possible, your support of educational and research programs in EMS. Such support will provide for the continuation and improvement of research programs, the development of reliable and accessible data, the expansion of training programs for emergency physicians and other personnel involved in emergency care, and the introduction of innovative concepts of emergency care that will benefit all Americans.

I thank you for the opportunity of addressing you.

[The prepared statement of Dr. Krome follows:]

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RONALD L. KROME, M.D.
President

UNITED STATES SENATE

COMMITTEE ON HUMAN RESOURCES

SUBCOMMITTEE ON HEALTH AND SCIENTIFIC RESEARCH

Written Testimony

submitted by the

UNIVERSITY ASSOCIATION FOR EMERGENCY MEDICINE

concerning

EMERGENCY MEDICAL SERVICES AMENDMENTS OF 1979

(S. 497)

FEBRUARY 28, 1979

In pursuit of excellence in Emergency Medicine through research and education

TESTIMONY OF THE UNIVERSITY ASSOCIATION FOR EMERGENCY MEDICINE

CONCERNING

EMERGENCY MEDICAL SERVICES AMENDMENTS OF 1979

BEFORE THE

COMMITTEE ON HUMAN RESOURCES

SUBCOMMITTEE ON HEALTH AND SCIENTIFIC RESEARCH

UNITED STATES SENATE

FEBRUARY 28, 1979

Mr. Chairman, I am Ronald L. Krome, M.D., a board certified general surgeon and Chief of the Section of Emergency Medicine at Wayne State University in Detroit. I have been engaged in the full-time practice of emergency medicine since 1970 and am the Director of the Emergency Department of Detroit General Hospital.

I appear here today because of my elected position as President of the University Association for Emergency Medicine, an international organization of physician-educators with more than 400 members in the United States and Canada. The Association's major goal is to improve the quality and accessibility of emergency medical care by assuring that effective programs of education and research are organized and maintained. We are in our ninth year of working collectively to collect, analyze and disseminate information regarding the delivery of cost-effective, patient-oriented emergency care.

This is the third time that representatives of UA/EM have presented testimony to Congressional committees, beginning in 1972. Much progress has been made, due in great measure to the understanding and support we have received from a succession of concerned and responsive Congresses. But, gentlemen,

the EMS problem has grown almost as rapidly as our ability to cope with it. In 1972, for example, the emergency services in our country handled just under 50 million visits. The most recent statistics indicate that in 1977, a smaller number of emergency departments saw more than 77 million visits.

I will not regale you with any more statistics about the magnitude of the problem. We have had ample evidence in the past that you are aware of the need. However, we in the field of emergency medicine are deeply concerned that the momentum we have built toward resolving problems of education and research will be braked just as we are making real progress.

EMERGENCY MEDICAL SERVICES TRAINING PROGRAMS

In this time of concern over rising health care costs and accelerative rates of inflation, how can we retreat from programs that will increase the number of skilled physicians and allied health personnel in the field of emergency medicine? Is there any question that health care delivered by skilled practitioners is the most cost-effective care? As in any field of endeavor, the higher your level of skill, the less time it takes to do the job and the less support is needed from others.

Mr. Chairman, quality emergency care requires residency-trained emergency physicians. Currently, we have 48 residency training programs that are training emergency physicians. A well-trained emergency physician is the professional who supervises and helps train other allied health professionals who form an effective, life-sustaining emergency care team. Properly trained emergency physicians provide two-fold benefits: they personally deliver improved patient care; and they provide more effective direction to the EMS system in which they serve.

In emergency care, as in most activities, skilled leadership influences the performance of all who are involved in the system. We believe the most efficient

way to upgrade the quality of care, particularly in underserved areas, is to increase the number and the skills of emergency physicians who serve these areas.

Now is not the time to reduce our efforts, not when the impetus for success is accelerating. We encourage the Committee to recommend extending those provisions of the Health Manpower Act that continue the progress we have made and that will support the development of new programs that are desperately needed.

RESEARCH PROGRAMS IN EMERGENCY MEDICAL SERVICES

Mr. Chairman, the University Association for Emergency Medicine is dedicated to the development of appropriate research efforts in our field. Perhaps no other area of Emergency Medical Services requires greater support than research into the design of treatment protocols: the improvement of methods for measuring results, and the collection, analysis and distribution of data concerning traumatic injuries and life-threatening medical problems.

We have made significant progress with the support of previous federally-funded programs. But, we will lose the momentum for continued success if there is no support for new research initiatives.

Fluctuating levels of support for research create a situation which hinders research productivity. Sound scientific research is incompatible with on-again, off-again financial support.

A corollary of both research and planning is the accumulation, interpretation and accessibility of reliable data concerning Emergency Medical Services. We need to know more about the persons who use EMS systems, the providers of those services, and the outcome of the services provided. It is essential that we have information about the morbidity and mortality of patients who enter the system. We are still guessing and estimating such critical information as:

- the total number of physicians, nurses, allied health personnel involved in EMS
- the types of facilities and equipment that are available to emergency patients
- the profile of educational backgrounds and on-the-job training represented by professionals who provide emergency care.

Certainly no single organization in the private sector and, perhaps, no consortium of such organizations, can be expected to undertake such an awesome task without the financial support of the Federal government.

We appreciate your past support, one example of which is the EMS Research Conference that was initiated last September through a grant from the National Center for Health Services Research (HS 03274).

This research program is aimed at designing and validating the performance of EMS systems and their components. This type of research will be invaluable to the directors of EMS systems in their efforts to provide accessible, responsive and cost-effective services to the American public.

The results of this conference are still being analyzed but the methodology used indicates that valuable information will be forthcoming. The conference participants were practitioners from every segment of the EMS system. The results were impressive: more than 46 research problems were identified and prioritized; each problem was defined in detail; and recommendations were developed for research approaches to resolve the problems.

For the first time, the providers of emergency care helped focus the attention of researchers on the problems that most need resolution. Not surprisingly, one of the major problems mentioned was that federally supported research was not aimed at problems considered top priority by those who provide emergency care.

Mr. Chairman, we who are involved in Emergency Medical Services programs of education and research commend your Committee for its past support. But,

we are concerned that, in its desire to reduce the rising costs of health care, the Congress may nip in the bud a flourishing growth of programs that will ultimately provide real, lasting answers to questions about how to provide cost-effective emergency care. We encourage you to continue, at the highest level possible, your support of educational and research programs in EMS. Such support will provide for the continuation and improvement of research programs; the development of reliable and accessible data; the expansion of training programs for emergency physicians and allied health personnel; and the introduction of innovative concepts of emergency care that will benefit all Americans.

We thank you and the Committee for this opportunity to speak on the important matters under consideration. The University Association for Emergency Medicine stands ready at any time to assist you in your deliverations in what ever way we can.

Senator CRANSTON. Thank you very, very much. We appreciate your statement.

Ms. PRADO. Mr. Chairman, my name is Marta Prado. I am a registered nurse, and I am the president-elect of the Emergency Department Nurses Association, which is a professional association representing more than 12,000 professional nurses throughout the United States. In my professional capacity as a consultant to an emergency medical services program in Dade County, I am responsible for the coordination and training of at least 200 paramedics who are providing advanced life support to more than 42,000 patients a year. I am also a consultant to a group of emergency physicians who staff and provide care in many communities in the Southeast United States. I have been a witness to the impact that a good EMS can have on a community.

The Emergency Department Nurses Association was formed 10 years ago because of a great concern to the emergency nurses throughout as to the coordination of efforts of emergency medicine throughout the United States. It was in those days that emergency departments were still called emergency rooms and were highly neglected by both administration and other members of the professions, because they were thought of as budgetary drains, as a great source of patient complaint, and because they were not providers of primary health care. We have come a long way since then. The emergency department is, in many instances, the only way that a patient can gain access into the health care system and be referred elsewhere if that is what he needs; let us not forget that.

The rapidly growing numbers of health professionals going into the field of emergency medical services is a recognized phenomenon. There are an estimated 55,000 nurses staffing emergency departments throughout the United States. The Emergency Department Nurses Association has obviously not been able to reach all those 55,000 nurses with their educational programs, and we

feel that emergency nurses have been neglected as far as nursing funds have been concerned over the last 3 years.

Well over 300 communities throughout the United States have been funded and assisted with the planning, implementation, and expansion of their programs, and I think that there can be no question in anybody's mind as to what impact this legislation and this fund has had on the quality of life in the United States.

The emergency nurses throughout the United States have witnessed the benefits of such systems, because we have been there; we have been there in all the hospitals in the United States, both in the urban communities and in the rural communities which, as we all know, are too often forgotten. Many times, it is the emergency nurse who is the only member of the health care team to take care of this patient, which is far away from a comprehensive system and sometimes far away from a physician. We would like to make sure that those rural systems are not forgotten.

I want to remind you all that in 1975, President Ford, in his proclamation of EMS Week in the first week in November, said:

> Let us affirm that this national legislation is only the beginning of our effort to upgrade and perpetuate this part of our total health care system so that no individual in this country will lack help whenever he needs it.

We of the Emergency Department Nurses Association cannot support the slow growing death of a program that is just beginning to reach its potential.

As you have heard from Dr. Podgorny, the emergency department physicians and nurses will treat more than 80 million patients in the United States in 1979, and even in spite of all the improvements that have occurred, we will still lose 100,000 people in the next year. How can we approach the question of ending this program? The Emergency Department Nurses Association thinks there is no question about it.

As you are charged with the task of trying to support the continuation of the act, we would like to recommend several things. One, in spite of all that has occurred so far, the involvement of emergency nurses throughout the country has not been great. We support the continuation of grants for planning, but we particularly want to support the continuation of 1203 and 1204 as an important incentive to communities to continue to effect and implement their emergency medical services plans. We would like to also recommend that at least 20 to 30 percent be allocated to the rural communities.

Although the Department of Health, Education, and Welfare's Division of EMS has supported and has adopted the continuing education curriculum of the Emergency Department Nurses Association, there is still much that needs to be done to make sure that this educational mode of education for nurses be utilized for nursing practice in the rural, suburban, and urban communities.

Mr. Chairman, we unanimously concur with other members of our EMS community that section 1205, which deals directly with EMS research, needs to be continued to insure that we are maximizing the utilization of health manpower, both in the rural and suburban communities. Particular attention needs to be taken to the expanded role of the emergency department nurse, especially in those areas of the country so distant from a comprehensive

hospital. There has been some indirect progress made through section 789 moneys, but there is still much work that needs to be done. We would like to also insure that research would aid in finding more appropriate solutions to assuring ourselves as to the competency of all health care personnel involved in emergency medical services.

Our association will start their certification project in the spring of 1980 to assure the consumer that emergency nurses taking care of them in their community hospitals are competent to do so. We would like to insure that that happens in the city and in the rural areas.

We would like to also recommend and would be pleased to support a timely and accurate data base in regards to health manpower involved and their relationship to patient care, and we would like to see this be done.

Let me just conclude by saying that we recognize the significance of upgrading emergency medical services and, of course, that of upgrading emergency nursing skills. We urge you to instruct the appropriate agencies to exert substantial efforts during the continuation of emergency medical services and to fund emergency nursing programs. We would like to recommend that this be done for a period of 5 to 6 years, and we would also like to say that it be done at a minimum of $50 million.

I would like to thank you for the honor and privilege of being able to speak to you and your colleagues, and wish you luck. Thank you.

[The prepared statement of Ms. Prado follows:]

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U.S. SENATE

SENATE SUBCOMMITTEE ON HEALTH AND SCIENTIFIC RESEARCH

SUBCOMMITTEE OF SENATE HUMAN RESOURCES COMMITTEE

Written Testimony

submitted by the

EMERGENCY DEPARTMENT NURSES ASSOCIATION

concerning

Emergency Medical Services Ammendments of 1975

February 28, 1979

Emergency Department Nurses Association
February 28, 1979 - Page 1

Mr. Chairman and Members of the Committee:

My name is Marta Prado; I'm a Registered Nurse, and I'm the President-Elect of the Emergency Department Nurses Association, a national professional organization representing more than 12,000 professional emergency nurses. In my professional capacity as a consultant in Emergency Medical Services at the Dade County Fire Department, I am responsible for the coordination and training of 200 rescue paramedics who take care of 42,000 patients a year. I am also a consultant to a group of emergency physicians who provide quality care in emergency departments throughout the eastern United States. I have been a witness of the impact that a good, comprehensive EMS system can have on a community.

Let me begin by saying thank you for the opportunity to testify today on behalf of the President, the Board of Directors and the membership of the Emergency Department Nurses Association. The Emergency Department Nurses Association has been deeply concerned with the improvement of emergency medical services since the association's inception almost ten years ago. The following goals were developed at the time:

1) to provide optimum emergency care to patients in emergency departments by helping to establish standards; and
2) to promote, encourage and implement a positive attitude toward education at all levels within the emergency department.

We recognize that for many years the hospital emergency department, which at the time was called an emergency "room" was a small area, well-hidden, often forgotten, poorly equipped and often inadequately staffed, both from a numbers standpoint and a quality standpoint. Hospital administration generally tried to ignore them because they were thought of as budgetary drains, the greatest source of patient complaints and not a provider of primary care. Thanks to the improvements of emergency medical services, which started with the EMS Act of 1973, facilities began to expand, equipment began to fill the emergency depart-

ments, emergency departments began to be staffed by trained, competent emergency physicians and emergency department nurses. Hospital administrators have recognized that the hospital emergency department holds a top priority in the health care delivery in the United States, and also recognized the tremendous impact that the emergency department has on the multi-department system of the hospital.

The emergency department not only provides emergency health care, but has been a source of primary health care for many members of the community and sometimes is the only place a patient can access entry into the health care system, in spite of the development of health clinics and community health centers, which we of the Emergency Department Nurses Association advocate. At the same time, it has become the pivotal point in the evolution of community emergency medical services handling victims of both medical and traumatic emergencies.

The rapidly growing number of health professionals entering the field of emergency medical care is already a recognized phenomena and one in which emergency department nurses have played a definitely important role. It has been estimated that approximately 55,000 nurses in this country are practicing in emergency departments. We believe that the history of implementation of Public Law 93-154 speaks for itself. Well over 300 communities throughout America have received assistance with the planning, implementation and expansion of their emergency medical services systems under the provision of this Act; there can be no question as to the impact which this legislation has had on the quality of life in the United States of America.

Emergency nurses throughout the United States and the world have witnessed the benefits of a good pre-hospital care system. We have been there, therefore, we can supply such witness since we are in the emergency departments of those hospitals, both in the urban and rural communities, working side by side with the emergency physicians supporting the lives of those who are sick and injured and who 6 to 10 years ago may not have been fortunate enough to have fallen into our hands. Emergency nurses have been there as members of the

pre-hospital emergency medical services extending their expertise and skills in emergency nursing to those in need at the scenes of trauma and illness and during their transport to hospitals via air and ground. We are there teaching paramedics and basic emergency medical technicians the essential skills so necessary to the stabilization and transportation of an ill patient.

Communication systems have become sophisticated over the last 5 to 6 years; thanks to those funds, emergency nurses are there communicating with and directing the EMS personnel. We are in every hospital in America which provides an interface with an EMS system in its community, and let us by no means forget that we are there even in those all but forgotten rural community hospitals where we are frequently alone to care for those patients who have the same life-threatening emergency medical care needs and who have at times been neglected by the dispensing of funds. We have, in the last few years, provided education to the rural community hospital nurse to care independently for some of these patients. However, much work still needs to be done. Emergency nurses bring unimpeachable expert witness to support the progress which has been made. We have also asserted our expertise in recognizing that there is so much more that remains to be done. In 1975, President Ford proclaimed a week in November as Emergency Medical Services week. At that time, he said, "Let us affirm that this national legislation is only the beginning of our effort to upgrade and perpetuate this part of our total health care system so that no individual in this country will lack help whenever he needs it". We of the Emergency Department Nurses Association cannot support the slow growing death of a program that is just beginning to reach its potential.

Emergency nurses and physicians will treat more than 80 million patients in emergency departments during 1979. Even with the multiple improvements that have been made throughout the country in emergency medical services systems to date, at least 100,000 Americans will die this year as a result of a medical or traumatic emergency. How can we even approach the question of continuing this

program? The Emergency Department Nurses Association thinks there is no question about it. We urge the Committee, the members of Congress and the Administration to act diligently and expeditiously to insure that the EMS systems Act is continued for a least a period of five years, and continued with the proper funding to compliment and complete the task that we have been trying to accomplish.

As this Committee listens to testimony and is charged with the task of establishing the need for renewal and continuation of such Act, the Emergency Department Nurses Association asks that several important key issues be kept in mind. In spite of all that has occurred so far, there is still great concern for the lack of coordination of efforts as they relate to the involvement of emergency nurses throughout the country. We support the continuation of grants for planning, but particularly, we are in support of the continuation of Sections 1203 and 1204 as an important incentive to communities to affect their emergency medical services plan, and we strongly support and recommend that there be an earmarked 20%-30% available funds for rural needs.

As I stated previously, it is very often that the emergency department nurse, who, in fact, operates rural emergency medical services hundreds of miles from where there is a competent, comprehensive emergency facility or at times even hundreds of miles from a competent physician, has the responsibility to insure the consumer that his emergency will receive the same attention in the rural community as in the city.

Although the Department of Health, Education and Welfare's division of emergency medical services has adopted the continuing education curriculum for emergency nurses which was developed by the Emergency Department Nurses Association with HEW under Federal Grant Contract PHSR4-7418, there is still much that can be done to utilize this educational mode of educating and elevating the standards of emergency nursing practice in the rural, suburban and urban communities. The emergency department nurse is a key member of the EMS team, and has been ignored with regards to having the opportunities provided to upgrade

her practice skills. We encourage this Committee to not forget the 40,000 or so nurses that the Emergency Department Nurses Association has not been able to reach with all their educational programs that could be reached with the appropriate funding.

Mr. Chairman, we unanimously concur with other members of our EMS community and professionals that Section 1205, which deals directly with EMS research, needs to be continued to insure that we are maximizing the utilization of health man-power, both in the rural and suburban communities. Particular attention needs to be taken to the expanded role of the nurse in the emergency department, especially in those areas of the country so distant from physicians and comprehensive hospitals. There has been some indirect progress made through research from 7, 8 and 9 monies, however, much work still needs to be done. Similarly, research could aid in finding more appropriate solutions to assuring ourselves as to the objective competency of all health care personnel involved in emergency medical services. Are we being effective? Are we making an impact? Our association will implement a certifying examination, which in conjunction with our continuing education curriculum will assure emergency nurse competency. Our first exam will be given in the spring of 1980, which will also mark the tenth anniversary of the Emergency Department Nurses Association. We hope that research efforts will be available to demonstrate the effect of these measures on improved patient care. There is still the need for establishing an EMS data base, particularly with regards to professional man-power involved and their relationship to patient care. Timely and accurate data would provide a great instrument for assessing the flow of emergency patient care, the effectiveness of the care rendered and the modifications necessary to improve the system. We need to assess the effectiveness of our care on the mortality and morbidity of all emergency patients. Members of the Emergency Department Nurses Association would be pleased and would welcome a collaborative effort with the American College of Emergency Physicians and the University Association of Emergency

Medical Services to establish and maintain such a data base if research funding becomes available.

Mr. Chairman, we are pleased to see that you did not choose to end the program overnight. However, a three year slow death of the EMS program could not serve the purpose that the EMS Act of 1973 had in mind. We urge you to continue the funding of emergency medical services programs for a period of at least 5 years, and we ask that this be done with a budget of no less than $50 million per year, so that we can finish the task at hand that you have placed upon us.

In conclusion, we ask that this Committee recognize the significance of upgrading emergency medical services in the communities, but especially that of upgrading emergency nursing skills and the effect which this upgrading has on the overall system. We urge the Committee to instruct the appropriate agencies to exert substantial efforts during the continuation of Emergency Medical Services systems Act to fund emergency nurse education programs at the community level, particularly where the continuing education curriculum is utilized by personnel trained in its application. Our association's primary responsibility as a professional nursing association is to provide optimum, competent emergency care to patients in emergency departments throughout. We do this by promoting, assisting and developing the competency of our member emergency nurses. Competent nurses, physicians and pre-hospital technicians working together provide the unique emergency medical services which is the pivotal point of a successful emergency medical service.

Thank you, Mr. Chairman, for the honor and priviledge of being invited to speak to you and your colleagues. For your information, the Emergency Department Nurses Association is submitting more detailed material with its formal statement. Attached to this testimony you will find several position papers dealing with the subject of emergency medical services, which will provide detailed elaboration as to our committment to improving emergency medical services throughout the United States.

Senator CRANSTON. Thank you very much. We are delighted to have your testimony.

Ms. PRADO. Thank you.

Mr. HARRIS. My name is Jeffrey Harris, and I am the executive director for the National Association of Emergency Medical Technicians. I am also a volunteer emergency medical technician in Massachusetts.

The Carter administration, in the fiscal year 1980 budget, stated that the EMS program has worked successfully in 294 of 300 regions and will begin an orderly phaseout in 1980. The administration's approach to phasing out the EMS program will result in only 75 regions having completed advanced life support; an additional 176 regions, or 59 percent, completing basic life support. The remaining 49 regions—and might I add, a significant portion of rural America—will not participate at all or will not progress beyond the planning stage.

This approach is inconsistent with the 93d Congress original intent to provide improved emergency medical services systems for all citizens with emergency conditions across the country. This is also inconsistent with good program management, as there has been no overall or comprehensive evaluation of the effectiveness of this program, nor is there any analysis or projection of the capability of States and local communities to continue their EMS programs at this premature time.

The EMS program, in several earlier planning documents, has taken a consistent position that with adequate funding of the national program, 300 comprehensive EMS regions could be completed by 1985–86.

The National Association of EMT's has projected that if the EMS program was funded for $50 million each year through 1985, most, if not all, EMS regions, approximately 85 percent, could be funded through advanced life support. It is further projected that another 10 percent of the regions could be funded through basic life support, leaving only 5 percent as either nonparticipating or limited to the planning phase.

The NAEMT takes the position that the Congress should consider a 6-year extension of the EMSS Act at $50 million per year to complete the national EMS program to the full intent of the law and maintain EMS as a national health priority.

The NAEMT also supports the addition of two important initiatives of trauma and poisoning to the proposed EMS legislation extension. These initiatives should include: one, the development of centers of excellence for trauma, and, two, the development of a national program of regional poison information and control centers.

Trauma is still the leading killer of children, young adults, and the third leading killer of all Americans. There are more than 100,000 trauma deaths and 11 million citizens are disabled each year, 400,000 permanently. Trauma costs more than $60 billion each year. Regional trauma systems have demonstrated decreases in mortality rates up to 50 percent. The spinal cord injury program in Chicago reports that 68 percent of their patients return to active, productive lives and have shorter hospital stays because of the rapid patient transportation and evacuation system available

there. This shortened hospital stay provides a cost saving of $3 million for the center and $37 million projected nationally.

Trauma is a complex disease, and comprehensive trauma systems are major undertakings for regional communities and involve an extremely wide spectrum of health and public safety providers. I might also add that we have identified 23 separate Federal programs involving trauma, expenditure for trauma, and those are not coordinated centrally. Unlike cancer and heart disease where further progress now depends on fundamental research into their causes, advances in trauma require no great new discovery, but only the organization of all community medical care agencies into a system for emergency health care delivery.

Trauma centers of excellence are crucial at this time, as the Nation continues to embark upon the development of comprehensive regional trauma care systems. Major policy decisions will need to be made for national program direction to establish expectations, projections of social impact, care costs, reimbursements, and prevention of trauma. The NAEMT supports the development of a national program of trauma centers of excellence, and proposes that as part of the EMSS Act extension, and encourages the authorization of $10 million each year for the next 3 years.

Each year, there are an estimated 10 million poisonings in this country. This number is continually increasing as new drugs and household and industrial products present a growing hazard to our citizens.

Poisonings are the fifth most frequent cause of accidental death; 85 percent of all cases involve children, making poisonings the most frequent pediatric emergency. The remaining 15 percent are very serious intentional or industrial adult poisonings, and result in over 5,000 deaths per year.

Regional poison centers, properly organized into a system of care, providing consumer access and information about accidental ingestion of drugs and other potential hazardous agents and their prevention, can reduce mortality and morbidity. Currently operating regional poison centers are showing that 85 percent of all poisonings can be managed effectively at home, over the telephone, and thereby prevent inappropriate utilization of very expensive emergency department and hospital health care resources. It should be noted that in San Diego County, which has had an experience of almost 4 years, I believe, there has been a 40-percent decrease in the number of emergency department visits for poisoning.

The operational cost for a regional poison control center is approximately $250,000 per year. These costs when averaged across the community are negligible—in Massachusetts, the new poison center is averaging $4 per call, by the way—especially when compared to the health care savings made possible by home intervention early in the phase of the poisoning.

The NAEMT supports the development of a national program of regional poison centers and proposes this as part of the EMS Act extension, and encourages the authorization of $5 million, $10 million, and $15 million, respectively, over the next 3 years to support the development of 60 to 70 regional poison centers.

Finally, the need to continue strong support for emergency medical training of physicians, nurses, and emergency medical techni-

cians must be emphasized. Based on Department of Labor projections, there will be a need for at least 100,000 EMT's and EMT paramedics to be trained by 1990.

It should be noted that of the current 270,000 EMT's and EMT paramedics, 60 percent are citizens who volunteer their time, both for training and patient care delivery. The national association has estimated that the yearly dollar value of these citizens volunteering their time is $243 million. Over 6 years, that is $1,458,000. A request of $10 million each year for 6 years to support this major health commitment by citizens of the country can certainly be said to be cost-effective.

In these times of cost containment, budgetary reductions and balancing, the EMS program provides the opportunity to show leadership for the general health care delivery system by its clearly defined goals in accomplishing the prescribed tasks as intended with a scheduled completion of the program in an orderly manner.

The extension of the EMS program can provide a model for other categorical health programs from startup to completion, with continuation by State and local authorities after a period of Federal funding. The administration wants to phase out the EMS program. The voters and Congress fully understand and endorse reduction of public expenditures.

Extension of the EMS program, as proposed by NAEMT, will establish a well-managed completion and cost effective phaseout of the program in timely fashion by 1985.

Thank you for the opportunity to speak on behalf of the association, Senator.

[The prepared statement of Mr. Harris follows:]

Testimony presented by
Jeffrey S. Harris, REMTA,
NAEMT Executive Director,
regarding continuation of
the 1976 Emergency Medical
Services Act.

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The Carter Administration, in the F.Y. 1980 Budget, stated that the EMS Program has worked successfully in 294 of its 300 regions and will begin an orderly phase-out in 1980. The Program will be closed out in 1982 under this plan. The President's budget proposes $39.6 million for EMS systems in 1980; further reductions will take place in 1981 and 1982.*

The Administration's approach to phasing out of the EMS program will result in 75 regions (25%) having completed advanced life support; an additional 176 regions (59%) completing basic life support. The remaining 49 regions (16%) will not participate at all or will not progress beyond the planning stage.

This approach is inconsistent with the 93rd Congress' original intent to provide improved emergency medical services systems for all citizens with emergency conditions across the country. This is also inconsistent with good program management as there has been to date no overall or comprehensive evaluation of the effectiveness of this "excellent" program nor is there any analysis or projection of the capability of states and local communities to continue their EMS programs at this premature time.

The EMS program in several earlier planning documents has taken a consistent position that with adequate funding of the National Program, 300 comprehensive EMS regions could be completed by 1985-1986.

The National Association of Emergency Medical Technicians (NAEMT) has projected that if the EMS program was funded for $50 million each year through 1985, most, if not all, EMS regions (85%) could be funded through advanced life support. It is further projected that another 10% of the regions could be funded through basic life support and leave only 5% as either non-participants or limited to the planning phase.

The NAEMT takes the position that the Congress should consider a six year extension of the EMSS Act at $50 million per year to complete the National EMS Program to the full intent of the law and maintain EMS as a national health priority. A six year program would provide the authorization to the Administration to carry out the intent of Congress and would continue the momentum so that states and local communities could proceed in the expeditious implementation of effective EMS systems without further delay.

The NAEMT also supports the addition of two important initiatives of Trauma and Poisoning to the proposed EMS legislative extension. These initiatives should include: (1) the development of Centers of Excellence for Trauma, and (2) the development of a national program of Regional Poison Information and Control Centers. Early experience with regional EMS projects have shown that in these two important areas, lives can be saved by systems of improved patient access and expert care. Also, health care costs can be controlled when a systems approach is used for these conditions.

Trauma is still the leading killer of children, young adults, and the third leading killer of all Americans. There are more than 100,000 trauma deaths and 11 million citizens are disabled each year; 400,000 permanently. Trauma costs more than $60 billion each year. Regional trauma systems have demonstrated decreases in mortality rates up to 50%. The spinal cord injury program in Chicago reports that 68% of their patients return to active, productive lives and have shorter hospital stays because of the rapid patient transportation and evacuation system available there. This shortened hospital stay provides a cost saving of 3 million dollars for this Center and 37 million dollar savings if projected nationally. The American Trauma Society estimates that 20,000-40,000 lives can be saved each year, and annual savings could amount to hundreds of millions of dollars in medical costs, insurance and long-term care.

Trauma is a complex disease and comprehensive trauma systems are major undertakings for regional communities and involve an extremely wide spectrum of health and public safety providers. Unlike cancer and heart disease where further progress now depends on fundamental research into their causes, advances in trauma require no great new discovery, only the organization of all community medical care agencies into a system for emergency health care delivery. As much of the basic system is already in place, there is now an obvious need for the development of Trauma Centers of Excellence. These centers of excellence would be

situated in major medical communities where complexes of advanced critical patient care exists. They would be the centers of training for trauma professionals and paraprofessionals. These centers would study in depth their surrounding and developing regional trauma systems resultant impact on patient care, survival, rehabilitation, and costs. They would do clinical research, conduct epidemiology studies and public education in order to improve existing systems and provide insights into accident prevention. These centers of excellence are crucial at this time as the nation continues to embark upon the development of comprehensive regional trauma care systems. Major policy decisions will need to be made for national program direction to establish expectations, and projections of the societal impact, care costs, reimbursements and prevention of trauma. The NAEMT supports the development of a national program of Trauma Centers of Excellence and proposes this as part of the EMSS Act extension and encourages the authorization of $10 million each year for the next three years.

Each year there is an estimated 10 million poisonings in this country. This number is continually increasing as new drugs and household and industrial products present a growing hazard to our citizens.

Poisonings are the fifth most frequent cause of accidental death. Eighty-five percent of all cases involve children making poisonings the most frequent pediatric emergency; the remaining 15% are very serious intentional or industrial adult poisonings and result in over 5,000 deaths per year.

Regional Poison Centers, properly organized into a system of care, can reduce mortality and morbidity. Regional centers service large populations (2-4 million) and provide consumer access and information about accidental ingestions of drugs and other potential hazardous agents and their prevention. Major regional poison control centers receive up to 40-60 thousand consumer inquiries per year. Of these poison calls, 85% are managed effectively at home, over the telephone and thereby preventing inappropriate utilization of very expensive emergency department and hospital health care resources. These centers provide consultation for all physicians and other emergency medical personnel in the region so that they can provide expert care appropriate to the patient. Regional centers have developed data bases from which public education, professional training and accident prevention programs are developed.

The operational cost for a regional poison control center is approximately $250,000 per year. These costs when averaged across the community are negliable - especially when compared to the health care savings made possible by home intervention, early in the phase of poisonings.

The major regional poison centers are returning to the community these savings at a rate far above their operational costs. A national plan calls for some 60-70 Regional Poison Information and Control Centers in order to provide optimal poison care for the nation.

The NAEMT supports the development of a national program of regional poison centers and proposes this as part of the EMSS Act extension and encourages the authorization of $5 million, $10 million, and $15 million respectively over the next three years to support the development of regional poison centers. It also proposes that toxic poisonings be made a national health priority and that a nationwide epidemiologic data base with programs of public education, professional training with research on hazardous product identification be initiated. This request must also coordinate all of the many Federal programs already involved in some aspect of poison information and control.

Finally, the need to continue strong support for emergency medical training of physicians, nurses, and Emergency Medical Technicians must be emphasized. Based on Department of Labor projections, there will be a need for atleast 100,000 EMTs and EMT-Paramedics to be trained by 1990. It should be noted that of the current 270,000 EMTs and EMT-Paramedics, 60% are citizens who volunteer their time, both for training and patient care delivery. The NAEMT has estimated that the yearly dollar value of these EMTs voluntary service to the nation is approximately $243,000,000. (10 hours per week x 50 weeks x $3.00 per hour x 162,000 volunteers); or $1,458,000,000 over a 6 year period. A request of $10,000,000 each year for 6 years to support this major health commitment by citizens of this country can certainly be said to be cost effective.

In these times of cost containment, budgetary reductions and balancing, the EMS program provides the opportunity to show leadership to the general health care delivery system by its clearly defined goals and accomplishing the prescribed tasks as intended with a scheduled completion of the program in an orderly manner. The extension of the EMS program can provide a model for other categorical health programs, from startup to completion with continuation by states and local authorities after a period of Federal funding. The Administration wants to phase-out the EMS program. The voters and the Congress fully understand and endorse reduction of public expenditure. Extention of the EMS Program as proposed by the NAEMT will establish a well managed completion and cost-effective phase-out in a timely fashion by 1985.

Senator CRANSTON. Thank you very much.

Dr. CAYTEN. Senator Cranston, Senator Schweiker, staff, and colleagues, I am Dr. Gene Cayten. I am very pleased to have the opportunity to share with you some thoughts regarding emergency health services research, as supported by section 1205 of the amendments to the EMS Systems Act.

I direct the Center for the Study of Emergency Health Services at the University of Pennsylvania, where I am also an assistant professor of surgery and health care systems. I encourage you to support $5 million per year for 3 years for emergency health services research.

There are two compelling reasons why this is more important than ever before. No. 1, dollars spent in emergency medical services research have great potential to help control rising health care costs. No. 2, dollars spent in emergency medical services can have a significant and visible effect in preventing death and in enhancing the quality of patient life following emergency events.

I also suggest two areas of emphasis which should enhance progress toward cost control and increased patient survival. One, that there be increased support for trauma-related health services research, as well as support of the American Trauma Society's proposal for the development of centers of excellence for trauma and poisoning.

No. 2, that the National Center for Health Services Research recruit to its study sections those with backgrounds in applied emergency health services systems research.

Dollars spent in emergency medical services research will have a large payoff in terms of controlling health care costs for three reasons. One, because of the phaseout of Federal EMS system programs being forecast and local tax dollars becoming harder to get, State and local EMS system managers are in desperate need of methods and results to plan cost-effective systems.

Two, because the emergency department is both the locus for so much of the ambulatory care and the route to hospital admission for such a large proportion of patients, the appropriateness of care in this setting can have a great impact on the overall cost of medical care.

Three, the research in emergency health services systems has applications to many other aspects of the health care system. Dollars spent in EMS research can have a significant and visible effect in preventing death and enhancing the quality of patient lives following emergency events for two reasons.

One, the biomedical knowledge already exists to save the lives of many patients following heart attacks and accidents. Two, with relatively small dollar allocations, emergency medical services research has had a great yield in terms of potential lives saved and compares favorably with billions of dollars spent in cancer research.

Though much of the research to date has been related to cardiac disease, the potential value of research in trauma care systems may be even greater, since trauma victims tend to be considerably younger and would therefore have many productive taxpaying years ahead, were they to survive.

Research that would show ways to minimize trauma patient complications yielding even a 2- or 3-day shorter length of hospital stay per patient could save millions of dollars, since one out of every eight hospital beds is occupied by a trauma victim.

Please reflect on the significance of the two following examples of EMS systems research. Using 1205 research funds, Pozen developed a computer-assisted decisionmaking model which cut the overadmission rate to coronary intensive care units from 57 percent to 37 percent, while keeping the rate of those not admitted who should have been at the 2-percent level.

Considering the cost of hospital days and specialized care units and the prevalence of acute heart disease, the potential savings of this research is enormous.

Another example: Cobb, in a study supported by section 1205 research, showed that with the availability of quality cardiac life support in the field, approximately 40 percent of patients with deadly heart rhythms were resuscitated and ultimately discharged from the hospital where the resuscitation was initiated by a bystander.

This program utilizing the public therefore can save both lives and reduce costs. Thus, in a relatively few years, emergency health services research has demonstrated results with major lifesaving potential. At the same time, it has yielded methods to sustain quality care while significantly cutting costs.

I urge your increased support of this work. I would like the opportunity to submit further documentation of the value of this program. Thank you for the opportunity to present this.

[The prepared statement of Dr. Cayten follows:]

Emergency Health Services Research

Testimony to the Senate Subcommittee on Health and Scientific Affairs

C. Gene Cayten, M.D., M.P.H.
Director
Center for the Study of Emergency Health Services

Leonard Davis Institute
University of Pennsylvania

February 28, 1979

I am pleased to have the opportunity to share with you some thoughts regarding emergency health services research as supported under Section 1205 of the Amendments to the EMS Systems Act. I direct the Center for the Study of Emergency Health Services at the University of Pennsylvania, the only Center of its kind in the country. Besides our research work we have had extensive experience in technical assistance to state, regional, and local EMS systems as well as in the development of educational and training programs for many levels of EMS personnel.

I encourage you to support 5 million dollars per year for three years for emergency health services research. There are two compelling reasons why this is more important now than ever before.

1. Dollars spent in EMS research have a great potential to help control rising health care costs.
2. Dollars spent in EMS research can have a significant and visible effect in preventing death and enhancing the quality of patient life following emergency events.

I also suggest two areas of emphasis which should enhance progress toward cost control and increased patient survival.

1. That there be increased support of trauma-related health services research as well as support of the American Trauma Society's proposal for the development of Centers of Excellence for trauma and poisoning.
2. That the National Center for Health Services Research recruit to its study sections those with backgrounds in applied emergency health services system research.

REASONS FOR SUPPORTING EMERGENCY HEALTH SERVICES RESEARCH

Cost Control Potential

Dollars spent in EMS research will have a large pay-off in terms of controlling health care costs for three reasons.

1. Because the termination of the Federal EMS Systems program is being forecast, state and local system managers are in desperate need of methods and results to plan cost-effective systems. The combination of lack of federal funds and local tax revolt trends mean that objective decision making tools are needed now more than ever before. Regional programs will no longer be required to comply with the fifteen points of the EMS Systems Act. Managers will be more interested than previously in evaluating each aspect of their programs.

   In Philadelphia we have designed a randomized controlled study, the strongest of experimental designs, on the effect of using an expensive communication technique called telemetry because the City wants to know its precise effect on lives saved and on costs. In the the State of Washington, Emergency Medical Technicians (EMT's) with only 10 additional hours of training in defibrillation are being compared to EMT-Paramedics with hundreds of hours of training and higher salaries in their ability to save lives of patients with ventricular fibrillation. This study by Bergner may have great

implications regarding the costs of setting up advanced life support programs in rural areas. Myrick has also been studying the development of programs that can minimize the cost of emergency health services in rural areas.

State and local EMS system managers will also require methods to evaluate their programs. The development of methods for evaluation are a major component of the National Center for Health Services Research's efforts.

Frazier and Cannon developed a method for measuring the extent to which EMT's actually carry out the diagnostic and treatment tasks for which they were trained. Wolf and Shuman have developed a method which utilizes computerized clinical algorithms to assess paramedic performance.

2. Because the Emergency Department is both the locus for so much of the ambulatory care and the route to hospital admission for such a large proportion of patients, the appropriateness of care in this setting can have a great impact on the overall cost of medical care. For example, in the United States there has been a greater than 50 percent overadmission rate to hospital coronary care units. Using 1205 research funds Pozen developed a

computer decision making model which cut the overadmission rate from 57 percent to 34 percent while keeping the rate of those not admitted who should have been at the 2 percent level. Considering the cost of hospital days in a specialized care unit and the prevalance of acute heart disease the potential cost savings of this research are enormous.

Frazier has found at a major university medical center that 80 percent of the x-rays looking for fractures of long bones are negative. This research, supported by Section 1205, has developed a computer-assisted technique to decrease the false positive rate to 40 percent without missing fractures. As a result of this research the potential savings to that one hospital is $440,000. Other studies are underway to examine the use of skull x-rays to evaluate head injuries; currently such x-rays are 99 percent negative.

3. The research in Emergency Health Services systems has application to many other aspects of the health care system; but because of the evaluation climate engendered by Division of EMS and by the fact that these systems are just being put together, the opportunities and receptivity of EMS research is greater.

Though considered by some to be a categorical program the EMS system program is in fact comprehensive. It

does not address a single disease entity but involves the development of a system of care that integrates citizens, public safety personnel,and many levels of health care providers into a coherent attack on sudden illnesses of all types. As these systems are being built, there is an opportunity to research issues of manpower, training, quality control, regional allocation of resources. All of these are generically important to rationale health care system design.

Examples of such research supported by NCHSR are as follows:
Anwar is doing the first prospective sociological study of the new medical specialty, emergency medicine. Maatsch is developing the first research-based medical specialty exam, and evaluating it empirically against physician performance in real health care delivery situations. Such an approach will have direct benefits in improving and assuring the quality of emergency medical care and will be useful in terms of the design of licensing examinations and specialty certification as well as recertification for other medical specialties.

We have reported on extensive tests of abstractor intra- and interobserver reliability levels in gathering clinical data for EMS system evaluation. This 1205 research

as well as similar work done by Linn has important implications regarding methods of medical audit utilized by PSROs in their quality assurance efforts.

Gibson is studying the development of professional criteria for the regionalization of EMS systems.

Life Saving Potential

Dollars spent in EMS research can have a significant and visible effect on preventing death and enhancing the quality of patients' lives following emergency events for two reasons.

1. The biomedical knowledge already exists to save many more lives of patients following heart attacks and accidents. The deaths of such patients are among the leading causes of deaths. The research required is how to organize and deliver the medical services.
2. With relatively small amounts of dollars into emergency medical services research the yield in terms of potential lives saved is already great. This life saving potential of EMS system research though relatively small expenditures should be considered in relationship to billions of dollars spent in cancer research.

The specific factors that can result in the survival of patients suffering from lethal heart rhythms because of heart attacks are being defined and quantitated to save lives.

Cobb in a study supported by Section 1205 showed that with the availability of quality advanced life support in the field approximately 40 percent of patients found in ventricular fibrillation are resuscitated, brought to the hospital and ultimately discharged when resuscitation is initiated by a bystander.

Bergner found that the time from collapse to initiation of CPR is significantly associated with outcome. If CPR is initiated within four minutes of collapse, 39 percent of patients were admitted and 26 percent discharged. However, if CPR was not initiated within four minutes, only 21 percent were admitted and 7 percent discharged.

Bergner also found that for patients with ventricular fibrillation for whom the time to definitive, prehospital care was less than 6 minutes, 73 percent of the patients were admitted and 58 percent were discharged alive. On the other hand, if the time for definitive care was 14 minutes or more only 10 percent were admitted and no patients were discharged.

In another study we are trying to determine whether the use of clinical algorithms (decision trees) can enhance advanced life support care even further.

AREAS OF NEW EMPHASIS

Health Service Research and Centers of Excellence for Trauma

Increasing the support for trauma-related health services research as well as the support of "Centers of Excellence" for trauma will also enhance progress toward medical care cost control and increased patient survival. Though much significant health services research to date has been related to cardiac disease, the potential value of research into trauma care systems may be even greater since trauma victims tend to be considerably younger and would therefore have many productive tax-paying years ahead were they to survive. Research that would show ways to minimize trauma patient complications yielding even a two or three day shorter length of hospital stay per patient could save millions of dollars since one out of every eight hospital beds is occupied by a trauma victim. That is more than beds than are required for all births and all cardiac patients and four times the number needed for all cancer patients.

The development of Centers of Excellence for trauma to thwart the ongoing epidemic of accident death is vitally necessary. Research into aspects of these trauma systems will have important implications for the regionalization of other types of specialized medical treatment. The American College of Surgeons Committee on Trauma has developed and is now revising optimal standards for regional trauma centers. Studies need to be done on the effect of such centers on trauma patient survival and the costs of care rendered to such patients.

As has been done through some of the NCHSR grants relating to cardiac care, the effects of the various trauma care systems components need to be isolated and studies performed to determine which factors are the most critical in saving lives. For example, many of the most severely injured patients can be resuscitated only on the operating room table. Consequently, the trade-off between time spent in immediate resuscitation efforts must be carefully investigated.

Trauma systems studies would have particular relevance to rural areas where sixty percent of the trauma deaths occur.

EMS System Research Participation on National Center for Health Services Research Study Sections

The National Center for Health Services Research has improved in its support of more applied research since its early efforts but it would benefit from greater participation of those doing emergency health services system research. Only three of the present study section members have done any research relating to emergency health services and none of them have worked in studying system interventions. There are no surgeons on the study sections to provide input on proposed trauma systems research.

The NCHSR proposal review mechanism has the best potential for assuring that studies supported are sound research such that the research results could not have occurred by chance and can be generalized from. However, further steps are necessary to assure that the types of studies supported are relevant and significant to EMS systems development.

The NCHSR could improve its output of applied emergency health service system research by recruiting study section members with emergency health services systems research background. This will enable the study sections to discuss the areas of most critically needed research and to solicit proposals to address them.

Senator CRANSTON. Thank you very, very much.

Mr. Shern, I want to welcome you; we appreciate your traveling such a distance.

Mr. SHERN. Thank you, Senator Cranston. I am James H. Shern, fire chief of the city of Pasadena, Calif., and president of the International Association of Fire Chiefs. Mr. Chairman, I have some prepared remarks which have been submitted, and so I will not bother to read those to you. I would rather like to spend a few minutes offering some observations and some amendments to what I have said.

The fire services of this Nation have been in the emergency medical systems field for many years. In fact, if the citizens of the country consider for emergency medical services that which is delivered to them in their homes, on the streets, and where they may be stricken by various kinds of episodes, that is delivered presently basically by the fire services of this country.

I am concerned that in the programs that we are discussing, much of what is being done is not addressing that which the people think should be addressed; that is, how are they picked up and transported to the centers for definitive medical care.

The delivery systems for emergency medical care are in place. They are in place in the fire stations throughout this Nation. They are distributed in such a manner that they follow the same patterns as the patterns for fire. It is easy to see in any developed area in this country that the demands for emergency medical care follow the same demands for fire, and that the manpower, the communication, the housing, and all of that, is in place.

What is needed is to address the training and expertise of the men who have been there for many years delivering these services. I think we should address the fact that in this particular era of financial restraints, there should be a very close look at utilizing existing services to deliver the out-of-hospital medical care.

I think the out-of-hospital medical care is really the area that people think should be addressed here. In line with that, it seems reasonable, and I would suggest to the committee, that they consider the efforts that the U.S. Fire Administration can input into this system, since they are presently charged with the training and education of the firefighters of this Nation; they already are interfaced with the communications network to provide this kind of care. They are closely tied in with burns and burn injuries; they are part of a new, integrated Federal emergency management system which has as part of its demands the delivery of emergency services, whether it be for flood, fire, earthquake, or whatever. These emergencies always call upon, in some manner, the need for the delivery of emergency medicine.

So I say that much of the idea of phasing out the program is impossible. You can no more phase out emergency medicine than you can phase out fire and police departments. What can be done, if we are not careful, is to phase out the quality, to phase the quality down from where it is to a much lower level.

We could indeed return to the era of Band-Aids, the era of where we pick up people and transport them to the hospital in cars and wagons, and whatnot. But I do not believe that that is the implication of the committee, nor the belief of the administration, nor of anyone who is concerned with emergency medicine.

I think that to think in terms of trying to reduce the level of the program may more properly be regarded as changing the emphasis, and so I would ask the committee to request of the U.S. Fire Administration to submit to you some proposals and some concepts on the interrelationships of the fire community to the delivery of emergency medicine in this country, to explain to you the present level of involvement and to give you some idea of the facilities that are now in place that are available to citizens for use.

If you consider that the bulk of the paramedic delivery now is in the hands of the fire department and that the training is in those hands, I would say to you that the emergency medical system in this country will continue to go only at a reduced level if the funding for the support of the programs is reduced.

Mr. Chairman, that would be the end of my remarks and I would, of course, respond to any questions you might have.

Senator CRANSTON. Thank you very, very much.

[The prepared statement of Mr. Shern follows:]

TESTIMONY BY

CHIEF JAMES H. SHERN, PRESIDENT

INTERNATIONAL ASSOCIATION OF FIRE CHIEFS

BEFORE THE

SENATE HUMAN RESOURCES SUBCOMMITTEE ON HEALTH

FEBRUARY 28, 1979

MR. CHAIRMAN:

MY NAME IS JAMES H. SHERN, FIRE CHIEF FOR THE CITY OF PASADENA, CALIFORNIA AND PRESIDENT OF THE INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. OUR ASSOCIATION WAS ORGANIZED IN 1873 AND IS DEDICATED TO THE ADVANCEMENT OF THE NATIONS FIRE AND RESCUE SERVICES. I AM PLEASED TO APPEAR BEFORE YOU TODAY REPRESENTING THE NATIONS FIRE CHIEFS AND THEIR INTEREST IN EMERGENCY MEDICAL SERVICES.

THE INTERNATIONAL ASSOCIATION OF FIRE CHIEFS STRONGLY SUPPORTS THE EMERGENCY MEDICAL SERVICES SYSTEM DEVELOPED BY THE DEPARTMENT OF HEALTH, EDUCATION AND WELFARE. WE ARE CONCERNED THAT THE STATED GOAL OF 304 SYSTEMS HAS NOT BEEN REACHED. WE WOULD URGE THIS COMMITTEE TO PROVIDE AN AUTHORIZATION OF SUFFICIENT FUNDING AND DURATION TO ENABLE ALL CITIZENS TO RECEIVE THE BENEFITS OF QUALITY EMERGENCY MEDICAL SERVICES.

THE SUPPORT OF THE FIRE CHIEFS ASSOCIATION FOR EMS IS BASED IN PART ON THE IMPACT THAT SUCCESSFUL PROGRAMS HAVE MADE ON MORBIDITY AND MORTALITY. FOR EXAMPLE, MEDIC ONE, SEATTLE'S HIGHLY SUCCESSFUL MOBILE INTENSIVE CORONARY CARE CONCEPT HAS SAVED THE LIVES OF 804 "CLINICALLY DEAD" LOCAL RESIDENTS IN ITS FIRST SEVEN YEARS OF OPERATION, ACCORDING TO FIGURES RELEASED OCTOBER 21, 1977, BY HARBORVIEW MEDICAL CENTER.

THE PHOENIX FIRE DEPARTMENT HAS EXPERIENCED EMT DISPATCHERS THAT PROVIDE LIFE-SAVING ADVICE OVER THE TELEPHONE AT LEAST FIFTY TIMES

ENERY MONTH.

THE NATION'S FIRE SERVICES HAVE BEEN PROVIDING FIRST AID AND PRE-HOSPITAL EMERGENCY CARE SERVICE TO THE SICK AND INJURED FOR MANY YEARS. RECENT NATIONAL AWARENESS OF THE NEED TO UPGRADE THE EMERGENCY MEDICAL SERVICES OF THE NATION HAS PUT NEW AND ADDITIONAL EMPHASIS ON THIS PRE-HOSPITAL EMERGENCY CARE AND TRANSPORTATION. FIRE CHIEFS ARE RESPONSIVE TO THIS AWARENESS AND THE NATIONAL GOALS FOR IMPROVING THE PRE-HOSPITAL EMERGENCY CARE AND TRANSPORTATION COMPONENT OF THE EMERGENCY MEDICAL SERVICES SYSTEM. WE BELIEVE THAT EMT AND PARAMEDIC SERVICES ARE VITAL TO THE NATION'S HEALTH AND SAFETY, AND OPTIMAL PERFORMANCE OF THESE SERVICES AS REQUIRED BY THE NATIONAL STANDARDS IS A REALISTIC AND ATTAINABLE GOAL.

THE IMPLEMENTATION TO EMS PROGRAMS BY FIRE DEPARTMENTS IS EXPECTED TO TAKE VARIOUS FORMS. SOME FIRE DEPARTMENTS WILL ASSUME A MAJOR ROLE IN PROVIDING EMERGENCY CARE AND TRANSPORTATION TO THE SICK AND INJURED, INCLUDING BASIC LIFE SUPPORT (EMT) BY ALL UNITS OF THE DEPARTMENT, ADVANCED LIFE SUPPORT (PARAMEDICS) BY SPECIAL UNITS, CPR TRAINING AND BLOOD PRESSURE SCREENING FOR CITY RESIDENTS, FIRST AID CENTERS AT ALL FIRE STATIONS, AND EMT-TRAINED DISPATCHERS TO PROVIDE BASIC LIFESAVING INSTRUCTIONS FOR CALLERS TO APPLY WHILE AWAITING THE ARRIVAL OF TRAINED FIRE FIGHTER/EMTS. OTHER DEPARTMENTS WILL CONCINUE TO PROVIDE THE TRADITIONAL EMERGENCY MEDICAL SERVICE REQUIRED AT EMERGENCY SCENES, SUCH AS FIRES, BUILDING COLLAPSES, AIRCRAFT, TRAFFIC, AND TRAIN ACCIDENTS, EXPLOSIONS, FLOODS, AND OTHER MAN-MADE OR NATURAL DISASTERS.

IN ANY EVENT, FIRE DEPARTMENTS MUST KEEP THE EMERGENCY CARE AND TRANSPORTATION SKILL, KNOWLEDGE AND COMPETENCE LEVELS OF FIRE FIGHTERS IN LINE WITH THE STATE-OF-THE-ART AND THE LEVEL OF SERVICE THE GENERAL PUBLIC HAS COME TO EXPECT FROM FIRE FIGHTERS.

RECENT DEVELOPMENTS IN EMERGENCY MEDICAL SKILLS, EQUIPMENT AND ADMINISTRATION HAVE RESULTED IN DRAMATIC REDUCTIONS IN MORTALITY AND MORBIDITY. THE ASSUMPTION BY FIRE FIGHTERS OF MANY OF THE ROLES ASSOCIATED WITH THESE INNOVATIONS IS A PRINCIPAL REASON FOR THE DRAMATIC RESULTS.

MANY COMMUNITY SERVICES PROGRAMS ARE AVAILABLE WHERE FIRE FIGHTERS ARE TRAINED AS EMTS. TWENTY-THREE MILLION AMERICANS HAVE HIGH BLOOD PRESSURE. FIRE FIGHTERS TRAINED AS EMT'S CAN BE USED TO DETECT HIGH BLOOD PRESSURE IN THE COMMUNITY'S CITIZENS BY ESTABLISHING A ROUTINE BLOOD PRESSURE SCREENING PROGRAM IN THE FIRE STATION OR AT A CONVENIENT COMMUNITY LOCATION. THESE SCREENING PROGRAMS ALSO CAN BENEFIT FIRE FIGHTERS. A REGULAR PROGRAM CAN ESTABLISH BLOOD PRESSURE PROFILES FOR ALL FIRE DEPARTMENT PERSONNEL AND, PERHAPS, DETECT POTENTIAL HEART CONDITIONS OR IRREGULARITIES BEFORE THEY BECOME SERIOUS.

DISPATCHERS TRAINED AS EMTS CAN RELAY THE INFORMATION NECESSARY TO PROVIDE A VICTIM WITH BASIC MEDICAL ASSISTANCE UNITL THE FIRE DEPARTMENT ARRIVES. ONCE A CALL FOR MEDICAL ASSISTANCE HAS BEEN RECEIVED AND THE PROPER ASSIGNMENT DISPATCHED, THE EMT/DISPATCHER CAN INSTRUCT THE CALLER IN WHATEVER BASIC LIFE SUPPORT MEASURES ARE APPROPRIATE.

FIRE FIGHTERS TRAINED AS EMTS CAN BE CERTIFIED CPR INSTRUCTORS TO TRAIN THE CITIZENS OF THE COMMUNITY. THE SEATTLE, WASHINGTON FIRE DEPARTMENT HAS TRAINED 156,000 INDIVIDUALS, MORE THAN HALF THE CITY'S ADULT POPULATION, TO PERFORM CPR.

FIRE STATIONS AS FIRST AID CENTERS ARE A COMMUNITY SERVICE A FIRE DEPARTMENT WITH PROPERLY-TRAINED EMTS CAN PROVIDE. MINOR CUTS AND SCRAPES CAN BE TREATED AT THE FIRE STATION ENABLING THE AMBULANCE TO BE READY FOR CRITICAL EMERGENCIES.

THE FIRE SERVICE HAS A MAJOR ROLE IN THE INITIAL PLANNING AND IMPLEMENTATION OF AN EMS SYSTEM. THE AVAILABILITY OF MANPOWER ON A 24-HOUR PER DAY BASIS TO OPERATE CENTRALIZED COMMUNICATIONS, PROVIDE RAPID RESPONSE, EMERGENCY CARE AND TRANSPORTATION PLACES FIRE SERVICES IN A POSITION TO HAVE EXTENSIVE INPUT IN EARLY SYSTEMS DEVELOPMENT. AREAS OF INVOLVEMENT INCLUDE:

MANPOWER-SUFFICIENT PERSONNEL TO OPERATE COMMUNICATIONS AND EMERGENCY VEHICLES.

TRAINING-EMT, EMT-PARAMEDIC, EMS COMMUNICATION TRAINING.

COMMUNICATIONS-PLAN, PROCURE, INSTALL AND OPERATE EQUIPMENT AND ACT AS FCC LICENSEE.

TRANSPORTATION-DEVELOP TRANSPORTATION PLANS RELATIVE TO RESPONSE TIME AND POPULATION NEEDS; PROCURE AND OPERATE EMERGENCY VEHICLES.

PUBLIC SAFETY AGENCIES-IMPROVED COORDINATION WITH OTHER AGENCIES AND IMPROVED "FIRST ON THE SCENE" CAPABILITIES.

DISASTER LINKAGES-IMPROVED RESPONSE DURING MASS CASUALTY INCIDENTS, NATURAL DISASTERS AND SIMILAR SITUATIONS.

MUTUAL AID AGREEMENTS-INITIATE OR IMPROVE INTERDEPARTMENTAL MUTUAL AID MECHANISM FOR EMS PURPOSES.

PUBLIC INFORMATION/EDUCATION-ASSURE THAT THE PUBLIC IS AWARE OF THE PROGRAM AND PROVIDE MECHANISMS FOR PUBLIC EDUCATION AND INVOLVEMENT.

WHILE WE SUPPORT EMERGENCY MEDICAL SERVICES SYSTEMS WE HAVE ENCOUNTERED PROBLEMS. COOPERATION BETWEEN THE VARIOUS ELEMENTS OF THE SYSTEM IS ESSENTIAL.

THE PROBLEM OF A CAREER LADDER FOR PARAMEDICS IS CRITICAL. IS PARAMEDIC "BURNOUT" A PASSING PHENOMENON? WITHIN THE FIRE SERVICE WE ATTEMPT TO ROTATE PERSONNEL BETWEEN MEDIC UNITS, ENGINE AND LADDER COMPANIES. WE CANNOT MORALLY LET PEOPLE GO BECAUSE THEY HAVE BURNED OUT. THE ISSUE NEEDS TO BE STUDIED MUCH MORE THOROUGHLY.

THE NATIONAL GOAL OF 304 EMERGENCY MEDICAL SERVICE SYSTEMS, OCEAN TO OCEAN COVERAGE, IS ATTAINABLE. I URGE YOU TO KEEP EMS AS A NATIONAL PRIORITY AND PROVIDE THIS ESSENTIAL SERVICE TO ALL OF OUR CITIZENS.

MR. CHAIRMAN, I WOULD BE HAPPY TO ANSWER ANY QUESTIONS. THANK YOU.

Senator CRANSTON. Let me first turn to Dr. Podgorny and Dr. Krome. Would one of you please answer the following question? Then, if the other has an alternative thought, please express it. To what extent can continuing medical education programs which prepare physicians for a second career, such as an emergency room physician, meet the need for such physicians?

Dr. PODGORNY. Senator Cranston, only to a limited degree. The bulk of the physicians who are currently engaged in the practice of emergency medicine, like Dr. Krome here and myself, have been trained in other traditional specialities, because at the time of our training, the foresight of this committee and of the Congress was not available and such residency programs were not available.

The ideal training remains in the formal, integrated, centralized and coordinated programs, and without them, we of course do need to have continued medical education for such people, but in no way will it replace what we need, and that is to have residency training.

Senator CRANSTON. Thank you very much. Dr. Krome, do you agree with that?

Dr. KROME. I agree.

Senator CRANSTON. I have some other questions, but I will submit them to you for the record.

Ms. Prado and Mr. Harris, do you estimate that there is a continuing need for more training programs for nurses in emergency medical care?

Ms. PRADO. Do I see the need? Yes, I certainly do, and in my statement I think I mentioned to you that there has been very little done on that aspect of care, which is training the nurse.

Senator CRANSTON. Mr. Harris, let me ask you a similar question. Is there a continuing need for more training programs for emergency medical technicians?

Mr. HARRIS. Yes, I believe so. There are a number of areas where there has been no EMT training. There are some significant start-up costs, particularly as you get into advanced life support. As an example, the program in Boston, which was funded through 789 moneys, for 18 paramedics to be trained, cost almost $20,000 to get off the ground. For many communities across the country, this can be a significant amount of money and a block for getting the vitally needed training program going.

Senator CRANSTON. Has the Federal grant support been helpful in training personnel for both programs, and do you think the grant support should be extended for another 3 years? I will just ask each of you to answer yes or no to that question.

Mr. HARRIS. Yes.

Ms. PRADO. Of course.

Senator CRANSTON. Chief Shern, when I first introduced the Emergency Medical Services Systems Act in 1972, I was told that many firemen were not eager to enter the paramedic program because it did not offer assurance of advancement and promotion in the fire department. Does that problem still exist or has that changed?

Mr. SHERN. That problem did exist. It has been changing. One of the significant causes of that change is the recognition now of a

new phenomenon; that is, the phenomenon of burnout of paramedic people, of those who are assigned to that particular function.

The activity level is increasing at such a rate that we are beginning to see that the people who are involved in it are actually being burned out, and the ability to move into other parts of the department is a chance for rehabilitation. I think that is becoming more prevalent, and I think it is a necessary thing.

Senator CRANSTON. In your experience, is there good coordination between fire departments and emergency medical service systems?

Mr. SHERN. There is excellent coordination. I think that one of the areas of difficulty from the beginning was to try to delineate the various responsibilities and to coordinate the responsibilities of training and control. In most cases, that has been satisfactorily worked out.

It takes two systems: One, the system of delivery of the patient to the bricks and mortar institutions for care, and the other is the system that works upon the patient at that level. I think the two have been fairly well integrated, and I look forward to even closer cooperation.

Senator CRANSTON. Thank you. Finally, to Drs. Cayten, Podgorny, and Krome—and, again, would one of you answer and if the others have a different view, please express it—what do you see as the priority need for research in emergency medicine?

Dr. CAYTEN. I think the development of methods that would enable us to determine whether these systems are being developed in the most cost-effective way to save lives.

Senator CRANSTON. Has the research that has been supported under this authority in the past been generally useful to EMS systems?

Dr. CAYTEN. It is becoming more and more useful. One of my recommendations is to increase the number of emergency health service systems researchers on the study sections of the National Center for Health Services Research.

Senator CRANSTON. Thank you. Do you have an added comment?

Dr. PODGORNY. Yes, Mr. Chairman. I concur with Dr. Cayten. I would like also to point out to you that the research in the whole area of emergency medical care is so young in comparison with other areas of health care that it is unfair to compare the results and what we have achieved by itself; it must be in comparison to other areas.

The research is young, and it will probably take another 10 years before the result and the impact of research really will be felt.

Senator CRANSTON. Senator Schweiker?

Senator SCHWEIKER. Thank you, Mr. Chairman. I would like to begin by saying I think you all made a very persuasive case in your presentations. I am sorry we have to rush you, as Alan Cranston said. One of my problems is that I have to go to an NIH research hearing on the very budget item for heart and cardiac problems that we just talked about. But I think you are persuasive.

I have just a few brief questions. Dr. Cayten, in your testimony, there is a sentence about a technique called telemetry in Philadelphia. I just wonder if, in a nutshell, you could tell us what that is about.

Dr. CAYTEN. Telemetry enables paramedics to transmit the actual electrocardiogram to a hospital where physicians can read that interpretation. The dilemma is that there has not been research to prove that that actually saves lives. It may have applicability in some settings, and it may not be as useful in many others.

This is the type of practical study that we feel would be useful in emergency health services research.

Senator SCHWEIKER. This is a rough question, I know, but what percent of your medical teams would have telemetry today?

Dr. CAYTEN. I would have to submit that to you. I do not have that data.

Senator SCHWEIKER. Dr. Krome, you say that there are currently 48 residency training programs that are training emergency physicians. Could you give me an estimate of what percent of emergency medical residency training programs, nationally, this would represent?

Dr. KROME. There are 48 residency programs in existence.

Senator SCHWEIKER. How many residents would that represent?

Dr. KROME. At least 270.

Senator SCHWEIKER. OK. You can submit the details for the record, but what percent of the total emergency medical residencies nationally would that represent? In other words, what is being funded other than from our program here?

Dr. KROME. There is funding of some residency programs at a local level other than that funding.

Senator SCHWEIKER. Do you have any idea of the proportion of what we are doing, versus what somebody else is doing?

Dr. KROME. No; I do not.

Senator SCHWEIKER. Dr. Podgorny?

Dr. PODGORNY. To elaborate a little bit, the exact figure of the residency programs in emergency medicine that are operative today in this country is 53. Of these, 48 have gone through a portion of the review process, as has been outlined, for the purpose of the educational sections of the various HEW regulations.

Of these 48 programs, 7 programs have been funded with the specific funds that your committee had allocated and worked on in regard to the educational portion of the EMS Act. The remainder do not, to my knowledge, receive any Federal funding.

Obviously, all of them are funded through medical schools, hospitals, and the communities that they are located in, but none of them, to my knowledge, outside of the seven are funded specifically with the funds from this act.

I think that maybe in the last part of your question, you were asking about a percentage. The 52 is the total number of residencies in emergency medicine; 48 of them have been through at least a portion of the endorsement procedure. It represents, as Dr. Krome said, approximately 280 residents, totally, in training today, and 408 have been trained and are in practice currently.

Senator SCHWEIKER. Ms. Prado, you made the point that about 20 to 30 percent of the funds ought to be available for rural needs, and I just want to assure you that we will explore that in the Appropriations Committee, because I have been working on rural health care as a deficient gap in our system.

So if you have some additional statistics on that, or anything else that would support and back that up, we would sure be glad to have it for the record.

Ms. PRADO. I would be happy to do that. Thank you.

Senator SCHWEIKER. I think that is a very important point.

Also, you make a point which I think is equally valid, that many departmental nurses operate services hundreds of miles from a competent facility or a competent physician. I wonder if you could give us, for the record, some statistics on that, too. Maybe you have some figures now.

Ms. PRADO. I can give you some for the State of Florida; 35 percent of the emergency problems in the State of Florida is being handled primarily by nurses, because they are in remote areas where physicians are not available to provide the care.

They are usually between 100 and 125 miles from the facility, and these are the people that I mentioned and it is sad to think that somebody who has a heart attack in the city has a better chance of surviving than someone in the rural community.

Senator SCHWEIKER. The last question I have is directed to Mr. Harris. You make the point that 60 percent of our citizens presently volunteer their time for training and patient care delivery, which I think is a very impressive, high figure.

I assume that would be either through a fire department or emergency rescue squad kind of person who volunteers his time.

Mr. HARRIS. It is through both fire department rescue squads and volunteer ambulance squads. I believe that in your own State, Senator, the figure is somewhere around 90 percent that are volunteers.

Senator SCHWEIKER. Where?

Mr. HARRIS. In your own State.

Senator SCHWEIKER. That high?

Mr. HARRIS. Yes, sir.

Senator SCHWEIKER. I think your arithmetic, extremely conservative, is also very impressive. I think we ought to bandy those figures around a little more in terms of when you get that kind of volunteer support, what it means in terms of dollars if you are paid.

I would say that $3 an hour is very low pay, so I think you are very conservative, but I think it is a very valid point and we ought to be looking at that when we assess cost effectiveness programs. So I assure you that I will take that back to the Appropriations Committee, too.

That is all I have, Mr. Chairman. Thank you.

Senator CRANSTON. Thank you very much. I am delighted that Senator Kennedy, chairman of the Health Subcommittee, who has done such effective and dedicated work on this and many other matters, is now with us, and I turn to him.

Senator KENNEDY. Thank you. I have a statement, Mr. Chairman, that I hope would be printed in the record, and it commends your leadership in this area for such a long period of time, and expresses strong support for this program. I look forward to working with you in achieving it. I apologize to the witnesses for being late.

[The opening statement of Senator Kennedy follows:]

Opening Statement of Senator Kennedy

Senator Kennedy. The Subcommittee on Health and Scientific Research is today holding a hearing on the emergency medical services program. This program first began in 1973 when the Emergency Medical Services Systems Act became law (Public Law 93-154). As chairman of this subcommittee, I have seen this program grow and provide needed technical support to communities around the country. While recognizing the uniqueness of each community, the EMS program has made great progress in regionalizing programs and having communities work in concert with each other.

Senator Cranston has introduced legislation to reauthorize this program, S. 497. I am pleased to be a cosponsor of this legislation. It extends the program through 1982. The authorization levels are in line with past appropriations and I believe the figures to be both realistic and fair. Senator Cranston has been a long time advocate of Federal support of our emergency care network. In the 92d Congress he first introduced legislation to establish this program. In the 93d Congress this bill became public law after a protracted debate with the administration—and a Presidential veto. With Senator Cranston's leadership the Senate overrode the veto the same day by a vote of 77 to 16.

Since 1973 we have seen great strides in the emergency medical services system. There are now 304 EMS regions in the country. Two hundred and eighty-two of these regions have already received some Federal assistance. However, only 17 regions have gone through the full EMS eligibility cycle. There is need for continued Federal assistance.

In our opening day of hearings in January of 1973 we learned that there were 200,000 ambulance personnel in this country. The National Academy of Sciences stated that only 35 percent of them were qualified at a minimal acceptable level. Today there are over 295,000 ambulance attendants and over 80 percent of them have received the federally recognized training level of EMT-A (emergency medical technician-ambulance). In addition we now have 17,000 paramedics.

We further learned in 1973 that of the country's 25,000 ambulances, 20,000 were of the stationwagon type which we all know are unsuitable for tending sick people in transit. In many small towns the hearse and the funeral director also "doubled" as ambulance and attendant. Great changes have come about in 6 years. There are now 27,500 ambulances and 40 percent meet Federal specifications. Eighty percent carry equipment recommended by the American College of Surgeons. Eighty-five percent can communicate with their base station and 45 percent can communicate with the hospital. However, only 1,500 have telemetry capability. Although much has been done, there is need for continued efforts in this area.

We know how critical the time is enroute to a hospital. We also know how critical it is for the ambulance to be in communication with the hospital and how important it is for the hospital to have adequately trained personnel in its emergency room.

The National Academy of Sciences recently issued a report entitled "Emergency Medical Services at Midpassage." It makes some excellent recommendations, particularly in regard to research, that

I urge HEW to consider in its implementation of the EMS program.

I look forward to studying the testimony presented today.

I want to welcome all the witnesses. I was wondering, Mr. Harris, or any of the other members of the panel, how could we build in an evaluation of the program and its effectiveness.

I suppose the real question would be is, in the support of this program, how do we effectively evaluate its effectiveness in terms of health; one, in terms of the systems aspect, and the other in terms of sort of the technology.

I think we are faced with, generally, scarce health resource dollars, and I think we are going to have to review the whole range of different health dollars and allocations of them.

I would just be interested in your own assessment of the effectiveness of the program and what ideas you would have. Perhaps you could submit some information about how we can really go to our colleagues in support of the budget figures and in support of legislation to show that it is really making a difference in terms of the lives of people and the quality of life.

Mr. HARRIS. No. 1, with regard to evaluation, the national EMS program has been attempting, as one of its underlying philosophies, to track patients. Specifically, in Massachusetts, of the $6 million that has come into Massachusetts, approximately $400,000 has been spent to develop patient record forms which are now utilized in about half of the ambulance services.

These forms provide information on the patient care in the prehospital stage; they are then carried along and made part of the patient record in the emergency department. Hopefully, by being able to track the patients from the time that the first responder touches the patient through the release of that patient back to a productive life, we can effectively evaluate what is going on.

I might add that in Massachusetts, the effect of the program has been dramatic. To date, we have had 14,000 EMT's trained; we have 90 percent of all the ambulance services now in compliance with the State laws. However, there are still significant areas of the State that have not developed adequate emergency medical services, particularly the western part of the State. Those are my thoughts on evaluation.

Dr. CAYTEN. Senator Kennedy, I would also like to address this question. I think evaluation needs to be looked at in at least two ways. One, I think, has been done very effectively and enthusiastically by the Division of EMS under Dr. Boyd's auspices, in terms of determining whether the individual grantees under the EMS Systems Act are fulfilling their own objectives.

The other is more of research evaluation, in terms of looking at the impact of the total system. Now, in order to do this, it is very important to dissect out the subsystem components of the total system and develop research designs that will enable you to isolate these effects in terms of their impact, so that it can be assured that the results are not just due to random chance and that the results can also be generalized.

To get this kind of data and do it without bias is a very important venture and one that the National Center for Health Services Research has been making good progress on.

Dr. PODGORNY. Senator Kennedy, I think there are four basic and very important components in this kind of research. One, unlike the research in other areas of health care, research in this area is very complex, because other areas of health care are pretty well defined within the system of delivery of health and practice of the scientific aspects of medicine.

As has been mentioned in part, in the area of emergency medical care, the basic components begin not with the first responder, but with the citizen, with an individual who has suffered an injury, or the people who surround him or her at the time of the discovery. That, in itself, becomes a key element in the provision and adequate communication of emergency care, and we do not know enough about that aspect.

The second aspect that Dr. Cayten just mentioned is that we really do not have the data base, and Mr. Harris alluded to it. With all of the sophistication of recording of statistics, we do not know exactly who the people are that are involved in the trauma, why they are involved in trauma, and why some people have more problems than others.

Finally, we need time; not the time to do the research so much as the time to make comparisons. There has not been enough time. When we talk about cancer, we can reflect on 75 to 100 years of experience; we do not have this.

Finally—and maybe not totally appropriately—if we stop the funding now, we will never have an opportunity to find out.

Mr. SHERN. Senator Kennedy, I would like to add a comment that in terms of the responders who are filling the hospital beds with patients, we have found that the more you raise the public expectations of the emergency medical system, the more people there are that pour into the system.

Even though the cardiac type of incident only represents maybe 10 or 12 percent of the kinds of calls that paramedics deal with, it is the expectation that emergency medicine will do something that raises the numbers.

Also, emergency medical systems provide really the only entry into the medical system for many people who cannot otherwise get in, so this tends to load the system. I would suspect, not being a detail statistician, that we are a long way from getting a level of stability sufficient to make some definitive comparisons.

I would say that the rate of entry into the system is going to continue up for many years, until we get some stability. And I suspect the statistics may always be suspect.

Ms. PRADO. I would like to make a couple of comments specifically as they deal with research. I think we would all be very remiss—certainly, you as national leaders would be remiss—if we were to in some way recommend to local communities that they embark on a very expensive program of emergency medical services, unless we have some hard data to tell them that it really has any significant impact on mortality and morbidity.

I think we do not have enough data and we have not done enough research to find out whether the money that we have spent has really made any significant changes in bringing people back to a healthy environment, and that is very important.

The second thing that I think needs to be researched is, what is cost effective for a community; is it basic life support or advanced life support. Maybe for some communities, it would be more cost effective to have one rather than the other.

The third thing that needs to be very thoroughly researched is consumer participation and consumer education. In the city of Seattle, they did a study last year. With a very aggressive cardiopulmonary resuscitation program, their cardiac survival increased from 19 to 32 percent, just because of the tremendous involvement that the community has had in their CPR program. That is something we need to encourage throughout all the communities in the United States.

Or course, as I mentioned before, the fact that we do not have a good data base of patients is very important, which we would support wholeheartedly.

Dr. KROME. I think there are basically two critical questions. First of all, is the public participating in the EMS system that we think they want, which may not be what they want; second, what impact does that have on health care—are we improving mortality and morbidity for those patients.

The difficult part is that we are not always talking about the same kinds of patients, unless we have a commonality of definition for those patients. We are further confounded in our research in evaluation of the system because of the difficulty in reporting certain kinds of injuries and incidents to a central location, and part of that is tied up with the fact that we do not have a central location to report those incidents to. And there may be some problems with patient confidentiality in reporting in those systems.

As I am sure you are aware, there are limits to whom we can release information to concerning patients who have drug abuse and alcohol abuse problems. The confidentiality rules of those arenas have an impact on what we can report, should we happen to have a central data collection point.

Ms. Prado just pointed out the impact that Seattle's lay population has had on CPR. In this week's JAMA, there is a report that skill deterioration in that same lay public has fallen by 50 percent in 6 months. So we have to have research into the educational methodology for both the public and the professional portions of the population.

Mr. HARRIS. May I make one more comment? In regard to the CPR training for citizens, and again I will use Massachusetts as an example—because of the Federal EMS program, in the last 14 months almost 100,000 citizens have gone through the mass heartsaver program.

We have 100,000 people who have sat in a classroom for 4 hours and have learned CPR. This program was sponsored through the Heart Association, the State department of public health, and channel 5. The thing that we will never be able to grab onto in regards to evaluation is that the first half hour of that course is about prudent living—why you should not smoke and how you control your diet.

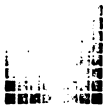
I do not know of any other program in the country that can get 100,000 citizens to sit in a classroom for 4 hours to talk about

prevention, and that is another impact that this program has which is a subtle impact.

Senator KENNEDY. Thank you very much.

Senator CRANSTON. Thank you very much. That concludes this panel's presentation. We look forward to reviewing your full testimony and to your responses to the questions I am submitting for the record.

[The information referred to follows:]



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Response to Written Questions

Presented to George Podgorny, M.D., President

AMERICAN COLLEGE OF EMERGENCY PHYSICIANS

concerning

EMERGENCY MEDICAL SERVICES AMENDMENTS OF 1979

(S. 497)

1968-1978: ACEP's FIRST DECADE OF ACHIEVEMENT

1. How many emergency department physicians do you estimate are needed to staff the projected 304 Emergency Medical Services Systems in the United States?

Our estimates show that there are approximately 20,000 emergency physicians practicing in emergency departments across this country. Many of these practice emergency medicine part-time or are fulfilling medical staff responsibilities in the emergency department. It is ACEP's position that much of the emergency medical care delivered by these physicians should be provided by full-time, residency-trained, emergency physicians.

To adequately provide this medical service in the more than 5,000 emergency departments across the country, we have calculated a manpower need of over 10,000 residency-trained emergency physicians. Though there is, and will continue to be, a place for physicians from other specialties to practice on a part-time basis in emergency departments, we believe the residency-trained emergency physicians should provide the major thrust in delivery of emergency medical care and, in addition, should serve the important leadership, training, and administrative roles in the Emergency Medical Services System.

2. How many residencies do you believe are needed to insure that these emergency departments are properly staffed with specially trained physicians?

There are currently 48 emergency medicine residencies. We estimate that 25 additional residencies are needed in the next five years if we are to reach the target of more than 10,000 residency graduates by the year 2010. We have

selected this target date since we project that at that time, most of the practice, trained emergency physicians who currently occupy most emergency departments, will have left, or will be leaving practice due to retirement.

We believe 73 residency programs will make it possible to meet future manpower needs based on current usage levels, population figures, and other health need characteristics. Of course, this assumes that these characteristics will remain status quo. This is something we cannot predict, so we use this figure understanding that it is probably a low estimate.

3. In general, has the development of Emergency Medical Services Systems in you community made a difference in the number of lives saved or disabilities reduced?

Unquestionably, it has. Besides the direct statistical improvement in mortality and morbidity, the development of Emergency Medical Services Systems has focused community and medical attention on emergency departments which has helped unite hospitals, community leaders, community physicians, and citizens in efforts to upgrade quality and reduce the debilitating effects of emergency incidents.

4. Have these systems helped you perform your duty more efficiently?

The answer is an unqualified yes. We receive ill and injured patients faster. They are receiving better pre-hospital care, and are subjected to fewer complications as a result of a improper or ill-informed handling en route to the medical care facility. There is better communication between hospitals, and there is more efficient delivery of patients to hospitals based on varying

capabilities. Telemetry, better transportation equipment, and better trained emergency medical technicians have expanded my range of effectiveness beyond the walls of the emergency department. There is no question that I am a more effective physician today than I was when this program began six years ago.

5. The legislation has always stressed the interdisciplinary training and interdisciplinary provision of Emergency Medical Services. Is this a desirable objective?

Yes. The crisis status of many patients entering the Emergency Medical Services System places a premium on smooth coordination, cooperation, and communications between the partners who are providing this medical service-especially EMTs, emergency nurses, and emergency physicians. Because in many cases action must be immediate, it is not enough that each participant understands his or her specific responsibilities. There is a constant need for unspoken communication and shared responsibilities as the emergency medical team delivers care. This approach is essential if we are going to continue to see the kind of improvement and efficiency that has been an important characteristic of the system.

6. Has the system in which you participate developed protocols for such interdisciplinary management of patients in the EMS System?

Yes. Both on the regional and local levels we have committed the procedures of pre-hospital care to standing orders and protocols. This assures proper care delivered in the field by EMTs and para-medics while being carefully supervised and controlled via radio by trained nurses and physicians. We feel that at all times the Advanced Life Support portion of pre-hospital care, or any other part thereof must be supervised by a physician.

Establishment of such protocols has created a situation that permits EMTs and emergency nurses to respond quickly and function efficiently while the emergency physician retains final control.

7. Please submit a report on the current status of Board certification and on accreditation of emergency medicine residencies?

After almost two years of detailed discussion and deliberation, the Liaison Committee on Specialty Boards (LCSB) at its meeting on February 16, approved the application for recognition of the American Board of Emergency Medicine. Formal support for ABEM was obtained from the seven largest existing specialty Boards which included the Boards of internal medicine, surgery, pediatrics, obstetrics-gynecology, family practice, neurology, and psychiatry, and otolaryngology.

On March 2, the American Medical Association's Council on Medical Education also approved this application.

The next mandated step of the approval process was acceptance by the American Board of Medical Specialties. This body met in Chicago on March 15, and reviewed the entire application and received reports from its own internal committees. All the reports recommended unanimous approval of the application. Because of a procedural rule, the final vote on the application was not taken in March. Instead a resolution was introduced stating that ABMS is strongly in favor of this new Board.

This action, in fact, recognizes ABEM as a certifying body and the twenty third formally constituted specialty Board in the United States.

The final formal vote on approval, as mentioned in the attached resolution, will be held in September.

With the formal approval of Emergency Medicine's certifying Boards in September, accreditation and endorsement of emergency medicine residencies will be passed to the American Medical Associations Liaison Council on Graduate Medical Education. This is the body which has formal responsibility for residency accreditation of all recognized specialties. During the past three years, emergency medicine residency accreditation and endorsement has been the responsibility of the Liaison Residency Endorsement Committee, a partite body sponsored by the American College of Emergency Physicians, University Association for Emergency Medicine, and the American Board of Emergency Medicine.

To date, the Committee has reviewed 73 emergency medicine residency programs and has endorsed 33 of these programs. Sixteen of these residency programs have full-endorsement; the remaining programs have been granted their first endorsement, therefore are provisionally endorsed. Fifteen additional residency programs are in various stages of application. The Committee's endorsement procedure includes a rigid application process composed of a detailed curriculum documentation and an on-site visit by two official physician reviewers. Periodically all endorsed programs are subject to a reendorsement review.

NATIONAL ASSOCIATION OF EMERGENCY MEDICAL TECHNICIANS

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ANSWERS TO QUESTIONS:

It should be noted that a "Paramedic" is an Emergency Medical Technician who has gone on to advanced life support capability. NAEMT projects that at the current EMT skill upgrading trend rate, the differences between EMT and Paramedic capabilities will be slight within 10 years.

1. Do any state laws inhibit the use of Paramedics in an Emergency Medical Services System?

To NAEMT's knowledge, there are no laws which inhibit the use of Paramedics...rather it is the lack of specific legislation in certain states which inhibit Paramedics. In other words, some states have taken the position that since there is no enabling legislation to allow Paramedics to practice, they should not. However, most states have or have pending legislation which call for Paramedic operations.

2. Are there national standards which are generally recognized?

Yes; for the training program, there now exists a National EMT-Paramedic Educational Program which has been approved by the Inter-agency Committee on EMS of the Federal Government. The Council on Allied Health Education and Accreditation has approved Essentials for conducting the educational program - attached. The National Registry has issued and conducted national examinations for the Registration of EMT-Paramedics.

b. Can Paramedics move from state to state and qualify for a comparable job?

Though national standards now exist, as with the EMT basic program, most states have opted to go with their own criteria, rules and regulations, tests, and so forth. This has made for a situation where at this time it is very difficult for state to state movement.

3. How easily are Paramedics able to find jobs?

Currently, the open market is very tight. The reason for this is that most systems have taken the option of conducting their own educational programs...and filling student slots from within the system rather then relying on personnel trained from other programs. Another problem is that many physicians " will only trust Paramedics trained within their own system"...due to the fact that the Paramedic practices under the doctors license - with most doctors not wanting to entrust

their license to "unknow" persons.

b. Are these jobs at salaries which make the job an attractive career goal?

A recent NAEMT survey shows that Paramedic salaries range from $10,500 to $22,000, with the average salary level (not counting overtime) of $12,500. Compare this to the average salary of a mechanic or janitor...and it is obvious that salary levels are not the compelling reason for a person to become a Paramedic. However, it should be noted that the trend is for salaries to dramaticly increase over the next 5 years.

4. Although the Paramedic Program is relatively young, is there any indication yet as to the proportion of Paramedics who find it a satisfying long-term career and remain in the EMS program?

Yes. Though the effect of burn-out reduces the number of years one can be on the street, many paramedics move on to administrative type positions. As an example, atleast 4 state EMS directors came-up from the ranks of EMTs and EMT-Paramedics. In a study done by Harris and McSwain, of 100 ambulance service managers questioned, a full 80% got their start as EMTs and EMT-Paramedics.

5, Has there been a tendency for Emergency Medical Technicians to seek additional training to move on to become Paramedics?

Yes; a rather great tendency. As noted at the beginning of page 1, the trend is for basic EMT training to increase in levels of advanced life support so that within a projected 10 years, the differences between EMT and EMT-Paramedic training will be slight.

6. Where are Paramedic (EMT) training programs given?

Counter to the administrations claim that most programs now take place in self-supporting colleges, most programs are conducted within community hospitals...usually with voluntary support of physicians and assistance through donations and Federal grants where available.

There is a increasing trend for the programs to be given in colleges. However, this being a majority is still atleast 5 years away.

Most Paramedic programs, with clinical and field experience included, will average from 500 to 800 hours...with a determination of the total hours based on the concepts and medical protocals for the area and physicians involved. It should be noted that the national course recommends a minimum of 400 hours.

ESSENTIALS FOR THE EDUCATION AND TRAINING OF THE EMERGENCY MEDICAL TECHNICIAN--PARAMEDIC

Approved by CAHEA

This Program is Administered by NAEMT

DESCRIPTION OF THE OCCUPATION

The Emergency Medical Technician-Paramedic is qualified by a competency based educational program of clinical didactic and practice instruction, and a field internship in advanced emergency care and services. The competencies include but are not limited to the recognition, assessment and management of medical emergencies under the direction of a physician. The EMT-Paramedic primarily provides pre-hospital emergency care to acutely ill or injured patients by ambulance service and mobile advanced life-support units under medical command authority, and secondarily, in other appropriate settings which are under physician control.

Competency, knowledge, awareness of one's abilities and limitations, the ability to relate with people, a capacity for calm and reasoned judgement while under stress are essential attributes of the EMT-Paramedic. The EMT-Paramedic respects the individuality and privacy of patients and their family members.

Given the knowledge, skills and field experience, the EMT-Paramedic has competency in:

1. recognizing a medical emergency; assessing the situation; managing emergency care and, if needed, extrication; coordinating his/her efforts with those of other agencies who may be involved in the care and transportation of the patient(s); and establishing rapport with the patient and significant others to decrease their state of crisis;
2. assigning priorities of emergency treatment, and recording and communicating data to the designated medical command authority;
3. initiating and continuing emergency medical care under medical control including the recognition of presenting conditions and initiation of appropriate invasive and non-invasive treatments, e.g. surgical and medical emergencies, airway and respiratory problems, cardiac dysrhythmias, cardiac standstill, and psychological crises; and

Prepared by the AMA Department of Allied Health Evaluation
L. M. Detmer, Assistant Director 312/751-6280 July, 1978

assessing the response of the patient to that treatment and modifying medical therapy as required under physician direction or other authorized personnel;

4. exercising personal judgement in case of interruption in medical direction caused by communication failure or in cases of immediate life threatening conditions (under these circumstances, provides such emergency care as has been specifically authorized in advance);
5. directing and coordinating the transport of patient(s) by selecting the best available method(s) in conjunction with medical command authority;
6. recording in writing or dictation the details related to the patient's emergency care and the incident; and,
7. directing the maintenance and preparation of emergency care equipment and supplies.

ESSENTIAL REQUIREMENTS FOR THE EDUCATION AND TRAINING OF THE EMERGENCY MEDICAL TECHNICIAN--PARAMEDIC

I. SPONSORSHIP

The ~~sponsorship~~ sponsoring institution of an EMT-Paramedic program of education and training shall be an accredited post-secondary educational institution such as a university medical center, senior college, community college, vocational school, medical center or other institution which meets comparable standards for education in this field. All institutions must be affiliated with an accredited medical center or hospital which in turn is capable of supporting EMT-Paramedic education and training with sufficient supervised practice experience and which provides organized emergency care services that involve EMT-Paramedics who work under a medical command authority ~~of~~ in an out-of-hospital setting.

II. CURRICULUM

A. Instructional content of the educational program shall include as a minimum the successful completion of stated educational objectives, which fulfill local and regional needs and which satisfy the requirements of this curriculum section.

The curriculum shall be organized to provide the student with knowledge of the acute, critical changes in physiology, psychological and clinical symptoms as they pertain to the pre-hospital emergency medical care of the infant, child, adolescent, adult and geriatric patient. Students must have an opportunity to acquire clinical experience and practice skills related to the emergency medical care of these patients. Students should also understand the ethical and legal responsibilities which they assume as students and which they are being prepared to assume as graduates.

The program shall consist of three components: didactic clinical instruction; in-hospital clinical practice; and a ~~physician~~-supervised field internship in an advanced life support unit which functions under a medical command authority. The time required to complete each component may vary, in part being dependent upon the ability of students to demonstrate their mastery of the educational objectives by written, verbal, and practical examination.

The program shall maintain on file for each component of the curriculum a reasonably comprehensive list of the terminal performance objectives to be achieved by the student. These objectives must delineate achievement in all competencies identified below and in curriculum documentation, measurement techniques used, and the records maintained on each student's work.

B. Instruction shall follow a competency-based plan of instruction supported by performance assessments:

1. Didactic Clinical Instruction - Lectures, discussions and demonstrations presented by physicians and others who are competent in the field.

2. In-hospital and Other Clinical Practice Settings - Instruction and supervised practice of emergency medical skills in critical care units, emergency departments, OB units, operating rooms, and psychological crisis intervention centers and other settings as appropriate.

3. Field Internship - Supervised Development of Clinical Competencies - The field internship is a period of supervised experience on an intensive care vehicle which provides the student a progression of increasing patient care responsibilities and which proceeds from observation, to working as a student, to working as a member of the team. There shall be provision for physician evaluation of student progress in acquiring the desired competencies to be developed through this experience.

The intensive care vehicle shall have telecommunication with medical command authority and equipment and drugs necessary for advanced life support. The student must be under the direct supervision and observation of a physician, ~~or~~ a nurse qualified in emergency medicine, or an EMT-Paramedic approved by the Medical Command Authority. The experience should occur within an emergency medical care system which involves EMT-Paramedics in the provision of advanced emergency medical care services and which maintains a defined program of continuing education for its personnel.

C. General courses and topics of study must be achievement oriented and shall provide students with:

1. The necessary knowledge, competencies, and attributes to perform accurately and reliably the functions and tasks stated and implied in the above "Description of the Occupation;"
2. Instruction which is sufficiently comprehensive and encompasses:

(a) orientation to the occupation:

(1) responsibilities of the occupation
(2) interprofessional responsibilities
(3) career pathways in emergency medical services
(4) legal responsibilities

(b) development of interpersonal skills
(1) awareness of one's abilities and limitations
(2) ability to accept direction
(3) awareness of impact on others
(4) willingness and ability to communicate with others
(5) ability to build a working relationship with patients and peers
(6) ability to function as team member
(7) ability to accept patients as they present, without passing judgement
(8) ability to involve others significant to the patient
(9) ability to respond to a patient's sense of crisis

(c) development of clinical assessment skills
(1) ability to obtain information rapidly in talking with the patient and by physical examination; by interviewing others; and, from observation of the environment
(2) ability to organize and interpret data rapidly
(3) ability to communicate concisely and accurately
(4) understanding of pertinent anatomy, physiology, pharmacology, microbiology and psychology

(d) development of clinical management and technical skills relating to the assessment and emergency treatment of:
(1) the cardiovascular system, including recognition of dysrhythmias, angina, myocardial infarction, congestive ~~and~~ heart failure;
(2) the respiratory system, including spontaneous pneumothorax, chronic obstructive pulmonary disease, acute asthma, trauma to the chest and airway. respiratory distress syndrome and acute airway obstruction;
(3) chest and abdominal trauma;
(4) medical emergencies, including acute abdominal disease.

infections, and endocrine disorders such as diabetes mellitus;

(5) the central nervous system, including hemorrhagic stroke, seizures, drug overdose, drug incompatabilities, and alterations in levels of consciousness;

(6) trauma to the central nervous system, including closed and open head injuries and spinal cord injuries;

(7) musculoskeletal trauma, including the peripheral neurovascular system and pelvic injuries;

(8) obstetrical emergencies, including complications of the 1st, 2nd and 3rd trimesters of pregnancy, bleeding, atypical presentations, and eclampsia of primiparous and multiparous females;

(9) gynecological emergencies, such as vaginal bleeding;

(10) pediatric emergencies, including respiratory conditions such as croup and epiglotitis, respiratory distress of the newborn, dehydration, infectious diseases, seizures, child abuse, aspirations, poisonings, and neonatal transfers;

(11) psychiatric emergencies including recognition of, and crisis intervention techniques relating to, problems such as the suicidal, assaultive, destructive, resistant, anxious, bizarre, confused, alcoholic, drug-addicted, toxic, overdosed, amnesic or paranoid patient may present;

(12) sexual assault;

(13) special situations including carbon monoxide and other noxious inhalations and poisonings, near-drowning, submersion, over-exposure to hot and/or cold weather extremes, electrocution, high altitude incidents, burns environmental and industrial exposures, and other knowledge and competencies as appropriate to the region.

(e) development of technical skills associated with biomedical

communications including telemetry, record keeping, use and maintenance of equipment, emergency and defensive driving, and principles and techniques of extrication.

III. RESOURCES

A. Administration

1. MEDICAL DIRECTOR

1. Each program shall have a medical director who shall be a licensed physician and who shall provide direction over all clinical instruction and clinical practice experience required by the program. Where appropriate, the medical director should be a member of the local medical school faculty.

2. The medical director must be knowledgeable and experienced in emergency medical care and should have demonstrated ability in education and/or administration.

3. The medical director shall be primarily responsible for the recruitment, selection and orientation of instructors and clinical preceptors; and the maintenance of an on-going evaluation of students' clinical and field experience by qualified physicians and other clinical activities.

4. The medical director may also be the program director.

2. PROGRAM DIRECTOR

1. The program director provides overall direction and coordination of the planning, organization, administration, periodic review, continued development, funding, and effectiveness of the program. Among the functions to be maintained are the processing of student applications; the selection of students; and the scheduling of classes and assignment of faculty; the coordination of examination and evaluation of students, including the preparation of assessment materials; the development and availability of required equipment and materials for each class; an adequate inventory of training equipment, including audio-visual resources; the provision for

counseling services to students on an individual and a group basis; the liaison between students, program staff, the sponsoring institution and its affiliates; the supply of information about the program to interested individuals and organizations; the preparation of the program budget; and, as appropriate, assistance in class instruction.

2. The program director may also be a physician.

B. Instructional Faculty

1. The faculty shall be qualified through academic preparation, training and experience to teach the courses and topics identified in the curriculum.

2. A planned program for the continuing education of the faculty in matters relating to their teaching responsibilities should be in evidence. The faculty may include qualified physicians, nurses, ~~advanced~~ EMTs (Paramedics) and other individuals.

C. Finances

1. Financial resources adequate for the continued operation of the educational program shall be assured for each class of students enrolled.

2. The institution shall not charge excessive student fees.

3. Advertising must accurately describe the educational program and the benefits of such education and training.

4. The program shall not substitute students for paid personnel in work on intensive care units, in the field, or for others who work or teach in the clinical facility.

5. There shall be evidence of an auditing and an accounting of financial resources required, generated and expended by the program

D. Facilities

1. Clinical practice training must occur under competent medical direction within accredited teaching hospitals which maintain an active organized emergency medical service, critical and/or intensive care units, and out-of-hospital mobile intensive care units, or, which are associated with intensive care vehicles.
2. Access to supplies and equipment used in the provision of emergency medical care shall be consistent with the needs of the curriculum and the number of students and faculty assigned to courses of instruction and practice experience.
3. Classrooms, laboratories and administrative offices shall be provided with sufficient space to accommodate the number of students matriculated in the program and supporting faculty.
4. Library resources shall be readily accessible to students and shall include current periodicals, scientific books, audio-visual and self-instructional resources and other references related to the curriculum.

E. Clinical Affiliations

1. Clinical affiliations shall be established and confirmed in written affiliation agreements with institutions and agencies which provide medical direction to and continuing assessment of student performance.
2. The applied practice component of the education shall occur within an emergency medical service system which delivers ~~EMT-~~ EMT-Paramedic services under medical direction, has telemetric communications, all necessary drugs and equipment, an evaluation system to insure quality in the care provided, and an organized program of continuing education for its personnel.
3. In each component of clinical training there shall be an appropriate ratio of students to instructors to

assure effective learning.

4. To facilitate the development of their clinical competencies, students shall have access to patients who present common problems encountered in the delivery of advanced emergency care in adequate numbers and in distribution by sex and age.

5. In programs where the clinical didactic instruction and supervised practice experience are not provided in the same institution, accreditation shall be given to the institution responsible for the academic components of the program. Activities assigned to students in the clinical setting shall be educationally efficient and effective in achieving the program's objectives.

F. Physical

1. General - Classrooms, laboratories, administrative offices and other facilities shall be provided.

2. Equipment and Supplies - Appropriate modern equipment and supplies in sufficient quantities shall be provided.

3. Library - A library shall be readily accessible and contain an adequate supply of up-to-date books, periodicals, and other reference materials related to the curriculum.

4. Records

(a) Student

(1) Transcripts of high school, collegiate credits and other credentials shall be accessible and on file.

(2) Report of medical examination upon entry to and exit from the program shall be maintained. Examination on entry shall include ~~record of a tuberculin test, a serologic test for syphilis, and a radiographic film of the chest.~~

Insert

Examination on entry shall include evidence of policies of policies which promote the protection of students and the public from transmission of communicable diseases.

(3) A record of class and practice participation and evidence of competencies obtained by each student throughout the education and training program shall be maintained.

(4) Copies of oral and written examinations and assessments of the students' developing and attained competencies shall be maintained for periodic review and analysis.

(b) Curriculum

(1) A descriptive synopsis of the current curriculum shall be on file.

(2) Statements of course objectives, copies of course outlines, class schedules, schedules of supervised clinical experience, and teaching plans shall be on file and available for review.

(3) A copy of the complete curriculum shall be on file.

G. Number

The number of students enrolled in each class shall be commensurate with effective learning and teaching practices.

IV. Students

A. Students shall be provided with a clear description of the program and its content, including learning goals, course objectives, and competencies to be attained.

B. Selection Prerequisites

1. High school graduation or general education equivalent.
2. Maturity of judgement, sound moral character and a health status which provides reasonable assurance that the student will meet the physical and mental demands of the occupation.
3. Evidence of successful completion of a course of training for EMT-Ambulance.
4. Evidence of certification as an EMT-Ambulance.
5. In programs which combine EMT-Ambulance and EMT-Paramedic training, the requirement of (3) and (4) above may be completed concurrently with the didactic and practice portions of the EMT-Paramedic program. These requirements must be fulfilled before students begin their field internships.

6. Equivalent military training within the past year and experiences as approved by the State agency may be substituted for (3) and (4) above.

7. Recommended by the admissions committee attesting to the applicant's attitude, professionalism, motivation, dependability and desire to follow instructions and orders with reliability.

C. Counseling

Counseling services shall be accessible to students. Guidance and placement services shall be available to new graduates.

D. Identification

Students shall be clearly identified by nameplate, uniform, or other apparent means to distinguish them from graduate emergency medical service personnel, other health professionals, workers and students.

E. Criteria for successful completion of each segment of the curriculum, and for graduation, shall be given in advance to each student. Appropriate appeal mechanisms shall be made known and be available to the students.

F. It shall be the responsibility of the program officials to determine that the applicant's/student's health will permit him/her to complete the program. Students must be informed of and have access to the usual student health care services of the institution. Where appropriate, emergency medical care must be available.

V. Operational Policies

A. ~~Recruitment and matriculation practices are non-discriminatory with respect to race, color, creed, sex or national origin.~~ Student matriculation practices and student and faculty recruitment are non-discriminatory with respect to race, color, creed, sex or national origin.

B. Announcements and advertising about the program reflect accurately the education and training being offered.

C. The program shall be educational and students shall use their scheduled time for educational experiences.

D. Health and safety of students, faculty, and patients are adequately safe-guarded.

E. Costs to the student are reasonable and accurately stated and published.

F. Policies and processes for student withdrawal and refunds on tuition and fees are fair, published, and made known to all applicants.

VI. Continuing Program Evaluation

A. A process for periodic and systematic review of the program's effectiveness must be documented. The results of these reviews must be considered and reflected in policies developed and in the program's self-study.

B. One element of this evaluation shall be the employment record of graduates of the program.

VII. Maintaining Accreditation

A. The Annual Report form provided by the Committee on Allied Health Education and Accreditation shall be completed, signed by the program director and returned by the established deadline.

B. If the program director, the medical director, or the education coordinator of an accredited program is changed, prompt notification shall be sent to the AMA Department of Allied Health Evaluation. A curriculum vitae of the new program official, giving details of training, education and experience in the field, shall be provided.

C. The Committee on Allied Health Education and Accreditation may withdraw accreditation whenever:

1. The educational program is not maintained in substantial compliance with the *Essentials* outlined herein, or
2. There are no students in the program for two consecutive years.

D. Accreditation will be withdrawn only after notice has been given to the chief executive officer of the institution that such action is contemplated, with the reasons therefore, and

with sufficient time to permit timely response and the use of established procedures for appeal and review.

ADMINISTRATION OF ACCREDITATION

1. Application for accreditation of a program should be made to:

   Department of Allied Health Evaluation
   Division of Educational Standards and Evaluation
   American Medical Association
   535 North Dearborn Street
   Chicago, Illinois 60610

2. The evaluation and accreditation of a program can be initiated only at the written request of the chief executive officer of the sponsoring institution or his officially designated representative.

3. A sponsoring institution may withdraw its request for initial accreditation at any time (even after the site visit) prior to final action.

4. The program being evaluated is given the opportunity to review the factual report of the visiting survey team and to comment on its accuracy before final action is taken.

5. The CAHEA and cooperating review committees will periodically resurvey educational programs for continued accreditation.

6. The chief executive officer of the sponsoring institution may request that a return on-site evaluation be made in the event of significant deficiencies in the performance of an earlier evaluation team.

7. Adverse accreditation decisions may be appealed by writing to the Committee on Allied Health Education and Accreditation. Due process will be followed.

Prepared by AMA Department of Allied Health Evaluation

July 1978

NATIONAL REGISTRY OF EMERGENCY MEDICAL TECHNICIANS

INFORMATION AND ENTRY REQUIREMENTS FOR NATIONAL REGISTRATION AS AN EMT-PARAMEDIC

Initial Examination Period

1395 E. Dublin-Granville Road
P. O. Box 29233
Columbus, Ohio 43229

FOREWARD

The National Registry of Emergency Medical Technicians, organized in June of 1970, administered its first basic EMT-A examinations on October 29, 30, 1971 to 1,520 EMT's simultaneously throughout the United States.

The continued growth of the Registry, both in numbers and stature, coupled with the growth and advancement of emergency medical services (EMS) dictated the need for National Registration at the next higher level of competency — EMT-Paramedic.

Current paramedic training programs, extant throughout the United States, are variously based in universities (medical schools), junior colleges, hospitals, and state educational systems. The variation in didactic and clinical hours varies from a minimum of 64 hours to those surpassing 1,200 hours. The U. S. Department of Transportation (DOT) and the U. S. Department of Health, Education and Welfare (DHEW), assisted by committees formed by the National Registry, the A.M.A. Commission on Emergency Medical Services, and the NAS/NRC Committee on Emergency Medical Services, combined to produce recommendations as to a single curriculum.

The combined recommendations were presented to DOT which contracted with the University of Pittsburgh to develop a uniform National Curriculum for the EMT-Paramedic. This curriculum has been completed, accepted by DOT and the Interagency Advisory Committee on EMS and identified as the standard national training program.

Based on the new National Curriculum, the National Registry contracted with the University of Kansas Medical Center, Emergency Medical Training Program, to develop the appropriate written and practical examinations for National Registration as an EMT-Paramedic. Prior to their distribution, the examinations were pilot tested in the areas encompassing Denver, Kansas City and Chicago.

PURPOSES

The purposes of the Registry are:

1. To promote the improved delivery of Emergency Medical Services by:
   (a) Assisting in the development and evaluation of educational programs to train Emergency Medical Technicians
   (b) Establishing qualifications for eligibility to apply for registration
   (c) Preparing and conducting examinations designed to assure the competency of Emergency Medical Technicians
   (d) Establishing a system for biennial reregistration (every two years)
   (e) Establishing procedures for revocation of certificates of registration for cause
   (f) Maintaining a directory of Registered Emergency Medical Technicians
2. To develop guidelines and programs to assist individuals who have completed Emergency Medical Technicians Training Programs to raise their level of competency to assure the provision of improved Emergency Medical Services, and
3. To do any and all things necessary or desirable for the attainment of the purposes stated above.

ENTRY REQUIREMENTS

Initial Examination Period

The Board of Directors has identified the first year of examinations as **"the initial examination period."** This period will encompass the twelve months following the scheduling and administration of the first National Registry EMT-Paramedic examination.

Entry requirements during this initial examination period are as follows.

1. Current National Registration as an EMT-Ambulance.
2. Successful completion of an EMT-Paramedic training program.
3. Six months **field experience** as an EMT-Paramedic.*
   *Individuals completing a paramedic training program who will be entering paramedic service, but do not have the required experience will be permitted to take the written and practical examinations.
   Successful completion of the training and the National Registry examinations will provide **Provisional Registration,** pending the completion of six months of paramedic field experience. The acquisition of the required field experience must be vertified in writing by the Medical Director of paramedic training and/or paramedic operations.
4. Application must be signed by the Medical Director of the Paramedic training program or the Medical Director of the Paramedic Service, attesting to the candidate's character, training and functional ability as an EMT-Paramedic.
5. Successful completion of the written and practical examinations based on the National EMT-Paramedic Curriculum.

SUBMISSION OF APPLICATIONS FOR EXAMINATION

Each candidate must submit one copy of the official application. Signatures of both the candidate and the Physician Director must be entered following the appropriate statements at the bottom portion of the application.

All of the requested information within the application must be completed. **Incomplete applications will be rejected.**

Date of application and date of birth must be entered numerically in the appropriate boxes to assist data processing.

EXAMPLE | 0 | 8 | 1 | 2 | 7 | 7 | for August 12, 1977

Be sure to enter your EMT-Ambulance National Registry number in the appropriate box.

Applications and fees are to be sent to the

National Registry of Emergency Medical Technicians
P. O. Box 29233
Columbus, Ohio 43229

If there are a number of applications from the same locality, processing will be facilitated if they are submitted as a group.

EXAMINATION AND REGISTRATION FEE

An examination and registration fee of $40.00 (Money Orders only please) must be submitted with the application, **payable to the National Registry of Emergency Medical Technicians.**

This fee will cover the cost of all printed material, examinations, certificate, pocket card, shoulder emblem, postage, data processing and administration.

To assist in defraying the cost of expendable material, the National Registry will distribute to the institution or agency administering the examinations, $10.00 per candidate examined. This distribution will be payable only to institutions or agencies assisting in the administration of both written and practical examinations, and not to any one individual.

NOTE: Fee **will** be refunded if the application is rejected.

NOTE: Free **will not** be refunded if the application is accepted and entered into data processing.

SCHEDULING OF EXAMINATIONS

Examinations will be scheduled on an area or regional basis. The selection of specific sites will depend upon the number of applications received from a given area.

You are requested to submit your application to the National Registry Headquarters in Columbus, Ohio as soon as possible. As applications are received, they will be grouped according to state, and may be further subdivided into areas within the state. The number and locations of examinations will be in direct proportion to the number of applications received.

A representative of the National Registry will be in attendance at each examination site. The individual selected to represent the Registry will evaluate the total examination experience and report same to the National Registry.

THE WRITTEN EXAMINATION

The written examination will consist of 150 multiple choice questions that will include material from each of the fifteen modules of the National Curriculum.

The number of examination questions for each module will be in direct proportion to the weight of each module as outlined in the National Curriculum.

NOTE: Realizing that existing paramedic training programs vary in length and content, and that the extent of training is not defined for the "initial examination period", the following outlines the contents of the National Curriculum from which the examinations were developed. This should assist the local Medical Directors in evaluating their training programs and personnel as to the paramedic's ability to cope with the material contained within the written examination.

Module 1 — The EMT-Paramedic — His Role, Responsibilities, and Training

This module discusses the role of the Emergency Medical Technician-Paramedic in the health care delivery system. The duties and responsibilities of the EMT as well as any legislation affecting his job performance are covered. In addition, the students discuss issues concerning the EMT, including medical ethics and reaction to death and dying.

Module 2 — Human Systems and Patient Assessment

This module includes an overview of anatomy and physiology of each system of the body. The use of medical terminology and the construction of medical terms using roots, prefixes, and suffixes are also included. In addition, the modules deal with the procedure for a patient assessment, including the patient's medical history, physical examination, and transfer of collected information to the supervising physician.

Module 3 — Shock and Fluid Therapy

Included in this module is a discussion of the fluids and electrolytes in the body, with emphasis being placed upon the manifestation of fluid and electrolyte imbalances. The manifestations of dehydration and over-hydration are also included. The module also deals with the causes, signs and symptoms of shock, fluid administration through intravenous techniques, and the application of the Medical Anti-Shock Trousers (M.A.S.T.).

Module 4 — General Pharmacology

This module is designed to introduce the student to the general groups of drugs and the classification of each. The module also discusses the kind of information the student should know about each drug, specifically therapeutic effect, indications, contraindications, correct dosage, and side effects. In addition, the module deals with

the calculation of dosages and the use of the metric system, and the administration of drugs through the various routes.

Module 5 — Respiratory System

This module begins with a discussion of the anatomy and physiology of the respiratory system and the assessment of a patient with suspected respiratory distress. Pathophysiology, including respiratory arrest upper airway obstruction, obstructive airway diseases, toxic inhalations, pulmonary edema, hyperventilation syndrome, pulmonary embolism, and trauma is also discussed. Techniques of management of the previously defined include oxygen administration, use of adjunctive equipment, direct laryngoscopy, endotracheal intubation, esophageal obturator airway, and suctioning, among others.

Module 6 — Cardiovascular System

The module begins with a discussion of the anatomy and physiology of the cardiovascular system, with emphasis upon the structure, function, and electrical conduction system of the heart. Then the assessment of the patient with suspected cardiovascular problem is discussed. Pathophysiology is also discussed, including coronary artery disease and angina, acute myocardial infarction, cardiogenic shock, synocope, trauma, and hypertensive states. In addition, the module deals with the interpretation and treatment of basic arrhythmias. Specific techniques covered include cardiopulmonary resuscitation, electrocardiographic monitoring, defibrillation, phlebotomy, carotid sinus massage, intracardiac injections, transthoracic pacemakers, and use of mechanical heart-lung resuscitators.

Module 7 — Central Nervous System

This module includes the anatomy and physiology of the nervous system and the procedure for the assessment of a patient with a nervous system disorder. The pathophysiology and management of patients presenting with CNS trauma, seizures, cerebrovascular accident are discussed. In addition, management of the comatose patient is covered. Specific treatments discussed include spinal immobilization in cases of trauma and the administration of diazepam in cases of seizures.

Module 8 — Soft Tissue Injuries

This module includes the anatomy and physiology of the integument, and the assessment and management of soft tissue injuries, including abrasions, lacerations, punctures, avulsions, burns, and impaled objects. Skills presented in this module include control of hemorrhage and the dressing and bandaging of specific injuries. Also, injuries to specific regions, including the eye, face, neck, and abdomen are discussed.

Module 9 — Musculeskelotal System

This module includes the anatomy and physiology of the musculoskeletal system, patient assessment, and the management of sprains, strains, fractures, and dislocations. Skills presented include splinting and immobilization techniques with the traction splint, air splint, and board splint.

Module 10 — Medical Emergencies

This module includes the identification and management of diabetic emergencies, anaphylactic reactions, exposure to environmental extremes, alcoholism, poisoning, acute abdomen, genito-urinary problems, and medical emergencies of the geriatric patient.

Module 11 — Obstetric/Gynecologic Emergencies

This module includes the anatomy and physiology of the female reproductive system and the technique for patient assessment of a patient with suspected obstetric and/or gynecologic disorder. The module also includes the management of an expectant mother, normal delivery, and the care and transportation of the mother and newborn. Abnormal deliveries such as multiple births, premature birth, breech birth, and prolapsed umbilical cord are discussed. In

addition, complications of labor and delivery, including post-partum hemorrhage, ruptured uterus, inverted uterus, eclampsia, and infant resuscitation are reviewed.

Module 12 — Pediatrics and Neonatal

This module deals with the unique aspects of dealing with and assessing pediatric patients. It also includes the pathophysiology and management of problems which are primarily seen in pediatric patients, including asthma, bronchiolitis, croup, epiglottitis, sudden infant death syndrome, and seizures in the pediatric age group. In addition, the module discusses the role of the EMT in a system for neonatal transport. The specific skills included are a review of infant resuscitation, intravenous techniques, and tracheal intubation on the infant.

Module 13 — Management of the Emotionally Disturbed Patient

The module discusses the various kinds of psychological problems the EMT might encounter, and specific procedures for handling each are included.

Module 14 — Rescue Techniques

This module emphasizes gaining access to the patient, disentanglement and ultimate transport of the patient. Techniques of tying ropes, knots, and hitches are included. The recognition and control of hazards such as explosive materials, downed electrical wires, toxic gases, and radiation are included. In addition, techniques for lifting, packaging, and transporting patients in emergency and non-emergency situations are discussed.

Module 15 — Telemetry and Communications

This module deals with the use of the radio communications equipment including the transmission of voice communications and EKG transmission. The module also includes a discussion of the regulations established by the Federal Communications Commission with respect to the use of the radio equipment. In addition, the module deals with the protocols and procedures for the transfer of information to the supervising physician.

GRADING OF THE WRITTEN EXAMINATION

The written examination will contain six major subtests. Each subtest will include questions from a group of related modules, as follows.

Subtest	Includes Modules	Minimum Score
1	1, 14, 15	70%
2	2, 3, 4	75%
3	6	75%
4	7, 8, 9	70%
5	5, 10, 13	60%
6	11, 12	65%

Passing the written examination will require the candidate to realize an average overall score of 70% plus the minimum score for each subtest as listed above.

Failure of any subtest will constitute total failure of the written examination.

Failures may reapply by submitting another application and fee for subsequent re-examination of both the written and practical portion.

THE PRACTICAL EXAMINATION

The practical examination will require that each candidate progress through five different stations.

Practical skills to be measured will include patient assessment, triage, the manipulative and cognative skills of intravenous and other parenteral drug and fluid administration, recognition and treatment of given arrythmias, cardiac monitoring and defibrillation, cardiopulmonary resuscitation, immobilization of fractures, airway maintenance, endotracheal intubation, control of bleeding, and other skills as outlined within the National Curriculum.

Grading of the practical examination will be on a Pass/Fail basis only.

Failure of one or two sections of the practical examination will **entitle the candidate to a retest of the sections failed,** requiring no additional application or fee.

Failure of three or more sections of the practical exam **constitutes total failure.** Failures may reapply by submitting another application and fee for subsequent re-examination.

CONTINUING EDUCATION

Reregistration will be required biennially (once every two years) and will be based on the completion of continuing education requirements to be established.

REVOCATION OF CERTIFICATES

"Certificates issued by this Registry shall be subject to revocation in the event that:

A. The issuance of such certificate or its receipt by the individual so certified shall have been contrary to, or in violation of, any provision of the Certificate of Incorporation of the National Registry of Emergency Medical Technicians or of the Bylaws; or

B. The individual certified shall not have been eligible to receive such certificate, irrespective of whether or not the facts constituting him so ineligible were known to, or could have been ascertained by, the directors of the Registry at the time of the issuance of such certificate; or

C. The individual certified shall have made any misstatement of fact in his application for such certificate or in any other statement or representation to the Registry or its representatives; or

D. The individual certified shall at any time have neglected to maintain the degree of competency in the provision of emergency ambulance or rescue to submit to re-examination by the Registry; or

E. The individual so certified has been found to be guilty of unethical practices or immoral conduct.

No certificate shall be revoked unelss the following procedures are afforded the registrant:

1. A copy of the charges preferred against the registrant and the event or events from which such charges have arisen is served upon him by registered mail.
2. The registrant is given at least ten days to prepare his defense.
3. A hearing is held on such charges at which the registrant is afforded a full opportunity to be heard in his own defense including the right to cross-examine witnesses appearing against him and to examine documents material to said charges.

The Board shall have the sole power, jurisdiction, and right to determine whether the evidence presented at said hearing or otherwise is sufficient to constitute one of the grounds for revocation stated above. The Board shall make findings of fact a basis for its decision which shall be final."

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Responses to Questions Asked by Senator Cranston

INTERNATIONAL ASSOCIATION OF FIRE CHIEFS • INCORPORATED

1329 18th STREET, N.W. • WASHINGTON, D.C. 20036

AREA CODE 202
833-3420

March 28, 1979

The Honorable Alan Cranston
United States Senate
Subcommittee on Health

Dear Senator Cranston:

In response to your written questions from hearings on Senate Bill 497, Emergency Medical Services Amendments of 1979, please bear in mind that when I respond to EMS questions I do so from a national viewpoint, that is to say, representing the nations fire chiefs.

EMS within the confines of the fire service has become very popular and is seen as an appropriate community service for fire departments. A recent IAFC survey of the Metropolitan Fire Chiefs Committee identified 73 out of 86 metropolitan fire departments providing some form of emergency medical care.

Question: The current law requires emergency medical services systems to coordinate, to the maximum feasible extent, their communication and transportation networks with public safety agencies. Generally, how practical has it been to have a joint communication networks and coordinated ambulance services?

Answer: The establishment and coordination of communications for ambulance services within fire department communication systems has been successful. Fire department communication centers operate 24 hours per day and have instant access to other governmental agencies. By coordinating fire and ambulance communications, assistance to ambulance crews is quickly provided by fire department personnel. Due to the geographical distribution of fire stations in a community, fire personnel can quickly respond to a medical emergency while awaiting the arrival of an ambulance. When ambulance service is depleted in a particular district, available ambulances can be relocated to cover that district. This is all made possible by a central communications' facility that can identify available units and monitor service demand areas.

Question: As you know, H.E.W. has proposed to eliminate training grants for training in emergency services on the grounds that local communities provide that training. What resources do fire departments have to support paramedic training without H.E.W. assistance?

Answer: With the nationwide effects of Proposition 13 and similar movements, local communities, and in particular fire departments, are hard pressed fiscally. In many communities in California the emergency medical services have been among the first budget cuts within fire departments. The priorities in any community must of course be determined at the local level. However, if the Congress has determined that 304 EMS systems are desirable and in the national interest, then I would think that the Department of Health, Education, and Welfare has an obligation to provide funding for these systems. I believe that all our citizens should have access to quality emergency medical care.

Question: In general, have the development of emergency medical services systems in your communities made a difference in the numbers of lives saved or disabilities reduced?

Answer: There is no question that the development of EMS systems has had an impact on morbidity and mortality. For example, Seattle, Washington Fire Department reports over 800 clinically dead persons have been restored to full and active lives.

Question: Have these systems helped you to perform your duties more efficiently?

Answer: EMS systems have provided assistance to fire chiefs particularly with the management of the system. However, greater emphasis must be placed on the "career development" of EMS personnel and the phenomenon of EMS "burnout".

Question: The legislation has always stressed the interdisciplinary training and interdisciplinary provision of emergency medical services. Is this a desirable objective?

Answer: Certainly the interdisciplinary aspect of the EMS system is desirable. The fire service agrees that EMS must be provided from a systems concept drawing on the total resources of a community or region.

Question: Has the system in which you participate developed protocols for such interdisciplinary management of patients in the E.M.S. system?

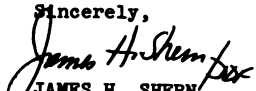
Answer: Patient protocols have been developed in the EMS systems that I am familiar with. Fire departments involved in EMS systems have developed treatment protocols, triage protocols and dispatch protocols. System wide protocol for these areas has been a desirable element.

Question: What steps have you taken to make a paramedic's responsibility more appealing?

Answer: In order to make paramedic assignments more appealing, a system of "career development" must be developed. Within many fire departments fire personnel are rotated between medic units, engine companies or truck companies. A personnel system must exist to allow EMS personnel to rehabilitate from the constant pressures of emergency medical services. After all, how many emergency department nurses or physicians spend 25 years in the emergency room? The average American worker changes jobs 12 times during a normal working career. Is it reasonable to expect paramedic personnel to spend 25 years on an ambulance? I think not. Therefore, when EMS personnel come from the ranks of fire fighters they can easily be rotated to various assignments within the fire department without losing career and retirement status.

If I can be of future assistance to you regarding emergency medical services or fire-related issues, please do not hesitate to contact me or the IAFC Washington office.

Sincerely,



JAMES H. SHERN
President, IAFC

Senator CRANSTON. We will now hear from our final panel: Dr. Allen Koplin, deputy commissioner, New Jersey Department of Health, and Mr. Thomas W. Pritchett, project director, Western Ohio Emergency Medical Services Region.

As I think you are already aware, I want to request that you hold your verbal testimony to not more than 5 minutes. I regret the time constraints we have. I assure you that your full testimony will be very carefully studied. I thank you very much for your presence.

STATEMENT OF ALLEN N. KOPLIN, FIRST DEPUTY COMMISSIONER OF HEALTH, NEW JERSEY DEPARTMENT OF HEALTH, ACCOMPANIED BY WILLIAM MINOGUE, MEDICAL DIRECTOR, NEW JERSEY EMERGENCY MEDICAL SERVICES PROGRAM; AND THOMAS W. PRITCHETT, PROJECT DIRECTOR, WESTERN OHIO EMERGENCY MEDICAL SERVICES REGION

Dr. KOPLIN. I represent the State of New Jersey today. We appreciate this opportunity to testify and we are very much in favor of extending this legislation for at least 5 years.

As this committee well knows, we are making only slow progress in this country in our efforts to plan and systematize health services in general. Most people still obtain care on an unplanned basis. This can be fatal in an emergency, and I think in terms of what we are here discussing today, we cannot rely on chance; we have to have a smoothly coordinated system.

The initial EMS legislation passed in this country was in response to public concern at that time. This concern still exists in many sections of the country, and there has been very uneven progress, as you have heard today, in the development of this kind of a system.

Not all regions have had an opportunity to complete their 5-year cycle; we in New Jersey are one of those. Even in Illinois where HEW funding of a statewide program has succeeded in producing a

rather mature system with wide geographic coverage, there are still problems.

One is the problem of evaluation that has been mentioned. I have submitted to you a preliminary study of an evaluation technique using tracer methodology, which attempts to measure whether it makes any difference if you have a system of that kind.

I think I would add to what has been said about evaluation that the question of outcome measurement in any health system evaluation is extremely difficult, let alone in an emergency system, with all of the various complexities mentioned.

I would say further that we possibly have a better opportunity if we extend this legislation to develop some new knowledge about evaluation of health services through the emergency system—a better opportunity than we may have for evaluating health systems of all kinds, because this is built into the legislation and should be extended.

In New Jersey, we are in the second year of HEW funding. We have instituted some rather unique features which we think you ought to be aware of and which are our justification for extending this legislation. We have been planning an improved regionalized system involving public safety agencies, the consumers, provides to those Federal seed funding has been very helpful to us in facilitating this system development. We have an opportunity to use these funds to bring a new dimension to EMS delivery through passage of an EMS planning regulation which will regionalize services and categorize hospitals.

This EMS regulatory approach is more significant in New Jersey where we have combined in one State agency licensure, planning under Public Law 93-641, certificate of need authority, and rate review.

Recent State legislation creates a hospital rate review system to establish fair hospital rates for all third-party payers.

Thus we are on the threshold of implementing a system capable of containing capital and operating costs in a manner not achieved elsewhere, and we have an ideal opportunity to integrate this system development with the EMS categorization process. There has been very little said today about the planning process in Public Law 93-641.

The payoff to the people of our State should be new and improved emergency care without wasteful proliferation of services and systems. And with the inclusion of reasonable costs of the EMS system in the third-party reimbursement mechanism, this program is going to be maintained in the future, in our opinion, without continued Federal support. We are trying to prove that in New Jersey. But we need more time to finalize the regionalization mechanism and we need help in the form of HEW dollars for program and staff and for technical assistance to the HSA's and the Statewide Health Coordinating Committee. We have given you a copy of this regulation. I think that if you read it, you will find that it includes planning by the HSA's to include every segment of the community, from rescue squads to physicians and hospitals, so that this total regional plan can be acceptable regionwide and can make it easier for the rate review activity to include the reasonable

costs of this kind of service as part of the normal payment for hospital and other health services of the future.

We do not seek permanent Federal funding under this legislation, because we have evidence through State-funded pilot MIC and paramedic services which have run their course that this hospital reimbursement mechanism mentioned can insure continuity of support.

We are advocating a 6-year extension of this program at the $50 million level. You have heard these figures stated previously. This sounds like a lot of money, but when you realize that in the State of New Jersey, there are 2.5 million emergency room visits each year, which cost about $50 million, you are talking about a very small part of the total picture of emergency services in this country. This is a worthwhile expenditure, in our opinion.

We think that we and others, through this extension, will be entitled to the full cycle of funding. We will be denied the full cycle of funding if this bill is not extended in the manner we recommend.

We also advocate special initiative funding, as has been mentioned, for poison resource centers, and also to measure the effectiveness of the trauma centers and other parts of the system.

That is all I have to say, sir. We would be glad to answer any questions.

[The prepared statement of Dr. Koplin follows:]

TESTIMONY BEFORE SENATE SUB-COMMITTEE ON HEALTH ON S-497 - EXTENSION OF P.L. 93-154, THE FEDERAL EMERGENCY MEDICAL SERVICES SYSTEM ACT OF 1973, BY ALLEN N. KOPLIN, M.D., M.P.H., FIRST DEPUTY COMMISSIONER OF HEALTH, NEW JERSEY DEPARTMENT OF HEALTH, P.O. BOX 1540, TRENTON, NEW JERSEY 08625

Speaking for the State of New Jersey, we appreciate the opportunity to testify on behalf of S-497 today. As this Committee well knows, we are making slow progress in this country in our efforts to plan and systematize health services. Most people still obtain care on an unplanned basis. This can be fatal in an emergency in which there can be no substitute for a coordinated smoothly functioning cost effective system.

The initial emergency services system legislation was passed in response to public concern over what to do when an unexpected accident or illness strikes. This concern still exists in many sections of the country, and there has been uneven progress in system development. Not all regions have had an opportunity to complete the five year grant cycle. Even in Illinois where HEW funding of a Statewide program has succeeded in producing a mature system with wide geographic coverage, there is still need for further support to assure careful evaluation of system outcomes. I am submitting a copy of a tracer study in which I participated in Illinois, which illustrates the problems of evaluation methodology.

In New Jersey, we are in the second year of HEW funding and therefore a long way from developing those services intended by the legislation. Our planning here has involved all those who deal with the patient beginning with primary responders be they citizens or families; the police, who initiate and receive communications;

ambulances; EMT's trained for field emergency response; paramedics; nurses; physicians; hospitals and others. There is no other facet of the health care system where an attempt has been made to integrate all elements for a total community or state from beginning to end. In emergency medical services planning, we have, in fact, secured both consumer and provider cooperation in seeking quality service at reasonable cost.

Federal seed funding under P.L. 93-154 has begun to facilitate this system development in New Jersey, and nationally has assured basic life support services for 59% of the 300 EMS regions. Advanced life support required in critical cases has reached only 25% of these regions, and over 15% have no system at all.

We in New Jersey believe we have a unique opportunity to use HEW funds to bring a new dimension to EMS delivery because we have combined licensure, planning under P.L. 93-641, Certificate of Need authority since 1971, and rate review in one agency - The State Health Department. Recent State legislation, S-446, creates a hospital rate review commission to establish fair hospital rates for all third party payors. We are now attempting to pass an EMS planning regulation which will regionalize services and categorize hospitals. Since we are on the threshold of implementing a system capable of containing capital and operating costs in a manner not achieved elsewhere, we have an ideal opportunity to integrate necessary EMS system development with this process. The payoff for the people of our state should be new and improved emergency care without wasteful proliferation of services and systems and with inclusion of reasonable operating costs in third party

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reimbursement of hospitals.

But we need more time to finalize the regionalization mechanism and help in the form of HEW dollars for EMS program staff technical assistance to HSA's and the Statewide Health Coordinating Committee. The HSA's have a vital role in conceiving a total regional plan under which they will recommend designation of hospitals to provide medical direction of paramedics in the field and special centers for tertiary care; e.g. neurological injury, burns, etc. HEW funds for one time equipment grants are also vital as incentives for hospitals, public safety agencies and others to improve basic life support and advanced life support operations.

We do not seek permanent federal funding under this legislation because we have evidence through State funded pilot paramedic services which have run their course, that the hospital reimbursement mechanism mentioned will insure continuity of support. We therefore advocate a 6 year extension of this Act at the $50,000,000 level so we and others may be entitled to the full cycle of funding, and so that we may continue to maintain a consultative, promotion, and monitoring role at the State level.

We also advocate special initiative funding for two purposes:

1. To develop poison resource centers throughout the country. Probably one could serve our state at a cost of only $250,000 - a sum which very few of our financially embarrassed urban communities are likely to assume at this time.
2. To develop special trauma center evaluation programs.

As indicated, this has not been completed in Illinois despite its advanced system, and is needed in New Jersey and everywhere in order to produce the data which can measure the effectiveness of trauma centers on mortality and morbidity.

We would hope that New Jersey will have the opportunity to complete its planning process with federal assistance and therefore urgently support extension of the federal legislation in question and sufficient appropriation to allow us to carry out its original intention.

2/26/79

PROPOSED

EMERGENCY MEDICAL SERVICES REGIONALIZATION REGULATION

FOR THE DESIGNATION OF

EMERGENCY MEDICAL SERVICES REGIONS AND HOSPITALS

NEW JERSEY DEPARTMENT OF HEALTH

REVISED

14 February, 1979

CONTENTS

INTRODUCTION

The Emergency Medical Services Systems (EMSS) Act of 1973 (P.L. 93-154) provided aid to states and sub-state areas to establish coordinated, cost-effective, area-wide emergency medical services systems. Through this legislation, the Emergency Medical Services unit in the New Jersey Department of Health has obtained federal support for implementing a regional Emergency Medical Services System in New Jersey.

Purpose of the Regulation

A primary purpose of this regulation is to insure effective treatment for patients anywhere in New Jersey who need emergency care.

The regulation is broad in scope in that it reflects systemic planning. Emphasis is on the planning process itself. The intent is to encourage involvement of all providers of emergency care from the beginning of planning to the implementation of a regionalized Emergency Medical Services Systems.

The goal of this regulation is to form coordinated regional network of emergency care providers. Agreements on treatment and transfer of certain categories of critically ill or injured emergency patients are also needed. Such patients make up only an estimated 3 percent to 5 percent of those who seek emergency care each year. Essentially, they are patients who require Advanced Life Support as defined below. The system is designed to ensure "wall to wall" care for the critically injured or ill patient, not to ration emergency care. Mutual treatment and transfer agreements are recommended in conformance standards established by the Joint Commission on the Accreditation of Hospitals. Experience elsewhere has shown that this results in improved patient care and more lives saved. The cooperation of volunteer ambulance squads is an essential component of any New Jersey Emergency Medical Services System.

Advanced life support services (ALS) are now being provided by the Mobile Intensive Care Units (MICU), which supplement the services provided by the volunteer squads. MICU's in New Jersey are mostly non-transport, particularly where volunteer paramedics are used to staff them. The local volunteer squads will continue to be responsible for the primary response and will usually transport the patient to the hospital. The MICU will be dispatched to work with the squad only in the critical cases mentioned above.

Effective care for those requiring critical emergency care will be accomplished through a system organized on a regional basis. Within each region, the system will be characterized by the following:

a. A radio communications system that will allow medical collaboration between the resource and associate hospitals and mobile intensive care units within a regional network.

b. The designation of one resource hospital for an entire region, and one associate hospital per 250,000 population in that region. The remaining hospitals providing emergency care would be designated receiving hospitals. Resource hospitals are to provide medical control of emergency care for specific categories of patients.

c. The resource hospital also will have certain responsibilities for developing protocols and providing training, (training will be for all disciplines in Emergency Medical Care, i.e. general public, dispatchers, physicians, nurses and rescue squads if requested by the squads). These responsibilities will be undertaken with the assistance of other providers in the system as appropriate.

Planning and Designation Process

The regulation "Process and General Criteria for the Certification of Need and Designation of Regional Services" which the Health Care Administration Board promulgated December 7, 1978 (NJAC 8:31-28:1 et seq.) applies to the designation of emergency medical services hospitals and any Certificate of Need awarded to such hospitals. As stated in that regulation, regionalized plans for this service will be developed by Health Systems Agencies. Since regionalized services are likely to cross Health Systems Agency boundaries, Health Systems Agencies must coordinate their planning.

Prior to making any designations, the HSA will have developed a plan for emergency medical services that will include the identification of EMS regions. Such plans will be developed in consultation with the hospitals and others affected in the region, and according to the requirements of the regulation "Process and General Criteria for the Certification of Need and Designation of Regional Services". They will be sent to the Statewide Health Coordinating Council to be reviewed and adjusted to become part of the State plan.

Once the HSA plans have been accepted, hospitals will be notified that applications for designation may be filed, on forms prepared by the Department of Health, within 90 days. One copy of the forms is to be sent to the HSA and one copy to the Department of Health. The HSA's will make recommendations for designation, and the Department of Health will designate hospitals as resource, associate, or receiving hospitals.

To the extent that new Hospital expenditures are required to meet approved regional EMS plans, the Department is committed to approving all allowable and reasonable costs through the rate-review process.

Any application for designation must meet the standards in this regulation and be in conformance with the EMS plans of Health Systems Agencies and with the State plan for regionalization of emergency medical services.

Each Health Systems Agency, in cooperation with the New Jersey State Health Department's Emergency Medical Services unit, will establish a regional emergency medical services advisory committee which will advise and assist the Health Systems Agency in emergency medical services planning. The Statewide Health Coordinating Council (SHCC) will establish an Emergency Medical Services Advisory Committee to assist the SHCC in compiling HSA emergency medical services plans into a State plan for emergency medical services regionalization.

Members of these regional and SHCC EMS advisory committees should be drawn from the full spectrum of persons with knowledge of or interest in emergency services, including physicians, nurses, hospital administrators and planners, members of first aid squads and paramedics, public safety personnel (e.g., firemen and police officers), local and State government representatives, and consumers.

Definition of Components of an Emergency Medical Services System

A list of basic structural components of a regionalized emergency medical services system can be viewed as:

First responders - policemen, firemen and the public.

Communicators/dispatchers - radio operators who are employed within a public safety communications center and use public safety communications equipment to dispatch services and to communicate with other personnel in an EMS system, in order to send the appropriate emergency services to the patient, or send the patient to the appropriate facility. Examples of areas with functional central public safety communication centers are Burlington, Camden, and Hunterdon Counties.

Ambulances and ambulance squads - vehicles designed and equipped to transport emergency medical services patients, and personnel manning these vehicles in order to provide basic life support services and transportation.

Mobile Intensive Care Units (MICU) and paramedics - vehicles designed and equipped to bring advanced life support services to the patient, and staffed by certified paramedic and/or mobile intensive care nurses providing the services through the MICU's.

Emergency department - an emergency unit in a hospital staffed 24 hours a day by a New Jersey licensed physician and nurses trained in and capable of rendering emergency services appropriate to the hospital's designation level.

Resource hospitals - to be designated under this regulation. Each resource hospital functions as the EMS hub for medical control and coordination in an EMS region (defined below) and provides an emergency department with centralized communication for medical control of basic life support and advanced life support functions. Detail regarding the role and requirements of resource hospitals are delineated in this regulation under "Standards and Criteria".

Associate hospitals - to be designated to this regulation. Associate hospitals have agreements to accept the advice of the resource hospitals for specific emergency medical service purposes. Associate hospitals have an emergency department and radio communications capability in accordance with guidelines established by the New Jersey Health Department and can undertake some of the responsibilities of the resource hospital (e.g., paramedic training and medical direction of patient care) when these tasks are delegated to the associate by the resource hospital. Detail regarding the role and requirements of associate hospitals are delineated in this regulation under "Standards and Criteria".

Receiving hospitals - to be designated under this regulation. Receiving hospitals have agreements to accept the advice of the resource hospital for specific emergency medical service purposes. Receiving hospitals have emergency departments and may receive specific critical care categories of patients. Associate and resource hospitals will also function as receiving hospitals. Detail regarding the role and requirements of receiving hospitals are delineated in this regulation under "Standards and Criteria".

EMS Region - the area to be served by a resource hospital, its associate and its receiving hospitals. This area need not be coterminous with any pre-existing regions. Detail regarding EMS regions can be found in this regulation under "Standards and Criteria".

A simplified list of the basic functional components can be viewed as:

Communications - including telemetry (the transmission of patient physiological data by telephone or radio between MICU and hospital).

Medical control - responsibility for leadership in the development and implementation of protocols for specific types of critical emergency care in a designated region. Implementation is accomplished through medical direction.

Medical Direction - physician - directed care of the patient either pre-hospital, via voice and telemetry, or in-hospital.

Mutual aid - reciprocal agreements among EMS providers (ambulance squads, police, hospital EMS personnel, etc.) serving contiguous areas, for the provision of emergency medical services in cases of unusual demand.

Training - of personnel for specific emergency medical services functions.

Triage - the act of assessing the type and the degree of severity of a presenting medical problem, and the health care resources that must be accessed in order to provide the appropriate level of care.

Basic life support (BLS) - the minimal acceptable level of care available in a regionalized Emergency Medical Services system.

Advanced life support (ALS) - includes basic life support functions as well as cardiopulmonary resuscitation; cardiac monitoring and defibrillation; telemetered electrocardiography; administration of anti-arrhythmic agents; intravenous therapy; administration of specific medications; use of adjunctive ventilation devices; trauma care and other authorized techniques and procedures.

Transfer - moving the patient from one facility, type of care, or level of service to another, according to patient wishes and needs and the availability of service, and in accordance with established procedures and protocols.

New Jersey Mobile Intensive Care Pilot Projects

Regionalized systems of emergency care have been initiated in this State in the form of Mobile Intensive Care pilot projects.

In October, 1973, P.L. Chapter 229, New Jersey's Paramedic Act, authorized any hospital having an accredited coronary care unit to apply to the State Department of Health for approval to conduct, for a 5-year period, a Mobile Intensive Care (MIC) pilot project. Of those hospitals which applied, nine were accepted as official projects.

Each project consists of a base station hospital and one or more MICU's under medical control. MICU's are each staffed by one or more paramedics. Five of these projects utilize volunteer paramedics and four utilize paid personnel. Mobile Intensive Care Paramedics in New Jersey are defined as Emergency Medical Technicians who have taken the New Jersey State Department of Health accredited paramedic training and have been certified by the New Jersey State Board of Medical Examiners as being qualified to render authorized advanced life support.

These pilot projects became operational with minimun start-up funding awarded to applicant hospitals which met basic criteria approved by the Commissioner of Health.

Although consideration was given to:
- Geographical area and population;
- Public information mechanisms;
- Technical resources available at applicant hospital;
- Accessibility to other resources;
- Inter-relationships with other hospitals;
- Potential to become self-sustaining;

these were not made explicit criteria in the application or selection of base hospitals and no regionalized plans were developed.

This regulation, building upon the knowledge the Emergency Medical Services program gained from the pilot projects, makes explicit such regionalization criteria, and specifies standards applicants must meet in order to be designated Emergency Medical Services resource hospitals.

Further information concerning the MICU pilot projects is available from the EMS program, 129 E. Hanover Street, Trenton, New Jersey 08608.

New Jersey Critical Care Categories and Specialized Resources

Critical conditions are the assumed or diagnosed physical conditions of an Emergency Medical Services patient whose life is considered at serious risk. Seven critical care categories were cited in the 1973 Federal Emergency Medical Services Act: perinatal/neonatal; burn; cardiac; behavioral (alcohol-drug abuse-mental health); poison; multiple trauma; and neurological injury emergencies. These emergencies will be of primary focus in future emergency medical services planning and regionalization. The following data indicates the potential numbers of persons needing such emergency care.

Perinatal/neonatal - 89,000 babies were born in New Jersey in 1976, 6,300 (7%) of them premature; 1,610 babies (2%) were either stillborn or died soon after birth. Over 8% of the babies were in need of intensive care.

Burns - In 1976, more than 2,500 persons in New Jersey were burned badly enough to require hospital admission, approximately 600 of them considered to be "severe" burns. About 200 people in New Jersey die due to burns every year.

Cardiac - Although cardiac - related deaths have been steadily decreasing in recent years, in New Jersey as well as nationally, every day in this State about 70 people die due to cardiac disorders and an equal number have myocardial infarctions (heart attacks).

Behavioral disorders - In 1976, over 28,000 persons were admitted to general hospitals in New Jersey with a primary diagnosis of psychosis, neurosis, alcoholism or drug dependence.

Poison - About 250 people in this State die from poisonings each year, and approximately 5,000 accidental poisonings are reported to the State Department of Health annually.

Multiple Trauma - Although data on this specific critical care category is not presently available, some indirect indicators suggest its prevalence. There were over 1,000 motor vehicle fatalities in New Jersey in 1975, and 11⁴,000 persons injured in motor vehicle accidents. In 1976, 83,000 persons with fractures, dislocations, internal injuries and open wounds were admitted to New Jersey hospitals.

Neurological injuries - New Jersey data is not available, but national data indicates that approximately 375 spinal cord injuries can be anticipated annually in a population of 7.4 million.

Critical care task forces, each addressing a single category, and each chaired by a leading physician in the State who is expert in that type of critical care, were established by the Emergency Medical Services program in 1977. They have disseminated draft documents and are in the process of preparing definitive documents to be used by hospitals designated under this regulation.

These documents will delineate the specific basic care required for each critical care category - care that must be provided by all personnel/facilities of a given type in the regionalized network (e.g., all paramedics or all emergency departments). The documents will also provide criteria that may be used in identifying emergency departments with special capabilities for treating particular critical care categories.

The critical care task forces have addressed themselves not only to the pre-hospital and emergency department care of patients in these critical care categories, but also to the appropriate level of inpatient care for patients with certain characteristics. The task forces have utilized (in addition to recognized national professional organization criteria) regionalization regulations and State plans relevant to the critical care categories. As additional Task Force reports are developed, they must be channeled through and coordinated with the activities of the Health Systems Agencies and the State Department of Health. If patient characteristics indicate that a higher level of care is required, the inpatient sites to which critical care patients will be transported (and the relationship between EMS critical care categories and facilities to be designated under previous regionalization regulations and plans, or services addressed by existing units of State government) are as follows:

Perinatal/neonatal care - facilities that have been designated Level II and Level III perinatal centers under the regionalization regulation.

Burn care - burn units and centers that have been awarded a New Jersey Certificate of Need; burn units and centers in Philadelphia and New York City; burn programs in New Jersey hospitals that meet the criteria specified in the Burn Care plan element in the State Health Plan.

Behavioral emergencies and poisonings - facilities meeting criteria to be developed by the task forces in collaboration with the appropriate planning and programmatic units in State government: in the Department of Health - the Division of Health Planning and Resources Development, the Division of Alcohol and Narcotic Abuse, and the Poison Control program; in the Department of Human Services - the Division of Mental Health and Hospitals.

Cardiac care - facilities meeting criteria to be developed by the task forces and approved by the Department of Health. Such facilities may or may not be facilities designated as cardiac surgery centers or cardiac catheterization centers.

Multiple trauma and neurological injuries - facilities meeting criteria to be developed by the task forces and approved by the Department of Health.

STANDARDS AND CRITERIA

EMS Region

Applicants for the designation of emergency medical services resource associate, and receiving hospitals must include supportive evidence substantiating the following:

The region to be served by the resource hospital, its associate and receiving hospitals will consist of at least 750,000 population, or at least 1,000 square miles. A population of more than one million would not be inappropriate in a densely populated geographic region. (Maps should be supplied.) Geographic inaccessibility waivers may be granted with the recommendation of the HSA.

The planned system or network in a single region consists of no more than one resource hospital. Associate hospitals will be designated based on one per 250,000 population. Resource and associate hospitals must have the capability of operating NICU's. The number and need for NICU's for the region is to be determined by the HSA in the planning process and approved by the SHCC.

Resource Hospital

Applicants for the designation of emergency medical services resource hospitals must meet the following standards and criteria and provide supportive evidence in their application.

Resource hospital size/utilization - An annual inpatient load of at least 9,000 admissions/discharges (a 200-bed hospital maintaining 85% occupancy with a 7-day average length of stay would have 8,864 in-patients).

Resource hospital facilities and equipment

1. An emergency department.
2. A functioning ICU/CCU.
3. A Federal Communications Commission (FCC) license to operate radio equipment, or written assurance that such a license will be applied for within 30 days of the facility's being designated an Emergency Medical Services resource hospital.
4. Radio equipment recommended by New Jersey State Department of Health and compatible with New Jersey State Department of Health State Telecommunications plan, capable of providing medical control communications for the region, or written assurance that such equipment will be ordered within 30 days of the facility's being designated an Emergency Medical Services resource hospital.
5. Biomedical communications equipment compatible with other units in the region, or written assurance that such equipment will be ordered within 30 days of the facility's being designated an Emergency Medical Services resource hospital.

Resource hospital staffing

Medical Director - physician licensed to practice medicine in New Jersey, fully experienced in emergency medicine, and trained in advanced life support. Employed full-time by the resource hospital but functions approximately 15% of the time as Medical Director of the emergency medical services region; trained and experienced in monitoring and maintaining optimal levels of patient care among medical, nursing and allied health care personnel.

Mobile Intensive Care Unit Coordinator (full-time) - responsible for scheduling and staffing the Mobile Unit with adequately trained and certified personnel. Also responsible for the maintenance of medical equipment, supplies communication equipment and vehicle maintenance.

Administrative and Training Coordinator (full-time) - responsible for management aspects of the Emergency Medical Services Program within the region, as well as coordinating or conducting training for emergency medical services personnel in the region. Further responsibilities include coordination of training among the associate, receiving and other hospitals, as well as community colleges and other educational facilities in the emergency medical services region.

Physician, nurses, and paramedics fully trained, certified and in sufficient numbers to staff a medically controlled advanced life support system in the region 24 hours a day, 7 days a week.

Emergency Department (ED) staffing consisting of at least:

24-hour physician coverage (a New Jersey licensed physician certified by the board of trustees of the hospital as being trained in and capable of rendering advanced life support).

cardiologist, internist, and surgical consultants available as needed or on call within 30 minutes. Senior residents may be used in the interim.

nurses trained in and capable of rendering basic life support and at least one nurse, certified by the board of turstees of the hospital in advanced life support, on duty at all times.

Resource hospital medical control - As a part of overall medical control, the resource hospital must agree to:

Perform functions related to training

Possess the capability to coordinate or conduct training in the emergency medical services region.

Use curricula approved by New Jersey State Health Department for paramedic training.

Provide orientation to the advance pre-hospital care program for all hospital employees and to the community in the region.

Provide training of emergency physicians and nurses who will be providing medical direction by radio or telephone from the resource and associate hospitals, and provide training of dispatchers.

Perform functions related to communications

Use designated UHF Med channels and VHF radio channels as outlined in the New Jersey State Health Department communications plan.

Abide by guidelines set forth by the New Jersey State Health Department to assure a state and regional medically controlled communications system.

Record all voice telemetry communications and store them for a minimum of two years.

Central dispatch is neither required by, nor specifically excluded from this regulation.

Perform supervisory functions related to remote emergency care of critical patients

Assure that choice of hospital to which patients will be transported is based entirely on objective analysis of patient preference, facility capability and proximity, and that no effort will be made to obtain commercial advantage through this regionalized emergency medical services system.

Use protocols for treatment and transfer developed in cooperation with other emergency care providers in the region and the New Jersey State Health Department, so that patients appropriate for specifically designated critical care facilities are transported there.

Have the capability to operate whatever number of MICU's is determined by the HSA's and the SHCC to be needed for a population of 250,000. The MICU's must meet the equipment and staffing standards established by the New Jersey State Department of Health. Salary costs of MICU personnel will be approved for reimbursement only when there is clear and ample documentation that volunteers were not available.

Arrange for the handling of Medivac patients by State Police helicopter service.

Seek mutually developed written agreements with basic life support ambulance squads detailing reciprocal responsibilities. It is understood that hospitals have no authority over volunteer ambulance squads and that these squads are not obliged to participate. Voluntary cooperation of these squads is to be sought, and HSA's should give special consideration to applicant hospitals successful in obtaining the cooperation of ambulance squads.

Other Criteria and Standards

An application for designation of resource hospital must contain the following information:

1. Detail regarding:

   a quality control system for medical direction and MIC responses.

   estimates of the start-up and operational costs anticipated.

   plans for informing the community about the Emergency Medical Services regional system and providing community education in system access, prevention, health education, and cardiopulmonary resuscitation.

   a plan for the participation of hospitals, basic life support, and advanced life support units in an equipment exchange program.

   relationships with local government units, Health Systems Agencies, and other appropriate agencies and organizations in the region.

2. Written assurance that the hospital:

   at the time it applies for designation, does not foresee a reduction from its current status in service capability, facilities or staff related to emergency medical services function;

   has the written approval and support of its governing body;

   will work in cooperation with the regional emergency medical services advisory committee;

   will maintain appropriate liability insurance;

   will assure that no discrimination among patients will be made, directly or indirectly, on the basis of the patient's race, religion, sex, age or ability to pay. The applicant shall state in writing that the hospital shall comply with all Federal and State laws in this regard, including the Good Samaritan statute.

3. Written assurance that a minimum data set as required by the New Jersey State Health Department will be collected for every patient encounter, basic life support, advanced life support, and emergency department; and basic reports using this data are submitted to New Jersey State Health Department as required. After consultation with appropriate hospital personnel, the Department of Health will develop a reporting form to be used by each hospital.

4. An application for designation from hospitals proposing to function as associate or receiving hospitals within the system must specify the following criteria will be met:

Associate hospitals must

have an emergency department;

receive patients;

agree to use protocols for treatment and transfer developed by the emergency medical services resource hospital in cooperation with other emergency care providers in the region and the New Jersey State Health Department;

have a functioning ICU/CCU;

have communications capability in accordance with guidelines established by the New Jersey State Department of Health.

provide medical direction to advance life support units nearest this facility;

coordinate paramedic training with the resource hospotal;

have an MICU coordinator, (full-time)

Have the capability to operate whatever number of MICU's is determined by the HSA's and the SHCC to be needed for a population of 250,000. The MICU's must meet the equipment and staffing standards established by the New Jersey State Department of Health. Salary costs of MICU personnel will be approved for reimbursement only when there is clear and ample documentation that volunteers were not available.

provide written assurance that the hospital:

at the time it applies for designation, does not foresee a reduction from its current status in service capability, facilities or staff related to emergency medical services function;

has the written approval and support of its governing body;

will work in cooperation with the regional emergency medical services advisory committee;

will maintain appropriate liability insurance;

will assure that no discrimination among patients will be made, directly or indirectly, on the basis of the patient's race, religion, sex, age or ability to pay.

The applicant shall state in writing that the hospital shall comply with all Federal and State laws in this regard, including the Good Samaritan statute.

will collect a minimum data set, as required by the New Jersey State Health Department, for every patient encounter - basic life support, advanced life support, and emergency department - and submit basic reports using this data to the State Health Department as required. After consultation with appropriate hospital personnel, the Department of Health will develop a reporting form to be used by each hospital.

Receiving hospitals must

have an emergency department;

receive patients;

agree to use protocols for treatment and transfer developed by the emergency medical services resource hospitals in cooperation with other emergency care providers in the region and the New Jersey State Health Department;

have a functioning ICU/CUU;

have gound line (telephone) communications with resource and associate hospitals, and have VHF communications capability. No other specific communications capability is required or encourged.

provide written assurance that the hospital:

at the time it applies for designation, does not foresee a reduction from its current status in service capability, facilities or staff related to emergency medical services function:

has the written approval and support of its governing body;

will work in cooperation with the regional emergency medical services advisory committee;

will maintain appropriate liability insurance;

will assure that no discrimination among patients will be made, directly or indirectly, on the basis of the patient's race, religion, sex, age or ability to pay. The applicant shall state in writing that the hospital shall comply with all Federal and State laws in this regard, including the Good Samaritan

will collect a minimum data set, as required by the New Jersey State Health Department, for every patient encounter - basic life support, advanced life support, and emergency department - and submit basic reports using this data to the State Health Department as required. After consultation with appropriate hospital personnel, the Department of Health will develop a reporting form to be used by each hospital.

Senator CRANSTON. Thank you very, very much.

Mr. PRITCHETT. I am Tom Pritchett, and since I have already submitted my statement, I will keep my comments brief.

Senator CRANSTON. Thank you.

Mr. PRITCHETT. I am Tom Pritchett, project director of the western Ohio EMS regional system, which encompasses 10 counties around Dayton in Ohio.

The implementation of a regional EMS program has provided a nonpartisan body to effect changes and improvements in the delivery of emergency health care that probably never would have happened otherwise. The regional program has been the catalyst to effect these changes to institute programs, such as CPR, on a regional basis.

Last year, for example, 11,568 people were trained in our 10 counties in CPR. CPR has been introduced into numerous school systems throughout our region. Continuing educational programs in advanced cardiac life support courses for physicians were instituted in our region. Some 70 physicians from 19 hospitals have been trained, of which 25 have now been trained and certified as instructors and are going on and training other physicians that work in emergency departments within our regional hospitals.

We have conducted an ongoing, continuing educational program for some 62 nurses who work in the emergency departments of our regional hospitals. With participation by hospitals and physicians, the medical management of our rescue squads is being provided through communications links with the hospitals and hospital-based physicians. Hospitals have been categorized to identify existing patient care capabilities to insure that quality patient care is being provided.

Standardized recordkeeping systems have been implemented. Where, initially, only 12 out of 94 of our rescue squads had any kind of uniform record system, we now have, in a 1½-year period of time, 86 out of 94 squads using uniform data collecting techniques.

We have introduced standardized patient transfer procedures. The quality of patient care has improved through the development of a coordinated EMS system. It takes teamwork, cooperation, and dedication. The public and the health providers have recognized the benefits and are working together to create a better system for our region.

There are specific other areas that require attention, and I just want to comment that I support the previous comments with regard to the further research necessary in the area of poison and trauma efforts.

I urge that the legislation be extended to finish the task of emergency medical services that has been undertaken in this country. In the State of Ohio, approximately one-third of the counties have been covered by regional EMS programs. I feel that through the development of a wall-to-wall type of program in this country, we will have an effective capability in the prehospital phase to insure a much greater rate of survival of our general population. Thank you very much.

Senator CRANSTON. Thank you very much; we appreciate your testimony. I regret that my and the committee's time constraints

prevent me from asking you questions now. I know that your ad lib responses would be superb, but you will at least have more time to think about your responses, because we will submit written questions to you. I thank you very much for your help.

[The prepared statement of Mr. Pritchett and material referred to follow:]

STATE OF OHIO

WESTERN OHIO EMERGENCY MEDICAL SERVICES REGION

EMS TESTIMONY

The Western Ohio Emergency Medical Services region encompasses a ten county, 4,373 square mile area with a population of 1.235 million people. The major city in the region is Dayton, Ohio. The region is presently at the 1203(2) level of emergency medical service system development under a Department of Health, Education and Welfare, Emergency Medical Services (EMS) grant. The Ohio Department of Health is the designated state EMS grant lead agency. The Ohio Department of Health has contracted the 1203(2) grant award for management and implementation to the Western Ohio Emergency Medical Services Council, Inc. The Council is comprised of a 32 member board of trustees with representation from each of the ten counties in the region.

A full time staff has been employed by the council to carry out the terms and conditions of the grant award. A Medical Director and seven physician specialists have been contracted by the Council to provide medical direction to the regional EMS program development.

The EMS plan for the Western Ohio region is based on the potential capability of the region to support a sophisticated EMS delivery system. While the region did not initially have a fully established basic life support system in place, the level of system development and expressed concern by a sufficient number of people and organizations assured support for an EMS program to be undertaken. Assessment of resources indicated that in most instances manpower and facilities were available to develop the linkage required to form a regional EMS system configuration. Deficiencies were noted to some degree in all of the components.

Since the initial phase of EMS system development primarily involves the pre-hospital phase, it was found that manpower resources ranged from 53% to 433% of local county needs to adequately staff ambulances. Physician and nurse skills required additional training to provide an appropriate interface with the Emergency Medical Technician-Ambulance and Paramedic working in the field. Communications between EMS services within counties and between ambulance services and hospitals were frequently found to be inadequate, incompatible or did not exist.

Facilities were not categorized as to their level of patient care capability as concerned their emergency services or internal critical patient care capabilities; uniformity of patient transfer procedures did not exist. Only one community (Springfield) in the region has 911 (universal emergency telephone number) available to its 80,000 residents. Only one county with 12 of the 94 ambulance services in the region utilized a uniform ambulance run report that was meaningful to hospital personnel with regard to continuity of patient care.

Cardiopulmonary Resuscitation (CPR) training was generally limited in scope, lacked coordination and at best fragmented. During the past one and a half years during which time the regional EMS program has been fully implemented, significant strides have been made in the improved delivery of pre-hospital emergency patient care, in hospital and patient transfers.

An extensive public information and education program has been initiated in conjunction with the American Heart Association, American Red Cross, news media, television, civic organizations, health providers and public agencies and institutions.

Over 11,658 people were CPR trained in 1978. Approximately $80,000 in free radio and television time has been allocated for EMS related public service announcements. An awareness has been developed in the general public about EMS. CPR has been introduced into public school systems throughout the region.

The City of Dayton with a day time population of over 400,000 has been assisted in obtaining a Department of Transportation (DOT) grant to initiate the establishment of a paramedic service which will provide advanced life support capability at the scene of a life threatening situation and enroute to the hospital. One county has been assisted in forming a county wide EMS management system with central dispatch and has submitted an application to the state for DOT funding for ambulances and communications equipment; three additional counties are in the process of formalizing their county wide systems. A continuing educational program for 60 nurses involved in the care of the emergent patient has been completed and a second program is now underway. Seventy physicians from 14 of the 19 hospitals in the region have completed a two and a half day course in advanced cardiac life support techniques (ACLS); 25 of these physicians are now certified instructors and are contributing their time to teach other physicians. These courses have been made possible through the cooperative efforts of the regional EMS program, physicians, Wright State University School of Medicine and hospitals throughout the region. The state sponsors a paramedic training program conducted through one hospital in the region.

Through the joint efforts of physicians, nurses, and hospital administrators regionally conducted continuing educational symposiums are being conducted for rescue squad personnel. This educational relationship is establishing bonds of confidence and unity of effort that result in good patient care. The formation of county based EMS councils are becoming the focal point for coordination of recertification training needs. Fire Departments and law enforcement agencies are participating fully in the regional EMS effort.

At present 86 of 94 ambulance services now utilize a standardized run report. This document provides for the continuity of patient care since it is used by the attending physician when the patient is delivered to the hospital and is usually attached to the patient chart. The report also has become an immediate evaluation tool to review technical skill performance of the squad member by the squad chief. Hospitals throughout the region have participated in categorization of their patient care capability based on criteria developed from national guidelines. The identification of specific care capabilities of each facility enables the attending physician to select the facility appropriate to the needs of the patient.

Early involvement of the hospital based physician in the pre-hospital phase of patient care through radio and telemetry communications with the ambulance service has increased. A regional communications plan has been developed and approved by DHEW communications consultant for implementation. The plan incorporates the assurance that medical management by a hospital based physician will always be available to the ambulance service and that channel and frequency integrity will be maintained between the ambulance and the hospital. A transfer manual providing guidelines for specific categories of emergent patient conditions: (amputations, behavioral, burn, cardiac, high risk infant, poison, spinal cord injury and traumas) to include transfer check list has been developed and implemented for use in hospitals throughout the region. Through establishment of data collection procedures and EMS system evaluation, statistics collected reflect progressive improvement in the delivery of pre-hospital care for the population at risk; lives are being saved and patients are getting to the proper facility. The presence of the regional EMS program has been recognized by EMS providers, private and civic organizations and agencies and governmental bodies as the

focal point for the coordination and progressive direction in improved delivery of EMS services.

Over 100 letters of support have been received to date for our next grant application pledging their support and continued commitment to the regional EMS program effort. While much has been done, more needs to be accomplished to achieve a fully integrated regional EMS system. The technical skill levels of the Emergency Medical Technician, paramedic, emergency department nurse and physician need to be coordinated regionally through on-going continuing educational programs, workshops and symposiums. Past experience has confirmed this need.

The continued development of county wide, coordinated EMS systems which are linked together into a regional net. Full implementation of the regional communication plan will assure public access to EMS dispatch centers, central dispatch centers linked to other public safety agencies and disaster services will provide comprehensive EMS resource management; the availability of medical direction from a hospital based physician complements the critical patient care initially rendered at the scene by the trained technicians.

The public information and education program will continue to expand. Consumers participation in CPR training, accident and incident prevention and recognition of early warning signs of a heart attack will be areas of major effort.

The strategy for future funding of the program at the conclusion of the DHEW, EMS grant funding cycle is being addressed.

While considerable progress is being achieved, it is not without problems. The time constraints placed on programmatic achievement annually as well as submission of grant applications annually places a heavy adminis-

trative burden on the regional EMS staffs. A two year grant approval cycle would be more realistic with a progress report submission at the mid point.

This concludes my testimony.

Thomas W. Pritchett
Project Director

Western Ohio EMS Council, Inc.
4020 Lake Village Centre
Trotwood, Ohio 45426

TWP/tb

MEMO NEW JERSEY STATE DEPARTMENT OF HEALTH

TO Dr. Koplin DATE March 21, 1979

FROM William J. Harris PHONE 292-0782

SUBJECT Senate Committee questions

The following are responses to the seven questions from the Senate Committee:

Question: Have you found that the guidance and technical assistance provided you by H.E.W. has been adequate?

1. It has been our experience that the majority of workshops and seminars conducted under the auspices of HEW have been beneficial and useful. They have been a source of valuable guidance and facilitated our conceptualization of systemwide goals. The DHEW II Physician Adviser and DHEW II Communications Consultant have made a sincere effort to assist us. Central & Regional Office representatives are available to give assistance and their track record is solid.

Question: Would your experience agree with H.E.W.'s contention that training of E.M.S. personnel can be supported solely at the local level?

2. EMT, Paramedic, and Nurse training programs are well established in New Jersey. HEW and DOT have provided funds to these programs. New Jersey OEMS is attempting to integrate EMT training into the community college structure. The outcome of this proposed transition is not yet clear.

Question: A. What has your experience been in obtaining the statutorily required assurances of continued support from your government units?
B. Has this new requirement forced you to seek alternative sources of continued funding, either from the State government or from other sources, and what success have you had?

3. Close cooperation at the local level is a reality in the area of telecommunications. New Jersey OEMS is the process of implementing a program of phased improvements in EMS/Fire/Police dispatch capabilities at the county level. County officials and public safety agencies are active partners in this process. New Jersey is unique in that it has a plan for the new total reimbursement of Advanced Life Support services. Basic Life Support will remain a primarily voluntary service. Our main funding thrust is then in the area of hospital based third party reimbursement. The regulatory and rate setting functions of the New Jersey State Department of Health will insure the validity of ALS arrangements. The incomparably strong volunteer tradition at the BLS level insures the continuity of free service.

Question: Do your systems coordinate their communications and transaction networks with public safety agencies?

4. New Jersey OEMS works closely with public safety agencies to coordinate EMSS communications and transportation. Crash Injury Management training orients public safety officers to the realities of systematic emergency care.

Question: Have you applied for and obtained Federal financial support from either the Department of Transportation or the Law Enforcement Assistance Administration?

5. New Jersey OEMS has never applied for nor received LEAA funds. DOT funds have been obtained to support training and communications.

Question: Have you encountered duplication in your community as a result of Federal agencies other than H.E.W. providing funding for the purchase of equipment for emergency services not coordinated with yours?

6. Most DOT funds and HEW funds are coordinated through New Jersey OEMS.

Question: A. Have you found that H.E.W.'s guidelines and regulations governing your grant application and award are realistic and achievable?

B. Do you believe the reports required of you are justified in terms of the personnel time required?

C. Have you found HEW's grant application requirements reasonable, or do you feel they entail too much paperwork and use of personnel time?

7. A. The time frame for the preparation of the grant is unrealistic. The new emphases in the grant process are however both logical and compelling. Additional attention to medical input is an especially useful focus for grant writing.

B. The manpower and time required to compile quarterly reports are not justifiable. It is clear that six months progress reports would contain more information. A half year's assessment might also be the occasion for a true evaluation of EMSS progress. The abstract writing process proved the worth of a system evaluation prior to the actual preparation of the grant. The grant itself constitutes an index of a year's progress toward systematized emergency care.

C. They are for the most part reasonable and valid. The grant application should be the logical outgrowth of a conceptualization process -- such as the one undergone for the preparation of abstracts this year.

Overlook Hospital

Summit, N. J. 07901 201 - 522 - 2000

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March 4, 1979

Senator Alan Cranston
Subcommittee of Child and Human Development
Room 4232
Dirkson Senate Office Building
Washington, D.C.

Dear Senator Cranston:

Thank you for the opportunity of testifying before your committee on February 28, 1979. Because of the severe time constraints those of us from the New Jersey EMS Project were unable to engage in the dialogue with you and the other Senators in a question and answer period. Ms. Ringwalt provided me with a series of questions you would have liked to ask and the following are my responses.

1. Have you found that the guidelines and technical assistance provided you by HEW have been adequate?

A. The HEW guidelines and the technical assistance by staff both in HEW Region II in New York City and in Hyattsville have been intelligent, efficient, timely and exceedingly helpful in our relatively new program in New Jersey. Telephone and other lines of communication have remained open continuously. The Regional EMS workshops conducted by Dr. Boyd and other national experts have been of particular assistance in that regard. Without Federal funding the dialogue and cross fertilization among all of us in EMS would not have taken place in my opinion.

2. Would your experience agree with HEW's contention that training of EMS personnel can be supported solely at the local level?

A. No. Until EMS systems are operational in a high percentage of the jurisdictions around the country the necessary local funding for education will not be forthcoming

in my estimation. I do not think the Federal Government will have to remain in the EMS education business indefinitely but it certainly should be a major area of resource expenditure while the system is taking shape. I've noticed at a local, regional and state level in New Jersey that once the system becomes developed and sophisticated, communities feel a sense of ownership and then are quite willing to fund the continuation of the service. Until the EMS system has proven it's worth at the grass roots level, education dollars are hard to come by locally.

3. What has your experience been in obtaining the statutory required assurances of continued support from your governmental units? Has this new requirement forced you to seek alternative sources of continued funding, either from the State government or from other sources, and what success have your had?

A. The federally funded New Jersey State EMS Project has always taken quite seriously the requirement that assurances of continued support from local government and other sources be guaranteed. For that reason once we idealized and conceptualized a system we chose to use a combination of state and federal health planning authorities to designate the expensive components of the system and grant certificates of need. In addition we have built the lion's share of the operational costs of the system into the usual mechanisms for health care funding in our State, namely community funds for the pre-hospital basic life support phase, a combination of hospital and community support for advanced life-support (Mobile Intensive Care Units) and hospital reinbursement dollars for the emergency care and the specialized critical care units (burn, neonatal, neurosurgical, trauma etc.)

Unquestionably this requirement has forced us to seek alternative sources of continued funding and that is healthy. An abrupt termination of federal funding within the next few years would be premature and come at a time when the entire categorization and implementation of the system has not reached full momentum. In other words, the requirement is a legitimate and appropriate one but its application in a too short a time span is unrealistic and destructive to the whole process.

4. Do your systems coordinate their communications and transport networks with public safety agencies?

A. Yes. Always. We have involved local county and state public safety leadership in the process from the start. They have developed some excellent models for communication and provide the helicopter (MEDIVAC) capability in our state and therefore represent a valuable resource in EMS.

5. Have you applied for and obtained federal financial support from either the Department of Transportation or the Law enforcement assistance administration?

A. The Department of Health in New Jersey is the recipient of Department of Transportation funds for the training of EMT's and also conducts a crash injury rescue program for public safety personnel.

6. Have you encountered duplication in your community as a result of Federal agencies other than HEW providing funding for the purchase of equipment for emergency services not coordinated with yours?

A. Yes, for the most part. The previously alluded to staff assistance from HEW Region II and from Washington have facilitated this matter. We are fully aware that such reporting is necessary in the interest of accountability and most importantly the long term evaluation of the effect of these expenditures. We have in general found the grant application requirements reasonable in spite of the fact they do entail a great deal of paper work and the use of personnel. We are aware that HEW must make these grants on a competitive basis and feel that the process is time consuming but necessary.

In addition to the questions provided us by Louise Ringwalt we had submitted the following questions and wish to provide answers to the committee.

1. What advantages have you found in categorizing hospitals in your state using the regulatory process?

A. At the outset of the EMS grant project we establish clinical task forces of providers of emergency medical care at all levels and idealized emergency medical services including the pre-hospital, hospital, and inter-institutional transfer of the critically ill. Once optimal, achievable care procedures were identified it became apparent this would never happen unless it was universalized within our State using a combination of voluntary and regulatory processes that were already well rehearsed in New Jersey. Since 1971, we have had both Certificate of Need legislation and the Commissioners of Health and Insurance have controlled the reinbursement of hospitals. The Federal health planning legislation caught on rapidly in such states as New Jersey and our HSA's are well along in the process of designated Perinatal/Neonatal centers, Cardiac surgical and Cardiac catheterization centers, chronic dialysis programs, megavoltage radiation, burn units etc. We married the federal health planning processes to the planning expertise developed in our Department of Health over the last seven years and the power of the purse held and excercised by our State government.

We are assured of a rational, well distributed, limited number of EMS entities which will be planned on a very local basis. Approximately ten EMS regions which will evolve out of the HSA process and be presented to the State Health Coordinating Council and the Department of Health as a coordinated state wide plan of EMS.

2. Have you encountered any problems with this process and if so, what are they?

A. Our initial problem was that the various segments of emergency medicine were relatively unconcerned with EMS systemitization until the prospect of categorization through the regulatory process became a reality. A very noisy and sometimes painful debate has been underway in the last six months as we proceed through a review and comment period. On April 1, 1979 the EMS regulation (which we submitted with our testimony) is expected to be passed by the State Health Care Administration Board with whatever modifications come up in the month of March. The overriding problem we have encountered is one of resistance to change, and a resistance to governmental involvement. As each of the special interest groups has debated the regulation,they enriched it through their input the rhetoric has died down and a major educational by-product has been realized. In other words, what at first was perceived as a problem has turned into a benefit for EMS in New Jersey.

3. How has New Jersey benefitted from EMS legislation?

A. The EMS funding created a critical mass of staff and expertise which has allowed us to tap the medical and other wisdom in N.J. and around the country and convert it to a realistic plan for EMS systemitization.

4. Why is it necessary to develop regional or statewide systems through federal incentives? Why cannot the desired effect be achieved on a voluntary basis?

A. Our experience has been that left to a totally voluntary approach, no EMS system will emerge. Islands of excellence will develop but will be grossly mal-distributed and frequently redundant. Once this redundancy occurs the personnel involved tend to lose their very perishable skills because of under-utilization.

5. Will EMS funding contribute to the spiraling increase in the cost of health care?

A. No. Just the opposite. In New Jersey, a State Hospital Rate Review Commission regulates all hospital reimbursement. We have a well developed system of health care planning and designation of specialty services. The federal grant has crystalized our thinking in EMS by drawing upon a combination of local medical expertise and sharing the experience of other EMS grantees. Regional planning and rationing of resources in EMS would not have occured in my opinion without federal stimulation. EMS programs (particulary specialized units such as burn, trauma units and advanced life support, Mobile Intensive Care Units) would predictably have proliferated into a far more expensive non-system without the federal involvement.

Thank you for your continuing enthusiastic support of these efforts.

Sincerely,

William F. Minogue, M.D.
EMS Project Director
New Jersey State Department of Health

WFM/m

Western Ohio
Emergency Medical Services

March 9, 1979

The Honorable Alan Cranston
U.S. Senator
229 Russell Senate Office
Washington, D. C. 20510

Dear Senator Cranston:

Enclosed are my responses to the written questions given to me at the conclusion of the EMS hearing held on February 28, 1979.

If you have any further questions or need any point clarified, do not hesitate to call me.

I do appreciate having had the opportunity to participate in a portion of the legislative process.

Sincerely,

Thomas W. Pritchett
Project Director

enclosure

TWP/tb

4020 LAKE VILLAGE CENTRE ● TROTWOOD, OHIO 45426 ● PHONE (513) 854-4044

These are the responses to written questions furnished the undersigned by Senator Alan Cranston pertaining to public hearing on S. 497, Emergency Medical Services Systems Amendment of 1979, February 28, 1979, Room 4232, Dirksen Senate Office Building, Washington, D.C. These responses supplement the previously requested and submitted written testimony and verbal summary presented before the Health and Scientific Research Senate Sub-Committee.

1. Question: Have you found that the guidance and technical assistance provided you by HEW has been adequate?

Answer: As a regional EMS program Director in western Ohio, my primary contact is with the HEW Region V EMS Office in Chicago. Their guidance and assistance is adequate. The staff is responsive to questions, helpful in providing guidance and keeps us informed of periodic report requirements, meetings and other programmatic needs.

2. Question: Would your experience agree with HEW's contention that training of EMS personnel can be supported solely at the local level?

Answer: In viewing the total EMS training needs, experience has proven that it is not probable that training can be solely supported at the local level; at least not initially. Prior to the implementation of the western Ohio regional EMS program under HEW funding, the initial training of the EMT-A and paramedic was adequate, but very little was done with regard to continuing educational needs. Continuing education for nurses was principally in the general patient care management aspect. Physician continuing education was primarily through hospital medical staff sessions and out-of-state convention sessions. None of the hospitals had a physician who had completed a residency in Emergency Medicine. As a result of the regional EMS program, continuing education courses have been established specifically for nurses working in Emergency Departments. The courses address the skills needed in the care

and management of the emergent patient. Last year 62 nurses received this special training and an additional 60 more will be trained this year from hospitals throughout the region. In April 1978, the first Advance Cardiac Life Support (ACLS) course consisting of two and one-half days of concentrated training was given to 28 physicians from hospitals throughout the region; 17 physicians were certified as ACLS instructors - the first ACLS instructors in the area.

To date five courses have been conducted; 25 physicians are now certified instructors and 44 certified as providers. These physicians are from 14 of our 19 hospitals. These physicians are now in the process of conducting additional courses. It is projected that by the end of 1979 an additional 75 physicians will be trained in ACLS techniques. These physicians are conducting these courses on a voluntary, free basis. The fact that the program is regionally related and coordinated has been the key to achieve this type of cooperative effort. Regionally coordinated paramedic symposia are also being conducted. Each session averages over 100 paramedics in attendance. Sessions are conducted by physicians with space provided by local hospitals and the university medical school. These achievements in this training effort would not have been possible without a regional EMS program providing the coordination and leadership. Cardiopulmonary resuscitation (CPR) training for the general public again is an area that previously was very local, but the regional EMS program working in cooperation with the American Heart Association and the American Red Cross has made CPR training the "in" thing. CPR is a household word throughout the region. I am confident that this training will continue on an ongoing basis but only because the regional EMS program has been the catalyst.

3A. Question: What has your experience been in obtaining the statutorily required assurances of continued support from your governmental units?

Answer: Obtaining assurances of continued support from governmental units is not a simple process. First, it has to be recognized that the establishment of a regional EMS program through HEW funding has to prove that the service and coordination being provided is beneficial to the communities throughout the region. In an area that lacks coverage by ambulance service and does not have adequate training resources for manpower, the efforts of the EMS regional program are highly visible; however, in a region that already has services to some degree, but are highly fragmented; the task of reflecting highly visible improvements are primarily more apparent to the providers (physicians, nurses, EMT-s, hospitals, public safety agencies, etc). It is through this group that the benefits of the regional EMS program efforts are conveyed to the governmental bodies. This process therefore, becomes more time consuming and more complex through coordinating and evolving a systems approach for the total EMS delivery system. During this past year, the recognition of the regional EMS program efforts are being recognized by the provider groups. In turn, the government units are recognizing the benefits of the regional EMS efforts. In this respect, letters of support expressing recognition of the improvements and benefits of the regional program are being received from governmental units. This recognition is being turned into assurances through signed agreements with Boards of County Commissioners to utilize the regional EMS program body for management and technical assistance and participate as a county component of the regional EMS program. The strategy being used in the Western Ohio EMS region is based on the development of county based, and regionally coordinated and integrated EMS system. On this basis the statutorily required assurances are being obtained as each county EMS system is formalized.

3B. Question: Has this new requirement forced you to seek alternative sources of continued funding, either from the state government or from other sources, and what success have you had?

Answer: We are seeking alternative sources of funding. Contact has already been established with a member of the Ohio House of Representatives to discuss the development of legislation to authorize state level funding for some portions of regional EMS systems that have progressed through all phases of the DHEW EMS program.

At the present time, one hospital has already picked up a portion of one salary (Medical Secretary) for staff support of the regional program. Physicians that were trained as ACLS instructors in a course sponsored by Western Ohio EMS have committed themselves to teach others on a voluntary basis. The Ohio Department of Health has agreed to fund the data collection and patient tracer outcome studies on an ongoing basis.

The possibility of the regional EMS office to coordinate and process for reimbursement all ambulance transport through third party payer is being explored. A standardized ambulance run report is already in use by 86 of the 94 rescue squads in the region. Since the majority of rescue services do not utilize this alternative as a revenue source, the regional program recognizes this as a significant self-sufficiency funding source.

While it is too early to determine the success of these alternative sources of funding, the probability of their success at this time is considered very high.

4. Question: Do your systems coordinate their communications and transportation networks with public safety agencies?

Answer: Yes, we exercise very close coordination with the public safety agencies in all EMS component areas with special attention given to communications and transportation. Since fire, police, and rescue have so many common interests and working relationships, the coordinated and cooperative effort has been very constructive in improved EMS services.

5. Question: Have you applied for and obtained federal financial support from either the Department of Transportation or the Law Enforcement Assistance Administration?

Answer: Yes, we have assisted the City of Dayton in organizing and applying for a DOT funded grant for the initial purchase of Advanced Life Support (ALS) paramedic level service ambulances and appropriate communications equipment. A grant in the amount of $142,960 has been awarded to the City of Dayton by DOT. We have assisted Shelby County Commissioners and their EMS providers in organizing a county wide, centrally coordinated EMS system and assisted in the submission of a DOT grant application in the amount of $167,040. Approval of the application is anticipated momentarily. Two additional county applications are already in the process of being finalized and will be submitted for DOT funding within the next 60 days. As each county becomes appropriately structured to support central dispatch with a coordinated EMS management system, the necessary funding for supplemental ambulances and communication equipment will be applied for through DOT. To date we have not requested any LEAA funding support.

6. Questions: Have you encountered duplication in your community as a result of federal agencies other than H.E.W. providing funding for the purchase of equipment for emergency services not coordinated with yours?

Answer: We have not encountered any duplication in funding by federal agencies of EMS equipment in our community.

7A. Question: Have you found that H.E.W.'s guidelines and regulations governing your grant application and award are realistic and achievable?

Answer: We have no problems with the H.E.W. Guidelines and regulations. To date they have been realistic and achievable.

7B. Question: Do you believe the reports required of you are justified in terms of the personnel time required?

Answer: Not entirely; the financial reports are appropriate. The quarterly programmatic reports are realistic as is the annual report; however, a semi-annual workbook plus crisis reports do tax the staff resources to respond to on-going program needs, grant application initiation in mid-year and other unscheduled reports. For example, a recent report in abstract format addressing 24 areas was requested in late October 1978, due December 1, 1978. A full day was spent in Chicago and an additional half day in Omaha on instruction on how to prepare an abstract. In my opinion, better planning could have precluded these additional trips and the number of man hours required to generate this document on such a short notice. In conclusion, a semi-annual workbook or annual abstracts would appear sufficient to meet all reporting requirements.

7C. Question: Have you found HEW's grant application requirements reasonable, or do you feel they entail too much paperwork and use of personnel time?

Answer: The grant application requirements are reasonable; however, the cycle process should be changed. The 1203-1 and 2 years should be combined into a one application grant award for two years. The same applies for 1204-1 and 2. Much of the material is basically the same except to update. An abbreviated application only reflecting changes for the 1203-2 and 1204-2 would be an improvement; or better yet would be the submission of a progress report. The manhours and supply costs for preparation and processing consistent applications annually is not very cost effective. In addition, staff time is more appropriately spent working with EMS providers and the public rather than slowing down to prepare a grant application in mid year.

Thomas W. Pritchett, Project Director
Western Ohio Emergency Medical Services
Council, Inc.
4020 Lake Village Centre
Trotwood, Ohio 45426

General Comments

I have appreciated the opportunity to have input into this national EMS legislative process. The EMS regional program concept has certainly addressed an area of health care that has long been neglected. The improvements in service and the impact on reducing death and disability has been significant.

Senator CRANSTON. I thank all those who have been with us, and we now stand adjourned. Thank you.

[Whereupon, at 11:04 a.m., the subcommittee was adjourned.]

A P P E N D I X

I. ADDITIONAL STATEMENTS SUBMITTED FOR THE RECORD

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
WASHINGTON, D.C. 20590

THE ADMINISTRATOR

APR 19 1979

Honorable Alan Cranston
United States Senate
Washington, D.C. 20510

Dear Senator Cranston:

We very much appreciate the opportunity to provide information for your Subcommittee on Health and Scientific Research in reference to S-497, a bill to extend the Emergency Medical Services Systems Act of 1973 (amended 1976). My staff and I feel that it is appropriate and important that the Committee members be fully informed and knowledgeable regarding the Emergency Medical Services (EMS) programs developed and implemented by the National Highway Traffic Safety Administration (NHTSA) under the authority of the Highway Safety Act of 1966, as amended.

I am enclosing several documents, pamphlets, and guidelines concerning the NHTSA EMS program which I am sure you and other Committee members will find of interest. However, I would like to highlight for you some of the significant accomplishments of our program to date, and to also inform you that our activities in support of State programs will continue for the coming years. Accomplishments to date based on 10 years of activity are:

	1966	1979
o Number of States with statewide EMS Coordinators (includes Washington, D.C., Puerto Rico, Guam, Virgin Islands, American Samoa, and Department of Interior)	4	56

Please note: Portions of these enclosures are included in the hearing record. The remainder are retained in the Committee's files.

	1966	1979
o Number of States recognizing national vehicle criteria	0	56
o Number of States with State or local EMS funding	0	56
o Number of States with EMS statutes (authorizations)	0	45
o Number of States applying essential medical equipment (ACS)* list to ambulance (66% of all vehicles)	0	54
o Number of States upgrading two-way communications in ambulances (79% of all vehicles to date)	0	54
o Number of States providing EMT-A (DOT Basic) training. (260,000 personnel trained to date)	0	56
o Number of States providing Crash Injury Management Training (first responders)	0	20
o Number of States providing extrication training	0	32
o Number of States providing paramedic training.	0	45
o Number of States authorizing paramedic level procedures.	0	50

* American College of Surgeons

Since 1968, the States and communities will have applied more than $150 million of the Federal 402 highway safety funds to EMS and we expect to see approximately $20 million in FY 1980.

Although the primary purpose of our EMS program is for highway safety related trauma, you can easily recognize that any such system must be based upon a comprehensive pre-hospital emergency response system. This is the principal reason why our activities must cover the total spectrum of a comprehensive Emergency Medical Pre-hospital Care System.

The transmitted materials are identified as separate enclosures in Enclosure 1. If there is any additional information we can provide for the record or for you or your Committee members, please do not hesitate to call me.

Sincerely,

Joan Claybrook

Joan Claybrook

8 Enclosures

Enclosure 1

DOT/NHTSA EMS PROGRAM - LIST OF ENCLOSURES

1. Enclosure Listing

2. Program Summary and Fact Sheet. This also contains Program Funding Criteria, Eligibility and Limitations along with titles and sources of pertinent NHTSA/EMS program documents and publications.

3. Program Coordination and Administrative Policy including recently published Star of Life Brochure.

4. Training Program Materials (sample of latest material).

5. National Emergency Aid Radio (NEAR) Program Material and Illustrations of Proposed Star of Life citizen entry information signs.

6. Communications Documentation on Policy, Training and Standards.

7. EMS Legislative Study and Model EMS Legislation

8. MAST Program Manual and National Guard Memorandum.

Please Note.—Because of the voluminous nature of enclosures 4, 5, 6, and 7, these submissions are retained in the committee's files.

DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
EMERGENCY MEDICAL SERVICES BRANCH

EMERGENCY MEDICAL SERVICES 1966-1979

PROGRAM REVIEW

and

FACT SHEET

Washington, D. C. 20590
March 22, 1979

48-284 O - 79 - 17

DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

EMERGENCY MEDICAL SERVICES FACTSHEET

BACKGROUND:

In 1965 the President's Commission on Highway Safety published its final report "Health, Medical Care and Transportation of the Injured" which recommended a national accident response program to reduce deaths and injuries from highway accidents. In 1965, the National Academy of Sciences focused national attention on the unnecessary loss of life and injuries due to accidents in its report "Accidental Death-The Neglected Disease of Modern Society." Following are some of the conditions which existed in 1966 and which were documented in these reports:

- o Few were adequately trained in the advanced techniques of cardiopulmonary resuscitation, childbirth, or other lifesaving measures, yet every ambulance and rescue squad attendant, policeman, firefighter, paramedical worker, and worker in high risk industry should be trained.

- o There were no generally accepted standards for the competence or training of ambulance attendants. Certification or licensure of attendants was a rarity. There was a need for a standard course of instruction and training aids.

- o Approximately 50 percent of the country's ambulance services were provided by 12,000 morticians, mainly because their vehicles could accommodate transportation on litters.

But in most instances, as in the case of many privately owned ambulances, the vehicles were unsuitable for active care during transportation. No manufacturer produced from the assembly lines a vehichle that could be termed an ambulance by proper definition. There were no acceptable standards for vehicle design.

- o Helicopter ambulances had not been adapted to civilian peacetime needs nor their place and value in the civilian sector studed and evaluated.

- o Ambulance medical equipment and supplies were incomplete.

- o With rare exceptions, ambulance radio installations provided communications only between dispatcher and drivers. There was a need for the assignment of discrete

radio-frequency channels, to provide direct communications between the site of an accident, ambulances, hospital emergency departments, fire department traffic control officials and civil defense authorities.

In addition the study addressed the inadequacy of training programs for emergency department staffs; including physicians, nurses, and paramedics; the need for around-the-clock staffing by permenently assigned personnel; the implementation of recommendations provided by the Committee on Trauma of the American College of Surgeons on architectural design and equipment of emergency departments; the need for accreditation and categorization of emergency departments; and the need for symbols on road maps and road signs at appropriate locations, to designate routes to hospitals and emergency departments.

The issues and problems described in these reports were considered in drafting the basic legislation for the Department of Transportation and the National Highway Traffic Safety Administration.

Public Law 89-564, the Highway Safety Act of 1966, was enacted on September 9, 1966, to provide for a coordinated national highway safety program through financial assistance to the States to accelerate highway safety programs. Funds made available under matching grant provisions of Section 402 of the Act are apportioned to the States and administered by the Governor, through his representative for highway safety. There is no direct Federal funding for political subdivisions. Project application by a political subdivision must be made to the State for inclusion in the State program.

Under Section 403 of the Act, funds are provided for demonstration projects and studies. The results of these studies and Federal guidance are provided to State and local emergency medical services coordinators through the Administrators of the Ten NHTSA regions.

The Highway Safety Act of 1966, amended, required that States have a highway safety program developed in accordance with uniform standards promulgated by the Secretary of Transportation. One of these standards is Standard 11, "Emergency Medical Services." While the purpose of the DOT (NHTSA) involvement in EMS is primarily for highway safety, such a program requires a comprehensive EMS system. The same standards, plans, ambulances, equipment, personnel, operational procedures, organization, administration, and communications required for the Highway Safety Program are applicable to all medical emergencies. Thus, the EMS systems developed by the States for the Highway Safety Program can simply be augmented as needed to handle the total demand for pre-hospital emergency medical services. The NHTSA approach therefore has been to design an EMS Highway Safety Program which assures the States the degree of flexibility to permit augmentation as necessary to serve all medical emergencies.

In 1968, NHTSA formally initiated its EMS program publishing the Highway Safety Program Manual (HSPM) "EMS" for Standard 11. This was the first comprehensive Federal document which addressed principles, procedures and criteria for the process of upgrading pre-hospital emergency medical care with a view toward total system development.

THE NHTSA EMS SYSTEMS CONCEPT:

In developing its Emergency Medical Services Program Standard, NHTSA adopted a systems approach. Figure 1 illustrates the functional diagram of the system which is addressed by the NHTSA EMS Program Standard. The NHTSA program addresses the constituent elements required for each function of the EMS system. These constituent elements are:

ADMINISTRATION - planning, implementation, operation, evaluation and coordination.

MANPOWER - job identification, training, operations

EQUIPMENT - vehicles, medical, extrication

COMMUNICATIONS - radio communications, public awareness, citizen access

From its outset the NHTSA EMS program has been based on the premise that the States have the primary responsibility for implementing emergency medical services within their separate jurisdictions. The primary thrust of the Administration has been to develop an information base which will permit the States to make optimum use of the an "seed" funding available through the Highway Safety 402 funding program for development of their statewide EMS systems.

This information base has been developed through the 403 program by contract studies and demonstration projects dealing with all functions and elements of the EMS system. These 403 efforts are designed and managed by the EMS Branch as one of NHTSA's Traffic Safety Programs. Often the 403 projects are conceived and recommended by EMS practitioners and are oriented to explore problems which have been identified by State and regional EMS system managers and administrators.

ACCOMPLISHMENTS:

Following is a listing of the NHTSA 403 program accomplishments which provide the information base for the development of emergency medical service systems by the States:

Administration

- o Regional and State EMS Coordinators identified and recognized as focal point for system development* 1969
- o State comprehensive EMS plan guidelines (appendix O, HSPM) published and plans developed - 1973
- o "Star of Life" adopted as National emergency medical care symbol - 1973 (Award of Certification Mark to NHTSA by patent Commissioner made on February 1, 1977) Criteria published 1978 - Brochure 1979.
- o Data elements identified and collection and evaluation begun 1969-1979
- o Legislation, regulation, licensure and certification as needs for system perpetuity - 1968. Survey and model legislation published 1977 and 1978 respectively.
- o National Registry supported for training standard identification and reciprocity - 1972. authorized funding support through State agencies 1978
- o Manual for EMS HSPM Vol. II (1969) revised and republished-1974 first national document for EMS System development.
- o Developed and released multiple, major award winning EMS Film, "Between Life and Death" for public information and program promotion.

Manpower

- o Emergency Medical Technician-Ambulance (EMT-A) job description developed and published - 1969-1972. Officially recognized by the Department of Labor as an occupational specialty.
- o Training course for EMT-A developed and published with accompanying AAOS** text - 1969. Revised and republished 1978.

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* State Highway Safety Program Review-1969-Appendix O Comprehensive EMS planning HSPM 1974. American Medical Association, Developing Emergency Medical Services-Guidelines for Community Councils, pages 17-20, (revised), July 1976

** American Academy of Orthopaedic Surgeons

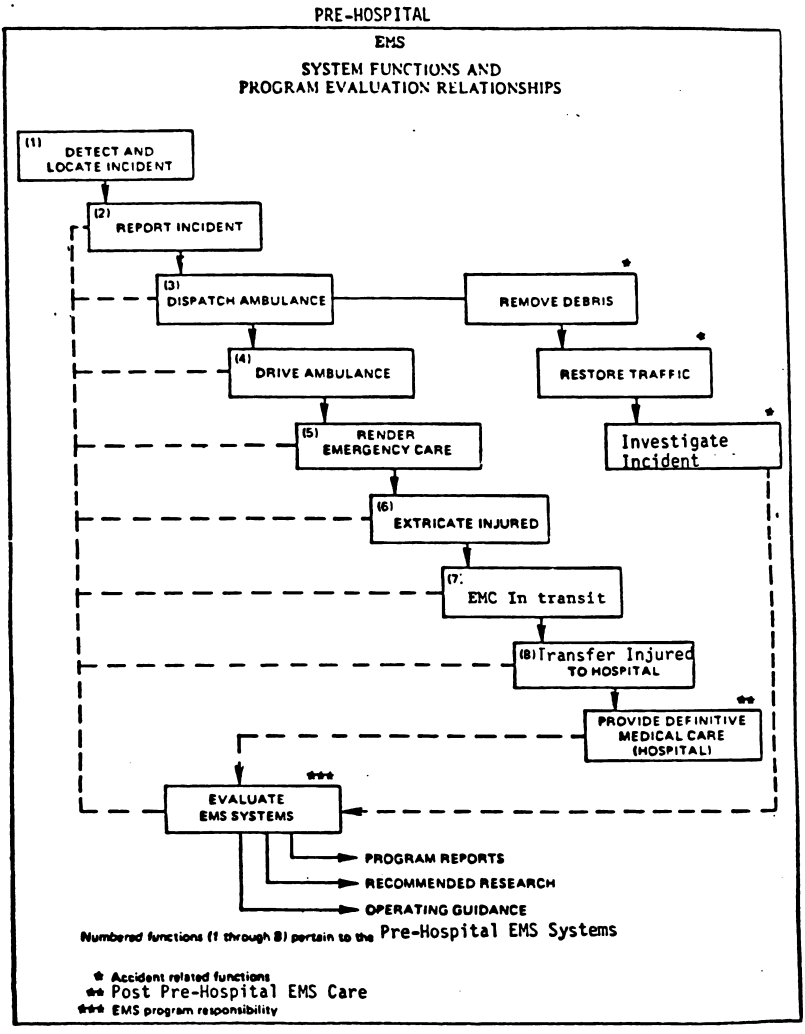

FIGURE 1

NOTE: Definitive care is provided by a hospital that has the capability of meeting the specific medical care needs of the incoming emergency patients.

- o Spanish translation for EMT-A training courses published-1975-Under revision in accordance with new English revision
- o Crash Injruy Management training for first responders developed and published - 1973-1974. Revised and being republished 1979 as "Emergency Care-First Responder,"
- o Extrication Training for all EMTs developed and published-1974. Revised and republished 1979
- o Dispatcher Training-1972. (Revised and republished 1979.)
- o Emergency Vehicle Driver Training (developed and published 1979.)
- o Administrator Training (curriculum guide published) -1975
- o EMT-P (Paramedic) Training course published - 1977. Text-1979
- o Initiated and particpated in course development for emergency handling of hazardous materials - 1976
- o Persian translation for EMT-A basic training course published in Iran. Seven other foreign countries have translated and are using the course. Other materials being studied and adopted. Egypt most recent country to apply NHTSA published criteria and materials.
- o Participated in revision and publication of "Emergency Serivces Guide for Hazardeous Materials" - 1974-1978. Provides standard procedures for Emergency Services Personnel. Supports training course above.

Operations

- o 24-hour service identified as national standard for emergency service - 1968
- o Two EMTs per ambulance run identified as national standard-1968
- o Standard colors and markings identified for ambulances as safety related factors for uniform national recognition-1971 and included in Federal Specifications for ambulance.

Equipment

- o Ambulance Design Criteria (ADC) developed in conjunction with the National Academy of Sciences 1969, adopted and published-1971. Served as basis for specifications. 1974

- Initiated and participated in Federal Specification for Standard Ambulances which also identified national standard colors and markings - 1972-1973, published in 1974. Revised and republished in 1979.

- Developed and published extrication/rescue vehicle guidelines- 1976. Developed and published specification in 1979.

- Developed and published specification use guidelines - 1976

- Adopted and published American College of Surgeons Essential Equipment List as the National Standard - 1968. Subsequently included in the HSPM for Standard 11 and Federal Ambulance Specifications.

- Studied and published criteria relative to helicopters - 1972

- Initiated and participated in MAST program with DOD and DHEW relative to military helicopter use. Twenty-three MAST sites established to date in 29 States. A Federal expenditure of in excess of 3 million per year is involved with no cost to the State or local governments - 1972. Developed and published AST manual 1977.

Communications

- Defined requirements for physician communication to emergency medical technician for supervision of advanced life support procedures to arrest trauma - 1968. Derived from report of the Secretary's Advisory Committee on Traffic Safety, DHEW, February 29, 1968, committee stated "The DOT should have primary responsibility for transportation and appropriate communications and command and control."

- Provide financial support and stimulus for first national conference on Universal Emergency telephone numbers "911."

- 911 Universal Emergency Number adopted and promoted as standard - 1973.

- Communications Manual published 1972. New manual published to incorporate new UHF channel provisions, system characteristics, VHF interface and new FCC rules - 1977

- Initiated, encouraged and supported FCC assignment of channels and rule-making in the UHF band for emergency medical service communications - 1973

- Developed and published Sound/Slide presentation on common system development empolying UHF/VHF interface - 1975

- o Developed and published Appendix P to HSPM Vol. II for communications planning in accordance with the new FCC rules - 1975.

- o Published guidance memoranda for two tier communications planning in accordance with appendix P-HSPM Vol. II-1978

- o Developed EMS Communication System Architecture in Draft, to be published.

- o Initiated, developed and published manual on the NEAR (National Emergency Aid Radio) program. (This provides for Citizens Band (CB) involvement in emergency identification and reporting as an additional aid for entering the system.) 1976. Developed and published training course for citizen monitoring along with training film, "Help is Near" 1979

THE NATIONAL IMPACT OF THE NHTSA EMS PROGRAM:

The above was accomplished and is being pursued to National program implementation in the pre-hospital emergency medical care sector with the aid and cooperation of Federal agencies, related professional organizations and industry. In excess of 50 separate documents (manuals, memoranda, pamphlets, books, etc.) have been developed and published. The program, as developed by NHTSA under Standard 11, had the following national impact on the development of emergency medical services:

- o About 600-800 million dollars of non-Federal money has been generated in support of EMS since 1968. Very minimal amount could be identified in 1968.

- o State and community planning for EMS has become common place.

- o Legislatures are, increasing numbers, addressing EMS from the standpoint of both funding and standards fo care (including advanced care procedures).

- o States have obligated 137+million dollars of NHTSA funds to EMS since 1968. For 1976 alone, the total amount represented 16 percent of all funds available or 19.5 million to EMS. In 1978 the States applied 22+million and it appears that they will approach that figure in 1979.

- o Federal agencies have been involved in the application of the above criteria and standards in the pre-hospital emergency medical care field, namely; Department of Health, Education and Welfare, Department of Agriculture, Department of Labor Department of the Interior, General Services Administration, Veterans Administration, Federal Communications Commission and

Department of Defense. (Navy Corpsmen are being trained in the EMS-A course this year -- The Navy is establishing a procedure to incorporate the EMT-Paramedic (EMT-P) training course into their corpsmen training program.) The Coast Guard has fully integrated the DOT EMT training into its Search and Rescue mission.

PROGRESS IN EMS DEVELOPMENT:

Because of its obvious humanitarian and life saving nature, the EMS program won almost immediate popular public support and has become recognized as a necessary public service. In the ten years following NHTSA's initiative in EMS the following progress has been made:

Ten Years of Progress and EMS Program Development - 1966 to 1976#

A. System Commonent Status

Number of States with Statewide EMS Coordinators	4	56*
Number of States recognizing national vehicle criteria	0	56
Number of States with State or local EMS funding	0	56
Number of States with EMS statutes (authorization)	0	45**
Number of States applying essential medical equipment (ACS) list to ambulance (66% of all vehicles)	0	54
Number of States upgrading two way communications in ambulances (79% of all vehicle to date)	0	54
Number of States providing EMT-A (DOT Basic) training. (260,000 personnel trained to date)	0	56
Number of States providing Crash Inquiry Management Training (First Responders)	0	20

Latest Survey not Completed for updating.

* Includes Washington, D. C., Puerto Rico, Guam, Virgin Islands, American Samoa, and Department of the Interior

** U. S. State and Territorial Survey, Emergency Medical Services Statutes, Prepared by Public Technology, Inc. in accordance with DOT/NHTSA/EMS Contract No. NHTSA-65994. Final Report November 10, 1977, Washington, D. C. Model Legislation for Emergency Medical Services DOT HS-803-238

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Number of States providing Extrication training	0	32
Number of State providing Paramedic Training	0	45
Number of States authorizing Paramedic level procedures	0	50

PROGRAM BENEFITS:

The objective of the NHTSA EMS program is to develop statewide EMS prehospital care systems. It is to save lives and reduce permanent disabilities and disfigurement arising from medical trauma occouring outside of the hospital setting by prompt delivery of effective prehospital emergency medical care. As part of its program, NHTSA ia sponsoring evaluatations which will provide a measure of these benefits in terms of the impact of EMS on mortality and morbidity. Some indications of these benefits have already been documented.

In a recent report, Dr. Robert I. Levy of the National Heart, Lung and Blood Institute presented data on the drop in mortality rate for both cardiac and non-cardiac diseases (figures 2) In doing so, he stated, "Ambulances and other emergency vehicles are better equipped and staff personnel better trained, resulting in patients being delivered to the hospital in better condition." It is significant to note that the beginning (1968) of consistant downward trends exhibited in the chart correlate with the initial mandated criteria for ambulances (high head room, medical equipment, communication) and training of ambulance personnel, which at that time was advanced Red Cross with the added requirement for a CPR capability.

Percent Decline in Death Rates Since 1950 for Cardiovascular and Non Cardiovascular Diseases

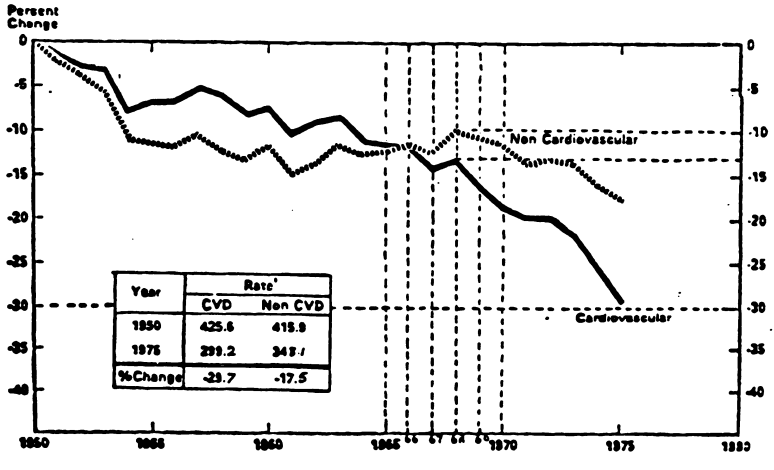

Figure 2

Evidence is beginning to suggest that reduction in amputations, paraphlegia, quadraphlegia, and onset of pneumonia are also taking place. That is why it is becomming important that measurements of performance and effectiveness be given a high priority at this stage of EMS development. For this reason NHTSA has and is initiating studies.

NHTSA, NATIONAL HEART, LUNG, BLOOD INSTITUTE (NHLBI)-DHEW AND STATE CONTRACT EFFORTS IN EVALUATION:

Beginning in 1970, there has been a steady decline in cardiovascular mortality in the United States in contradistinction to the marked steady increase in cardiovascular mortality past World War II. Many hypotheses have been postulated in an attempt to explanin this change in trend: Cornonary risk factor reduction, public health education, high risk patient identification, the introduction of pre-hospital mobile coronary care etc. Despite the many studies in each of these areas, there are no data to support any of these hypotheses conclusively. The ultimate explanation for this decline is probably a complex set of interactions among all these factors.

To gain further insight into the probable causes of this decline The National Heart Lung and Blood Institute (NHLBI) and NHTSA co-sponsored a joint agency effort and awarded a contract to the Boston University Medical Center to conduct a study to determine the following:

1. Ascertain information concerning the effectiveness of the Mobile Intensive Care Unit, and its value in reducing mortality and morbidity resulting from coronary heart disease. In addition to determine the validity and generalizability of the data in the effectiveness of the Mobile Intensive Care Unit.

2. Examine the feasibility of developing a conceptual model for evaluating a Mobile Intensive Unit to include the definition and identification of a minimum data set which would be considered essential in any objective evaluation.

3. To determine the extent to which an evaluation could rely upon existing data bases and how much additional Federal Resources initiative would be required to supplement present data collection activities.

Findings

The on-going MIC research is primarily located in academic medical centers in large urban areas and in advanced EMS regions only.

The Nationwide data base existing in the Federal Offices of Emergency Medical Services cannot support a national evaluation.

The findings in the report do not support the contention that MIC programs have substantially contributed to the decline in cardiovascular mortality rates in this country. The data do suggest that the principal effectiveness of MIC programs relates to the subset of patients found in cardiac arrest. There appears to be a decline in mortality rate in the subset from approximately 85% to 75%.

In FY 1979, NHTSA awarded four evaluation contracts to EMS projects to Harrisburgh, Pennsylvania, Seattle; Washington Lincoln; Nebraska; and Augsuta, Maine. These contracts are providing EMS projects with resources to evaluate impact of Advanced Life support Systems over Basis Life Support Systems, effect of MAST on Spinal cord injuries and the determination of response times on mortality and morbidity.

NHTSA ACTIVITIES IN RURAL EMS-1977

On 22 September 1978, NHTSA initiated the Rural EMS System Project Study under contract DOT-HS-8-0208 to the University of Pittsburgh Health Operations Research Group, for development of a computer simulation model for the analysis of alternative policies on rural emergency medical services systems. This systems model will permit one to address such questions as:

- o Cost and effectiveness of various rural EMS measures
- o Cost and effectiveness of various mixes of measures
- o Allocation of limited resources to various measures to provide the most effective EMS in a rural area
- o Optimum sequence for implementing a mix of measures in a new rural EMS system
- o Optimum level of development of rural EMS systems
- o Rural EMS system effectiveness as a function of level of development of the system
- o Management of changes to rural EMS systems.

The first report under this contract is a Model Concept Paper which was delivered on 15 March 1979 and is now being reviewed by a panel of experts.

In support of rural EMS development and the above study, NHTSA is assisting the State of Oklahoma in the administration of a rural EMS symposium in Oklahoma City on May 7,8, and 9, 1979. This symposium will premit rural planners to:

- o have visibility of the NHTSA rural study while it is in process and establish contact with the contractor so as to permit meaningful input regarding their needs for planning assistance for rural EMS system development
- o meet with each other to exchange information on rural EMS system development and administration - separate from the overriding influence of urban and metropolitan planners
- o forecast the types of data needed in their future for rural EMS system planning and evaluation.

NHTSA is also fostering exchange of information and coordination among rural States by authorizing 402 funding support of Interstate Councils of State EMS Administrators such as the Mid-Atlantic EMS Regional Council, and the newly formed Mid-America States rural EMS Council which includes the nine States in Federal Regions VI and VII.

In addition to the above planning and organizational activities, NHTSA is cooperating with NASA and several States in studies to extend communications for EMS throughout the rural areas of the United States. These studies include consideration of both terrestrial based and satellite based communications relay stations. Associated with these studies is a current project domonstrating the use of a satellite relay for communications between rural ambulances throughout the States of Mississippi, Alabama, and Louisiana (including offshore oil rigs) to distant EMS consulting hospitals. Through support of the 911 program and the NEAR program, NHTSA is facilitating rural citizen communications access to EMS services by means of telephone and Citizen Band Radio.

Through its development of training programs for First Responders and Paramedics, NHTSA is fostering the creation of new breeds of emergency medical practitioners to provide more speedy response to accident injuries in rural areas and to function as "physician extenders" in rural areas which suffer from a chronic shortage of physicians.

This initiative in rural EMS is a continuation of the guideline for rural EMS emphasis expressed by DOT in 1972. The quality of service rendered to the victim of an emergency must not be a variable, subject to negotiation from community to community. The guidelines that have been published are considered minimal and appropriate for all who render emergency care. It does not seem practical to make exceptions and deprive some of lifesaving and lifesustaining care merely because

they happen to live in a small community. Highway death rates in rural areas have exceeded those of the urban areas by 70 percent. Trauma centers and emergency rooms are of little value to the victim who has expired due to lack of proper care at the onset of the emergency or in transit to the facility. Quality of service rather than speed in transit is being emphasized.

NHTSA TECHNICAL (403) SUPPORT SUMMARY STATUS 1979 (FY 78 Funding)

Status of EMS Training Materials-1979

1. CB Monitor Training - Printed Course being delivered. Film on hand. Distribution in March.

2. Emergency Care First Responder - In type setting for printing - Distribution in May.

3. EMT-A Refresher - In final review for typesetting. Distribution in May.

4. Extrication Training - Being Printed - Distribution May.

5. Instructor Training - Going to printer for typesetting. Tape and Slides complete. Distribution in May.

*6. Paramedic Text - Illustrations being selected and integrated into text. Publication in June or July.

**7. Trauma Slides - At GPO for reproduction - Distribution in May.

Status of Specifications

1. Ambulance Emergency Care Vehicle - Undergoing final staff editing for inclusion of pertinent materials from NHTSA Ambulance Electrical System Study being completed. Expected distribution July.

2. Rescue Vehicle, Emergency - Light Rescue Surface Vehicle. Completed and undergoing final staff editing in conjunction with GSA. Expected publication in July.

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* Limited prepublication copies available for training being conducted. These are the text material only without illustrations.

** For use as supplement for all training courses in EMS. Provide excellent insight into all forms of Motor Vehicle Trauma.

Status of Study reports

1. Emergency Medical Systems and Pre-Hospital Cardiovascular Care. - An evaluation of studies and inventory of data bases on the effect of Emergency Medical Systems on Pre-Hospital Cardiovascular Care. Study done jointly with NIH/DHEW under contract with the Boston University School of Medicine. Study completed and final report being edited for publication. Summer 1979 distribution.

2. Communications Compatibility - Analysis of existing UHF communications systems. Study done by SYSTECH Corporation. Study completed and report being printed. Expected distribution in May. Communications design manual to be a follow on project to this effort.

3. Ambulance Electrical Systems - In depth analysis of the Ambulance Electrical Systems will include users manual for maintenance of portable equipment. Work done under contract with Research Triangle Institute (RTI). Publication and distribution expected summer 1979.

Status of Recommended Legislation

1. Model State 911 Legislation - This is model legislation for use by States in establishing a Statewide 911 emergency telephone number. Work done under contract with the National Telecommunications Information Administration (NTIA), Department of Commerce. Expected Publication in May 1978.

NHTSA PLANNED (403) PROGRAM ACTIVITY FY 79 (FY 79 Funding)

Projects are continuing or being initiated to support study, investigation and/or development in the following areas: Loran-C, Rural EMS, Sattelite Cast effectiveness evaluation, film distribution, Communication design manual and FCC rules petition, Star-ofLife Highway sign evaluation, and Frequency Synthesizer development in conjunction with NHTSA-NASA Physician-EMT medical kit.

NHTSA EMS FUNDING RESUME 1966-1979

The NHTSA EMS program has generated massive grass roots financial support of State and local emergency medical services. This program has been one of the most significant catalysts in modern times for initiating and sustaining public support. Since 1968 the States have obligated about 142+ million of NHTSA 402 dollars and 600 to 800 million non-Federal (State, local and private) dollars to the implementation of EMS systems in connection with the NHTSA program. The cost to the tax payers for NHTSA management of the EMS program is reflected in the expenditure of Section 403 funds for NHTSA administered contracts and projects in support of EMS.

Altogether, from 1967 through 1979 about 50 such projects were and are being conducted for a total expenditure of 10+ million dollars. These projects fall in the areas of development (584K)* demonstrations (4,919K)* and studies/surveys (5,340K)*. From this 403 effort came, inter alia, helicopter criteria, ambulance design criteria, communications criteria, guidelines and criteria for plan development and evaluation, economics of ambulance service and extensive development of training courses.

The following are the expenditures by Fiscal Year for course development and instructor institutes which accompany the completion of each course development.

1968	$48,000	1973	110,343
1968	25,700	1974	124,795
1970	4,900	1975	97,564
1971	58,232	1976	162,140
1972	- 0 -	1977	373,691
			1.005,365

The following is a summary of NHTSA 402 funding obligations through January 1, 1979.

EMERGENCY MEDICAL SERVICES 1/

NHTSA 402 Funds ($000) Obligations by FY

Year	Total All Standards	Total Standard 11	% To EMS
1966	NONE	-	-
1967	646 2/	- 0 -	-
1968	23,900 2/	1,646	6.9
1969	63,800 2/	6,801	10.7
1970	67,950 2/	6,942	10.2
1971	72,100 2/	7,631	10.6
1972	76,360 2/	10,883	14.3
1973	91,307 2/	11,652	12.8
1974	76,241 2/	10,949	14.4
1975	96,202 2/	13,715	14.3
1976	145,189 3/	19,237	13.3
1977	125,700 4/	16,996	13.5
1978	168,700 4/	22,319	15.0
1979	159,735 5/	13,345 5/	15.0 (estimated)
Total	1 1 67,830	142,716	12.

1/ Source: NHTSA NOTICES 464 (FY 67-74) and Computer Runs RIC 47 (FY 75-77). All available in Room 5117.

2/ Includes funds appropriated for both NHTSA and FHWA Highway Safety Standards.

3/ Same as 2/ but also includes Interim Quarter Funds.

4/ Excludes funds appropriated for FHWA Highway Safety Standards.

5/ Not all FY 79 Funds have been obligated

UNITED STATES GOVERNMENT

Memorandum

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

SUBJECT: INFORMATION: DOT (NHTSA) EMS Program and Resource Coordination

DATE: January 26, 1979

In reply refer to: NTS-13

FROM : National Highway Traffic Safety Administrator

TO : Regional Administrators, NHTSA
Regions I - X

Purpose:

The purpose of this memorandum is to provide information about the administration of the Department of Transportation's (DOT) Emergency Medical Services (EMS) program as administered by the National Highway Traffic Safety Administration (NHTSA) pursuant to its statutory authority and responsibility under the Highway Safety Act of 1966 (amended).

Discussion:

Through its highway safety program, the DOT has been the catalyst for the development of a high quality EMS system in the United States. Subsequent to our involvement, several other Federal programs have become involved in or have been developed to meet the needs of this evolving EMS system. As the system developed, the local and State program administrators have been able to make use of these multiple Federal programs to further their goal of developing quality emergency medical care. Previously distributed documentation relating to this program coordination and resource applications are: "DOT/DOA Coordination in Developing an Effective Rural Emergency Medical Service Program," of September 12, 1977, by the Administrator, NHTSA/DOT; Administrator, Farmers Home Administration FHA/USDA; Chief, Forest Service/USDA; and "Federal Policy on the use of Citizens Band Radio by Motor Vehicle Operators" of June 16, 1978, by the Secretary, DOT; Chairman, Interstate Commerce Commission (ICC); and Chairman, Federal Communications Commission (FCC).

Policy:

It is a continuing policy of the DOT and NHTSA to develop cooperation among individuals and all levels of government with the goal of providing an EMS system that meets the needs of this country. Attachments (1) through (5) are provided to amplify the NHTSA policy on program and resource coordination. Attachment (6) is a recently consummated Memorandum of Understanding with the Department of Health, Education and Welfare (DHEW) that supports and provides background for our policy statements.

HS Form
Oct. 1972 121

Action:

All program administrators are encouraged to establish working relationships among organizations involved so that there is a clear understanding of how the programs are structured and interact in both complementary and supplementary ways. NHTSA Regional Administrators are enjoined to designate one staff member as the Regional NHTSA/EMS Coordinator to serve as counterpart to the DHEW Regional EMS Consultants and to work with State highway safety agencies and State EMS Directors/Coordinators. All State comprehensive EMS plans are to be updated by the States, approved by the Regions, and two copies transmitted to the EMS Branch by September 30, 1979. This memorandum supersedes and cancels NHTSA memorandum of October 11, 1974, Subject: "DOT/DHEW EMS Program and Resource Coordination."

Joan Claybrook

6 Attachments

NHTSA/EMS PROGRAM AND RESOURCE COORDINATION

1. The Highway Safety Act of 1966 (amended) requires that States have a highway safety program developed in accordance with uniform standards promulgated by the Secretary of Transportation. Standard 11 entitled "Emergency Medical Services" broadly outlines the elements of content required in that part of a State's program. The purpose of this standard is to improve the lifesaving capability of emergency medical services through personnel training, proper equipment, communications, operational coordination, and comprehensive planning at both the State and local levels. The comprehensive EMS plans are a basis of support and justification for EMS problem identification in the annual Highway Safety Plan (HSP).

2. Pursuant to the above, guidelines are published in Volume 11, "Emergency Medical Services," of the Highway Safety Program Manual, with changes and addenda. This manual makes reference to the program materials in training, vehicle specifications, communications, administration, evaluation, planning, etc. These were and will continue to be developed and published for amplification, clarification and implementation. This was and is being done in consonance with the professional community to ensure that the best known resources-knowledge, techniques, and equipment are being brought to bear on the victim of an emergency.

3. Section 402 of the Act provides funding assistance to States for the conduct of their highway safety programs. These funds may be used for political subdivision emergency medical services projects within the framework of an overall State highway safety program , which encompasses all eighteen areas of highway safety covered by Federal standards. Project application by a political subdivision under Section 402 must be made to the State to be considered for inclusion in the State EMS program. Direct assistance to political subdivisions is not possible, since all funds available under this section of the Act are apportioned for use by the States.

4. With the advent of the Emergency Medical Services Systems Act of 1973 (amended) and its implementation by the Department of Health, Education, and Welfare, a new Federal resource and effort was added to the Emergency Medical Services field. NHTSA views this program as not only an expression of National support and interest in EMS but also a specific expression of continued interest in implementating Standard 11 under the Highway Safety Act of 1966 (amended). Therefore, a change in priority or policy regarding use of NHTSA 402 funds for EMS is neither contemplated nor considered prudent. It is still doubtful that any

State has advanced so far in the implementation of an effective emergency medical services program that it cannot profitably add funds to what they are doing or to what needs doing. Rather than viewing the EMS Systems Act of 1973 as a substitute in the EMS program area, it must be viewed as a source of supplementary aid in getting on with the job of implementing Standard 11, while at the same time focusing attention on even broader EMS related needs (emergency department upgrading, physicians and nurses education in emergency care etc.). The legislative history of the EMS Systems Act also indicates that the Congress intended to supplement and broaden the EMS effort rather than shift emphasis or substitute funding sources. (See attachments 2 and 3).

5. It is published NHTSA policy that the coordination of all resources and activities relative to statewide EMS system development must begin with a State Comprehensive EMS Plan. This enables the responsible State Highway Safety agency to identify and correlate all projects and funding in such a manner that they may be interrelated, and result in a total plan and system development. An outline for Comprehensive State EMS plans, which will satisfy the needs of both HEW and DOT, has been developed and appears in revised Volume 11, (April 1974) "Emergency Medical Services," Highway Safety Program Manual.

6. Attachment 4 provides a diagram of what is considered the coordination requirements of the two programs. The focal point as shown here is the State Comprehensive EMS plan, copies of which should be in both the DOT/HEW channels. As is shown, there should be coordination between the HEW projects and DOT 402 funding in the Annual Highway Safety Plan (HSP) to ensure that they fill needs and problems identified in the State Comprehensive EMS plan. This coordination requirement will also be true of the evaluation and reporting procedures as they are developed. The Comprehensive EMS plan must reflect the identification and application of all resources.

7. Attachment 5 is identified as the EMS Continuum, Funding and Criteria Schematic or Coordinated Application of Resources (CAR). EMS is viewed as a Continuum consisting of three distinct segments as shown across the center. Resources that may be brought to bear are then identified as flowing into each segment. Note again the coordination requirement between A, B, and C. This State level coodination of resources is considered of paramount importance to ensure maximum impact, total system development, and the reduction of duplication. You will note that the DOT effort is limited in both funding and criteria development to the transportation or pre-hospital (non definitive care)

segment, with some funding overlap into the area of the emergency department to aid the transition to definitive care. This latter is exclusively in communications and interchangeable equipment with ambulances (litters, IV equipment; etc.).

8. This statement of NHTSA/EMS program administrative policy is in consonance with the DOT/DHEW Memorandum of Understanding (Attachment 6). It also takes cognizance of the following NHTSA Administrative note:

Under an amendment (1978) to Section 402, the highway safety Act of 1966 program will have to be administered through "State Highway Safety Agencies" instead of "State Agencies," thereby compelling greater legislative attention to State agencies which have been often viewed as Federal grant management offices.

Senate Report No. 93-397 Calendar No. 373
of September 18, 1973 to Accompany S. 2410

It should be stressed that, although assistance is authorized to be provided under a grant or contract as necessary to support the carrying out of any requisite component of a plan, the basic thrust of the bill is to provide incentive payments for the development of a comprehensive and integrated system with maximum reliance for funding placed on acquisition of funds and resources under other Federal programs (especially for facilities, health manpower training, and transportation and equipment) through the Division of Emergency Medical Programs, Department of Transportation, and MAST and on the generation of local funds. Provisions in the reported bill (subsections 1206 (e) and (f)) make this explicit.

(f)(1) In determining the amount of any grant or contract under section 1203 or 1204, the Secretary shall take into consideration the amount of funds available to the applicant from Federal grant or contract programs under laws other than this Act for any activity which the applicant proposes to undertake in connection with the establishment and operation or expansion and improvement of an emergency medical services system and for which the Secretary may authorize the use of funds under a grant or contract under section 1203 and 1204.

Attachment 2

House of Representatives Report No. 93-601
of October 19, 1973 to Accompany H. R. 10956

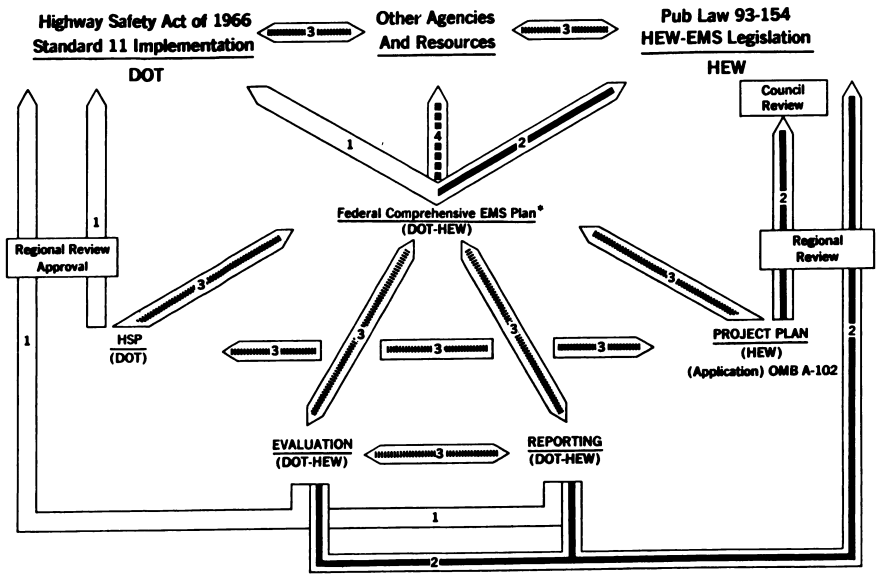
The Committee does not intend to create new grant authorities under the provisions of this bill which are duplicative of existing authorities. The basic purpose of the legislation is to encourage and provide incentives to appropriate units of government to inventory their resources for providing comprehensive emergency medical services, identify the gaps in such services, seek to remedy these deficiencies through better coordination or utilization of existing resources -- their own and those available under other Federal programs -- and develop the new components essential to the achievement of an integrated; comprehensive area EMS system. Where assistance is available under other Acts to support the development of any particular component of an EMS system, the Secretary is expected to direct the applicant first to seek such assistance and to provide support for such a component under the provisions of the new title XII only where such a component is not supported at all or is not sufficiently supported under other Acts to enable it to meet the requirements established under the reported bill.

Subsection (b) of new section 1203 -- Provides that special consideration shall be given to applications for grants and contracts for systems which will coordinate with statewide emergency medical services systems.

The Secretary shall take into consideration the amount of funds available to the applicant from Federal grant or contract programs under laws other than the Public Health Service Act for any activity which the applicant proposes to undertake in connection with the establishment and operation or expansion and improvement of an EMS system and for which the Secretary may authorize use of funds to carry out a grant or contract under new sections 1203 and 1204.

Attachment 3

DOT-HEW EMS COORDINATION



1 Document flow from States to DOT

2 Document flow from States to HEW

3 Coordination requirements

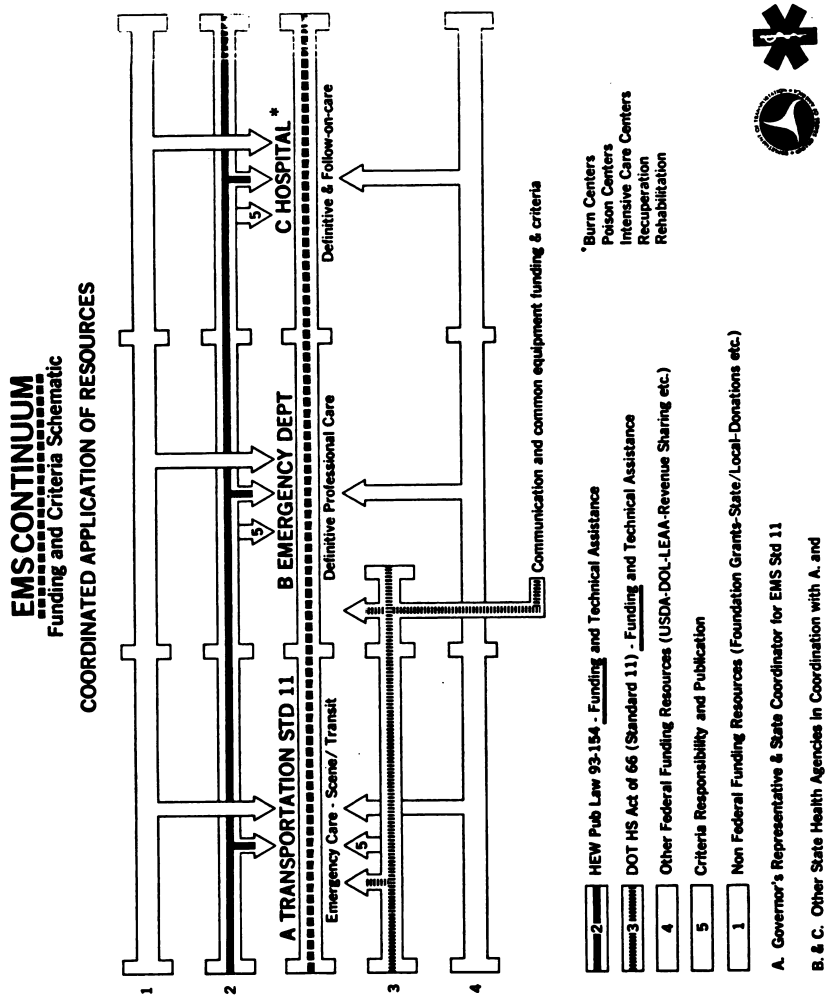
4 Document Flow To Other Involved Agencies

(DOT) (HEW) DOT documents only–HEW documents only

(DOT) (HEW) DOT-HEW common documents

* State developed EMS Plans in accordance with DOT-HEW coordinated guidelines pursuant to Standard 11 & Pub Law 93-154

Attachment 4



Attachment 5

Attachment 6 is the Memorandum of Understanding between the U.S. Department of Transportation and the U.S. Department of Health, Education, and Welfare appearing on p. 61 of this hearing record.

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
WASHINGTON, D.C. 20590

THE ADMINISTRATOR

AUG 7 1978

To all Governors' Representatives

On July 21, 1978, the Secretary of the Army as Executive Agent for The Department of Defense announced that the National Guard would be included in the Military Assistance to Safety and Traffic (MAST) program. MAST is an inter-departmental cooperative program which provides military helicopters in support of the Emergency Medical Services system. Until now, only regular and reserve units of the Army and Air Force Aerospace Rescue and Recovery Service have participated in MAST. Twenty-five military installations currently serve the civilian communities within a 100 nautical mile radius surrounding each participating activity. Army and Air Force aircraft have flown over 30,000 hours on MAST missions and have served over 14,500 patients.

MAST is an interim measure to provide aeromedical transportation assistance to civilians until such time as similar services can be locally provided. The authorization of National Guard participation in MAST has the potential of adding 208 aircraft at 20 sites across the nation. National Guard activities will serve on a part-time basis coinciding with their normal drill periods. Local participation is voluntary and cannot interfere with the normal mission requirements of the unit. All costs must be borne from funds normally budgeted for training. The first National Guard activity to enter MAST is located in Spokane, Washington. Other communities having potential National Guard MAST sites are:

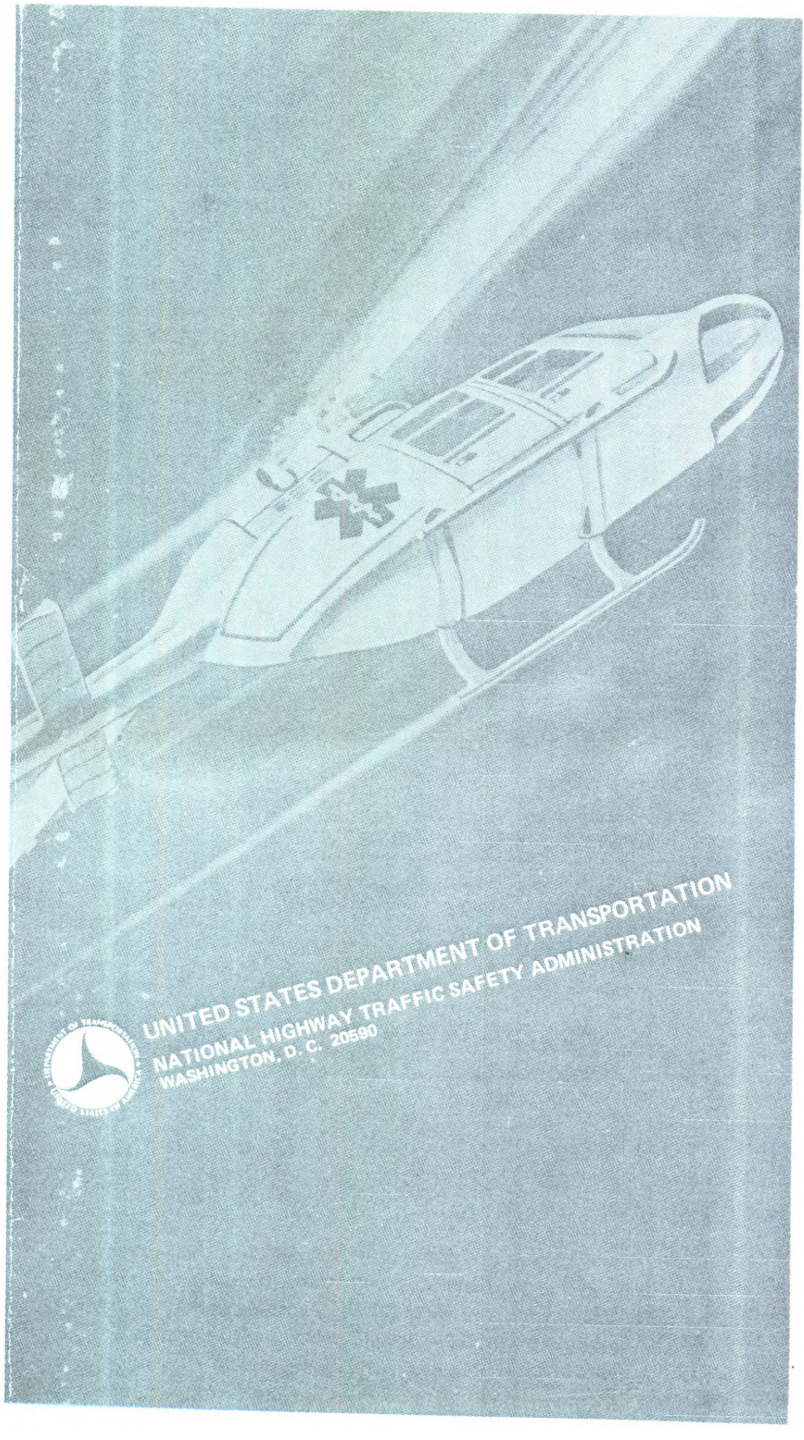
Lincoln, Nebraska	Smyrna, Tennessee
Bangor, Maine	Santa Fe, New Mexico
Meridian, Mississippi	New Orleans, Louisiana

Tupelo, Mississippi
Mather AFB, California
Bismarck, North Dakota
Parkersburg, West Virginia
Concord, New Hampshire
Ft. Belvoir, Virginia
Frankfort, Kentucky
Cheyenne, Wyoming
Rapid City, South Dakota
Westover AFB, Massachusetts
Montgomery, Alabama
Ellington AFB, Texas
Reno, Nevada

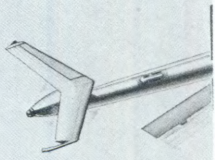
The MAST Program Manual is the basic guide for requesting new MAST sites. State officials having this new resource available to them are encouraged to investigate the forming of local MAST Coordinating Committees and becoming a part of this program.

Joan Claybrook

Joan Claybrook



HELICOPTER AMBULANCE SERVICE



- **DO YOU NEED IT?**
- **CAN YOU JUSTIFY IT?**
- **CAN YOU AFFORD IT?**

Demonstration projects have shown that helicopters can be used as emergency ambulances in a civilian emergency medical system. Certain truths have been established that should be recognized by any planner in considering the helicopter as an emergency ambulance vehicle: [1]

GENERAL

The helicopter can be a useful supplement to an emergency medical service system, but it is not a panacea for all problems and will not replace proper planning, equipping, training and staffing of other elements of the system.

Each potential operating area for a helicopter emergency ambulance service is unique unto itself and plans should take into account the various conditions existing in each area.

The benefits to a patient by using a helicopter emergency ambulance over a ground ambulance are difficult to measure, and there is no standard against which to measure these benefits.

TO OPERATE EFFECTIVELY

A helicopter emergency ambulance must be accepted by other elements of an emergency medical service as having a proper role in the system.

Communications can greatly affect the time from dispatch to treatment in both ground and helicopter emergency ambulance response. Inadequate communications can negate the potential time advantage of a helicopter.

There are certain equipment criteria and personnel proficiency standards which will increase apparent benefits to a patient and increase the effectiveness of a helicopter as an emergency ambulance.

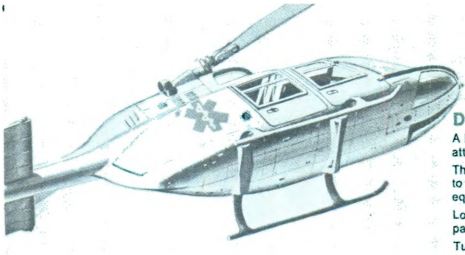
A HELICOPTER EMERGENCY AMBULANCE CAN

Rapidly deliver an emergency medical technician who can provide emergency medical care at the scene.

Rapidly transport a patient from point to point and provide enroute emergency medical care as required.

Provide rapid transportation of personnel and medical care supplies to the place of emergency.

Provide ambulance services to some geographic areas inaccessible to ground vehicles.



HOWEVER

There are times when a helicopter has no advantage over a ground ambulance for responding to an accident or for providing inter-hospital patient transfer.

There are certain categories of injury or illness for which the patient will receive no additional benefit from helicopter use.

A helicopter can provide medical advantage to only a small percentage of sick or injured in any given area.

The more economical ground ambulance should be used when no apparent benefits to a patient would be realized by using a helicopter.

Guides are available to planners considering a helicopter emergency ambulance service. They cover such topics as: helicopter ambulance design criteria, the number of helicopters, pilots, paramedics and mechanics needed for an effective air ambulance service, and the substantial costs involved.[2]

DESIGN GUIDES

A helicopter should be able to carry two litter patients and a medical attendant inside the cabin.

The cabin must have sufficient space to allow a medical attendant to administer aid to patients, and to accommodate sufficient medical equipment and supplies.

Low cabin noise and vibration levels are desirable for maximum patient comfort.

Turbine power is essential to minimize dispatch time of a helicopter.

Performance considerations, such as range, speed, and altitude will depend on the potential operating area.

Patients should be isolated from the pilot's compartment to avoid inflight distractions which could affect flight safety.

HELICOPTERS AND FLIGHT PERSONNEL

Aircraft down time for scheduled and unscheduled maintenance make a one helicopter operation impracticable.

A minimum of two helicopters are necessary for any air ambulance service. Three helicopters are preferable if the goal is continuous service, 24 hours a day, 7 days a week.

Five pilots and five paramedics are required for continuous service 24 hours a day, 7 days a week.

One mechanic must be available for maintenance.

1970 COSTS FOR TWO HELICOPTERS

With accessories and equipment: $235,381.

Straight line, five year, zero salvage value depreciation: $3,923 per month.

Insurance (hull, liability, malpractice): $4,050 *per month.*

Salary and payroll for five pilots: $8,685 *per month.*

Salary and payroll for five medical attendants: $4,650 *per month.*

Direct operating costs (fuel, oil, parts): *$46 per flight hour.*

Other expenses include such things as: hangar space, crew equipment, crew mileage allowance, training expense and communications equipment.

These costs might be justified if the helicopters can be used for such supporting missions as law enforcement, patrol, or surveillance, without sacrificing the medical evacuation capabilities or priorities.

SURPLUS MILITARY HELICOPTERS [3]

This could be the answer to high initial procurement costs. But this bargain could be "booby-trapped" with expensive pitfalls.

Before you can obtain an airworthiness certificate for any ex-military aircraft, *you*, not the Federal Aviation Administration, not the Army, not the people who sold you the aircraft, but *you*, must obtain, on your own, an FAA type certificate or be able to show that it conforms to an existing civilian model that has an FAA type certificate, and *you* must prove that it is in a condition for safe operation (airworthy).

Many military aircraft do not conform to any existing civilian type certificate, and some can never be made to conform, regardless of modification. The Department of Defense does not represent that surplus aircraft offered for sale are or can be certificated as airworthy.

You must make an honest estimate of the time and money that may be required before this bargain helicopter can be certificated and pronounced airworthy. The process might take months, even years, and the ultimate cost could exceed that of a comparable used civilian helicopter.

Information on "Certification" can be obtained from your nearest Federal Aviation Administration Engineering and Manufacturing District Office (EMDO). These are called Aircraft Engineering District Offices (AEDO) in the Western Region.

1 ***Helicopters in Emergency Medical Service. NHTSA Experience to Date.*** **December 1972. Superintendant of Documents, U.S. Government Printing Office, Washington, D.C. 20402. TD-8.2:H36 40 cents.**

2 ***Air Medical Evacuation System*** **(AMES), Arizona State University (1970), Final Report. NTIS/PB 193-724.**

Economics of Highway Emergency Ambulance Services, **Final Report, Dunlap and Associates, Inc., Darien Connecticut. NTIS/PB 178-837.**

Operation Structure and Procedures, Volume I, Coordinated Accident Rescue Endeavor, **State of Mississippi (1970). Final Report. NTIS/PB 199-756.**

Publications identified by NTIS/PB number are available from: National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22151 at $3.00 each.

3 ***Are Military Surplus Aircraft A Good Buy? A Briefing for Prospective Buyers.*** **Department of Transportation, Federal Aviation Administration, Office of Public Affairs, Washington, D.C., July 1972.**

NOVEMBER 1973

48-284 O - 79 - 20

UNITED STATES SENATE

COMMITTEE ON HUMAN RESOURCES

SUBCOMMITTEE ON HEALTH AND SCIENTIFIC RESEARCH

Statement for the Record

submitted by

GORDON VICKERY
Administrator-Designate
United States Fire Administration

concerning

EMERGENCY MEDICAL SERVICES AMENDMENTS OF 1979

(S. 497)

March 21, 1979

In 1970, as Fire Chief of Seattle, I founded, together with Dr. Leonard Cobb, the highly acclaimed Emergency Medical Services (EMS) System in Seattle, Washington. There is no doubt that the system has saved lives. Since 1970, Seattle has reported lower cardiac death rates directly attributable to a rapid response system and community involvement. From what was previously a uniformly fatal event, about half of all patients found in ventricular fibrillation are now being resuscitated. In addition, 25% of those are discharged home as longterm survivors.

Since the system in great part utilized the existing resources of the fire service, we in essence, increased the benefits to the taxpayers of Seattle from the investment in the city's fire stations, fire equipment, and manpower. With the increase in benefit from the taxpayers' investment in the fire service, we saw a corresponding increase in morale in the fire department and increased public support for the fire service.

FIRE SERVICES AND EMS: STATUS

Fire services assume the leading role in emergency medical services as a natural extension of their emergency training, equipment, communications, fire station location, and experience in dealing with accidents and disasters developed for firefighting and rescue. The fire service is one of our nation's basic emergency organizations. It represents a sizable resource and pool of manpower, operates equally well in urban and rural areas, and is naturally looked to for leadership and guidance in time of disaster or emergency. Eighty-five percent of the metropolitan fire services provide emergency medical service. Roughly half of those provide transportation and treatment; the other half provide medical services limited to treatment of victims at the scene of fires, accidents, and disasters. Seventy percent of the country's ambulances respond from fire stations.

The assumption by fire services of emergency medical service was encouraged by the National Commission on Fire Prevention and Control in its 1973 report to the President. The Commission stated that, "There are sound reasons for fire departments assuming emergency ambulance and paramedical functions." The Commission then recommended that:

> fire departments lacking emergency ambulance, paramedical, and rescue services consider providing them, especially if they are located in communities where these services are not adequately provided by other agencies.

Department of Health, Education, and Welfare (HEW) and Department of Transportation (DOT) efforts to upgrade emergency medical services have been extremely successful. Ambulance attendants and emergency medical technicians are far better trained, and the equipment they use is far more effective, than prior to this federal involvement in the provision of emergency medical services.

FIRE SERVICES AND EMS: PROBLEMS

The training of Emergency Medical Technicians (EMTs), the development of specifications for vehicles, and the establishment of regional emergency medical service systems have been assisted by HEW and DOT. Under the Administration's proposed phaseout of the federal EMS program by 1982, regional EMS systems will--as intended under EMS legislation--compete for funding at state and local levels. Even now, training and equipment are only a portion of the particular requirements of emergency medical services. Fire service experience with emergency medicine has shown that unique planning, personnel, and administrative problems are involved in providing emergency medical services.

FIRE SERVICES AND EMS: USFA

The U.S. Fire Administration (USFA) was created by the Federal Fire Prevention and Control Act of 1974 [Pub. L. 93-498, 88 Stat. 1535, 15 USC 2201 et seq., 278f, 42 U.S.C. 290(a)] to help improve the effectiveness of the nation's fire services. Increasingly, an important aspect of this mission of the fire services, and hence of this agency, is the effective provision of emergency medical services. Sections 7,8, and 9 of the Federal Fire Prevention and Control Act of 1974 authorize USFA programs on EMS. The U.S. Fire Administration has a history of involvement with EMS systems through development of Medic I and Medic II programs, USFA burn treatment programs, the development of EMS Master Planning, emergency response communications, and plans in medical emergency and disaster situations.

Emergency medical services require a large investment of money for equipment, communications, training, and manpower, a large portion of which the federal government has provided or supported. The unique management problems this additional service creates for the fire services continues to be addressed. The U.S. Fire Administration's National Fire Academy is developing the course described below on fire department administration of emergency medical services. The course is authorized by existing legislation: Section 7(d)(1)(c) and (e) of the Federal Fire Prevention and Control Act of 1974, as amended.

Phase I: Executive Management Overview of EMS

This phase is to serve as an introduction to the chief of the department and his EMS operations officer in understanding the past and present state of EMS. The purpose of having both attend is (1) respect due the chief of the department as the primary administrator of EMS in the fire department, (2) the opportunity for the chief to select his EMS operations officer, should the department not have one, and (3) an opportunity for the two primary EMS administrators in the fire department to jointly examine their overall role. The suggested time allotment for this part of the course is 16 hours and is to focus on the following areas:

* A definition of an EMS system as part of the total health care system

* The history of EMS in our society with special emphasis on the role of the fire service through this historical period

* An examination of the goals and objectives of a modern EMS system

* An examination of the rationale for fire service involvement in the field of emergency medical care, with special emphasis on the management and administrative concerns in such a rationale

* An examination of the realm of planning, specifically management designed, as it relates to the fire service and EMS

* An evaluation of the interpersonnel skills and techniques relating to EMS management and system design in a public service institution

* A review of the legal aspects and implications of emergency medical services as provided by a public protection organization such as the fire department

For the fire chief beginning EMS delivery, this phase is an important orientation. For the chief already providing EMS, it sets some criteria for comparing, in broad management and planning terms, the effectiveness or lack of it in his own delivery system.

Phase II: EMS Program Management

Phase II is for the EMS operations officer of the department, usually ranging in rank from lieutenant to district chief. The EMS operations officer will remain after the two-day executive overview to study in more depth the technical subsystems involved in the general planning and administration of daily EMS operations. These will touch upon all technical topics that must be integral components of operations planning and implementation.

1. Funding needs and sources
2. Training
3. Manning considerations: fire vs. EMS
4. Independent vs. dual role personnel
5. Paramedic burnout
6. Citizen abuse problems
7. Volunteer system design
8. Ambulance response time
9. Career ladders for EMS
10. Emergency call screening
11. Police response for EMT protection and safety
12. Public vs. private service for transport from the emergency scene
13. Public relations

14. Fire service/physician-nurse coordination and relationships
15. Fire service/hospital administration coordination and relationships
16. EMS evaluation
17. Communications
18. Quality Control
19. Labor/management issues in EMS

The above training provided by the academy course would fill a significant gap by assisting fire services in managing the complex equipment and highly-trained personnel of an EMS system.

The U.S. Fire Administration might well be included on the Interagency Committee on Emergency Medical Systems (IACEMS) created by Title XII (Emergency Medical Services Systems) of the Public Health Service Act. IACEMS involves 23 federal agencies and 5 public members to "coordinate and provide for the communication and exchange of information among all federal programs and activities relating to emergency medical services." Although the Department of Defense and the Department of Agriculture are represented on the Committee, no one is there to represent the fire services of the nation, which are so tightly bound to the EMS picture.

As a component of the new Federal Emergency Management Agency (FEMA), the U.S. Fire Administration will have even broader responsibility for aiding local fire services. FEMA will be the federal agency responsible for disaster preparedness and response. Fire services are invariably involved in responding to disasters and in providing rescue, emergency medicine, and firefighting services to victims. FEMA's programs will be needed by fire services to assist them in planning for, responding to, and rebuilding after disasters.

In summary, the U.S. Fire Administration has a significant role in resolving the important issues of EMS in the future. To prepare for advising and assisting fire services in their emergency medical service responsibilities, the U.S. Fire Admininstration, through its National Fire Academy, is developing the course described above. The U.S. Fire Administration could be in a position to assist fire service administration and personnel by undertaking coordination, education, and research responsibilities, pursuant to sections 7(d)(1)(c),(e), 8(a) and 8(c)(1)(2)(3)(4) of the Federal Fire Prevention and Control Act of 1974.

AMERICAN HOSPITAL ASSOCIATION
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STATEMENT OF THE AMERICAN HOSPITAL ASSOCIATION
TO THE SUBCOMMITTEE ON HEALTH AND SCIENTIFIC RESEARCH
OF THE
SENATE COMMITTEE ON LABOR AND HUMAN RESOURCES
ON S.497, THE EMERGENCY MEDICAL SERVICES SYSTEMS AMENDMENTS
OF 1979

March 19, 1979

The American Hospital Association, which represents more than 6,400 member institutions and over 27,000 personal members, appreciates this opportunity to present our views and recommendations on S.497, the Emergency Medical Services Systems Amendments of 1979. The legislation would extend the authorizations in Title XII and Section 789 of the Public Health Service Act for another three years, beginning October 1, 1979. These authorizations provide for grant and contract support for emergency medical services (EMS) systems, research and training, as well as demonstration projects in burn injury programs.

The AHA has long been involved in efforts to improve emergency medical services and has provided testimony in support of both P.L.93-154, the Emergency Medical Services Systems Act of 1973, and P.L.94-573, the Emergency Medical Services Amendments of 1976.

As a result of this law, communities are beginning to pool their resources in a rational manner in order to provide prompt and complete emergency care. The AHA has encouraged hospitals to play a key role in the development of comprehensive and integrated EMS systems. Hospitals are involved in the training of emergency medical technicians and emergency department nurses, physicians and related personnel. More-

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over, they provide leadership in achieving regionalized goals to form local EMS councils, to develop areawide disaster plans and to design systems for the categorization of services.

The AHA commends the Division of Emergency Medical Services of the Department of Health, Education, and Welfare for its efforts to date in the planning, establishment, and development of many EMS systems. Five years after the inauguration of the EMS program, 282 regional EMS systems have been funded by grants from the Division--a figure which will rise to 291 by the end of this fiscal year. These programs are in varying stages of development, and many of them need continuing support in order to become fully operational. Moreover, new programs are needed in 13 regions, in order to complete the network of services envisioned in P.L.93-154.

We strongly support S.497, introduced by Sen. Alan Cranston (D-Ca.), which extends the authority for the EMS program for three years at appropriate funding levels. We believe that a three-year authorization will provide necessary time for further development of existing programs, and initiation of some new programs, while allowing for congressional oversight during this period.

In addition, a three-year extension, as proposed in S.497, would allow more time for communities to address certain problems, such as the integration of services and communication systems. In order to achieve comprehensive EMS systems, all relevant public service segments of the community, including hospitals, police, and fire services; public and private ambulance services; and civil defense and relevant local governmental units, must ideally be incorporated into the system. Coordinating these disparate groups to achieve the common goal of providing comprehensive and high quality emergency medical services has often proven to be very difficult.

Front-end federal grant money has served as a catalyst to create a federal-state-local EMS partnership. However, both time and funds are still needed to overcome the inherent problem of jurisdictional divisions.

Communications and licensing are illustrative of two problem areas where full integration and coordination have not yet been fully developed. Comprehensive EMS systems require that police and fire rescue units, as well as ambulance services, join forces to assure the orderly transport of emergency or disaster victims to local hospitals. This entails the integration of radio communications and central dispatch functions. In a fully developed system, this means that complications should not result from crossing jurisdictional lines. Currently, emergency communications frequencies used in one community often interfere with those in an adjoining community. Coordinative mechanisms still need to be promulgrated to resolve these types of problems. Similarly, if the goals of the EMS program are to be achieved, communities must continue to resolve problems concerning reciprocity agreements for licensing requirements. Too often, licensing requirements prevent the establishment of EMS systems that cross political boundaries. This is especially true for emergency medical technicians who provide care to patients while in transit.

In order to determine the progress of EMS systems in attaining some of these goals, AHA recommends that funds be made available for the development of a comprehensive data collection system that will provide the basis for evaluating the problems and effectiveness of all EMS systems nationwide. At present, there is little reliable data on the results achieved by EMS systems.

In conclusion, we believe that in order to ensure that EMS systems progress toward independence from federal financial support, P.L.94-573 should be extended for three years at current appropriation levels. Experience has shown that the establishment of comprehensive EMS systems requires a strong commitment from the federal government in technical and financial aid if the obstacles noted earlier are to be overcome. Since S.497 affirms this commitment, AHA strongly endorses the bill.

We appreciate this opportunity to present our views and would be happy to provide any additional information which the Committee may require.

American Trauma Society

875 North Michigan Avenue, Chicago, Illinois 60611 / (312) 649-1810

STATEMENT BY THE AMERICAN TRAUMA SOCIETY
IN SUPPORT OF EMERGENCY MEDICAL SERVICES
SYSTEMS ACT CONTINUATION (AND PROPOSED AMENDMENT)

Trauma means injury. The American Trauma Society is a national voluntary health organization whose mission is to reduce needless killing and crippling from trauma by mobilizing professional and public support for improved systems of pre-hospital and in-hospital care; and by promoting programs in research, education, and the prevention of injury. Although the majority of our 4,400 members currently are physicians, an increasing number of business leaders and citizens are joining in the work to improve the fate of the victim of accidental injury.

It is known that more than 100,000 Americans die from traumatic injury each year. It is also known that 11-million of our citizens suffer injuries each year, and that 400,000 of those result in permanent disability. Trauma is the third largest killer in this country, after cancer and cardiovascular diseases, the latter claiming their heaviest toll in the later years of life. Trauma, on the other hand, is the leading killer of young Americans, those from 1 to 44 years of age.

Retrospective clinical studies tell us that a significant number of the trauma deaths result from survivable injuries. The estimates have ranged from 5 to 60 percent, and the American Trauma Society stands by a conservative medical estimate that today 20 percent -- or 1 out of 5 trauma deaths need not occur. In other words, each year we can save 20,000 lives with proper trauma care.

The National Safety Council tells us that in 1977, accidents cost us $62-billion. Thirty percent of that cost is in lost wages, 12 percent in medical expenses, and 20 percent in insurance administration.

It appears from a limited number of studies that Emergency Medical Service systems are in fact, having a positive effect on trauma deaths and disability. It also appears that there is a positive effect on controlling the costs of caring for critically injured patients. However, this data is largely anecdotal and localized.

There exist today great limitations to our knowledge of the trauma problem. We need an indepth description of the impact of trauma; its incidence; and the medical, epidemiologic, demographic, socio-economic and financial dimensions of this disease. We need a standardized data base, and a national trauma registry upon which to evaluate the impact of trauma and of developing EMS systems.

This major national pandemic of trauma is a $60-billion cost phenomenon about which we know relatively little. EMS project data, information from the National Center for Health Statistics, accident statistics from the National Safety Council; actuary and cost tables from the insurance industry; and rehabilitation expenditures from the private and governmental sectors provide only fragmentary appreciation of the problem.

Cancer, another major health problem, receives millions each year to research the problem and hopefully to find solutions in terms of population screening, medical treatments, rehabilitation and prevention. There remain a multitude of unknowns in cancer.

The unknowns in trauma relate to patient identification (epidemiology, demography, socio-economic impact), treatment necessities, rehabilitation essentials, and even to aspects of prevention such as safety engineering, behavior modification and restrictive legislation. The specific impact of our actions, or lack thereof in these areas is simply not known.

For trauma, there has been no comprehensive description of the incidence, prevalence, demography, systems impact, treatment standards, rehabilitation needs, or the effectiveness of prevention measures. We know that regional trauma care systems help significantly. While it appears that common sense has taken us in the right direction, without further identification of key parameters, we have no assurance of the appropriateness of our priorities or guarantee of further progress in dealing with this mammoth national health problem.

In 1976 the 94th Congress resisted the impulse to spend toward the Burn Care Center Development training programs and research effort (as requested by Section 19 of the Fire Prevention Act). Instead, the lead agency in EMS (the Division of Emergency Medical Services/Department of Health, Education and Welfare) was directed by Congress in Section 1221 of the EMSS Act as amended in 1976, to take an indepth look at the overall burn problem in terms of effectiveness, medical needs, clinical treatment, overall cost and reimbursement, and impact of burns. The burn demonstration study, now in its second year, is looking at all hospital-encountered burns in a 28-million population sample. The national direction of burn care will be in large part determined by the

results of this study. This study will determine the necessary resources to control the burn problem.

In order that trauma center development, sophisticated transportation systems, training for professionals and paraprofessionals and the public, and future research proceed in an appropriate direction, it would seem wise to adopt the same approach for the much more comprehensive and costly problem of trauma.

While the Emergency Medical Services System program has made an excellent beginning, the job is far from complete. Inadequancies in emergency care systems are still costing us lives. The American Trauma Society does not believe the job can be done in three years. We suggest, however, that it will take five to six years of work at the current level of funding and activity.

As we embark on the completion of a truly national emergency care system, it would seem prudent to study in detail the magnitude of trauma, successful systems impact to date; and to determine what the continuing measurements should be. By so doing, the national program can be completed in the most direct and purposeful manner possible. Not to do so would not only be unwise, but also irresponsible. We would never know what the EMSS program accomplished with respect to trauma, or in what areas future activity might be directed.

The American Trauma Society proposes, then, an authorization to invest $10-million for each of the next three years into ten trauma centers. These centers of excellence (one in each of the major federal health regions) would promote a commitment by the health care delivery and academic community to better understand the trauma problem; describe the problem by establishing dimensions and parameters of trauma in a variety of settings (urban, metropolitan, rural and wilderness); and provide data for improved system development, the appli-

cation of modern treatment techniques, and better utilization of technology and limited resources.

These centers of excellence would typically reside in a major medical center where trauma care is being provided. They would orient themselves to investigate trauma in a geographic region, so that a better understanding of patients' access to and needs for high resource demand treatment, the evaluation of consolidation of these high cost resources with an eye on cost control, and the development of models and systems for other centers of trauma care to follow.

These centers of excellence would be directed to assimilate uniform data and to develop strategies for this impact study by assisting in the development of a national data base for traumatic injury with uniform trauma registries. These centers would be asked to develop standards and programs for training of professionals, paraprofessionals and the public in sophisticated as well as simple techniques to participate in the care of trauma victims at all levels of system development. The centers would also develop model programs of public education and prevention -- the ultimate goal in trauma control.

It is the national goal of the Emergency Medical Services program to provide every citizen - whether at home or away - with state-of-the-art emergency care. The program can also decrease preventable death and disability from all types of emergencies. We know that many trauma deaths are preventable. We believe that only a systems approach can deliver the necessary care to our citizens regardless of location, and without costly and wasteful proliferation of health services. But we still need to know how serious the problem is and how we can handle it better.

March 14, 1979

NATIONAL
FIRE PROTECTION
ASSOCIATION
INTERNATIONAL

Statement of the

National Fire Protection Association

to the

Subcommittee on Health and Scientific Research
Committee on Labor and Human Resources
United States Senate

In Response to the Notice of Public Hearings on

Senate Bill 497
Emergency Medical Services Systems Amendments of 1979

March 13, 1979

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The National Fire Protection Association (NFPA) is a non-profit membership association with a role as public advocate for fire safety. Numbering as the largest single group in our membership of 32,000 are individuals, organizations, and municipalities, forming this nation's fire services. The NFPA is pleased to join with other fire service organizations in responding to the Notice of Public Hearing on Senate Bill 497 before the Subcommittee on Health and Scientific Research of the Committee on Labor and Human Resources of the United States Senate.

The Fire Services of this nation are a major participant in the Emergency Health Care Delivery Systems of every state. As such, fire officials have seen the overwhelming success of the systematic approach to EMS problems fostered by the funding provided through the Emergency Medical Services Systems Act. The regional planning efforts supported by EMSS Grants have been invaluable in managing Emergency Medical Service implementation to the best advantage of the public. The systems developed have proved to be outstanding examples of inter-agency cooperation with negligible duplication of efforts across geographical regions.

The Fire Service, in its role as an EMS provider, has made effective use of the training funds granted by the EMSS Act. NFPA estimates that 25% of the nation's fire service personnel, both volunteer and career, have been trained to at least the

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basic life support level. Of these individuals, we estimate that 10% are trained to the advance life support level.

Although much has been accomplished since the EMSS funding began, there still is a significant amount of planning, training, and implementation to be completed, especially in rural America. The Administration has proposed a funding level and duration of project that would fall far short of the overall goal of the original legislation. Emergency Medical Service Delivery Systems in all of the 304 regions are in need of funding support to achieve their maximum potentials and thus a reasonable balance of benefit nationwide. In the Administration's proposal, it is estimated that 83% of the regions will arrive at the basic life support operational level by the time the program is terminated at the end of FY 1982. We are gravely concerned about the future of the entire EMS and particularly those 17% of regions that will receive no implementation and/or planning funds, if this program is allowed to terminate at the end of FY 1982.

The National Fire Protection Association firmly believes that Emergency Health Care is a matter for local planning and resolution. However, the past success of the EMSS Act vividly illustrates that Federal funds and guidance can stimulate local efforts to achieve significant improvements measurable in terms of lives and human suffering. Toward the completion of this task, NFPA encourages the Committee to extend the EMSS Act for six years at a funding level of fifty million dollars per year. This funding level and term is consistent with the Administration estimates, published several times in the past year, which targeted 1985 as a completion date for comprehensive funding and implementation of EMS in all 304 regions.

James O. Page, J.D., Executive Director, ACT Foundation:

We sincerely appreciate the invitation and opportunity to testify in support of continuing the national emergency medical services (EMS) initiative under the leadership of the U.S. Department of Health, Education and Welfare. The invitation is particularly appropriate in view of the ACT Foundation's participation in and contribution to this national effort from its inception.

The ACT Foundation (Advanced Coronary Treatment) was formed as a non-profit entity in 1971 to promote the concept of pre-hospital emergency coronary care, which had been demonstrated in Belfast, Northern Ireland, and several American locations. From its inception, financial support for the ACT Foundation has been provided entirely by several leading pharmaceutical companies.

With technical assistance from the National Committee for Emergency Coronary Care, the ACT Foundation produced an important public education film, entitled, "A Life on the Line." This film, which described the early advanced life support programs in Seattle, Columbus and Los Angeles, was made available to interested citizens and communities through a free loan program. Also, an informative 68-page guidebook was offered without charge to assist communities in planning for and implementing mobile coronary care services.

During a six-year period, "A Life on the Line" served as the starting point for emergency medical services improvements in numerous communities throughout America. However, in 1974, it became apparent that the ACT Foundation could serve another important public information role related to the national effort to improve emergency care. In cooperation with the American National Red Cross and the American Heart Association, we initiated a program to encourage laypersons to become trained in the lifesaving technique of cardiopulmonary resuscitation - CPR.

In pursuit of this public education goal, we produced another film, this one entitled, "A Life in Your Hands." Meanwhile, this motivational film, narrated by actor Burt Lancaster, has received national and international awards, and has been viewed by an estimated 15 million Americans. Nearly 1,500 copies of the film have been sold to health-related organizations throughout the country at our cost. It has been made available through our free loan program and has been subscribed to capacity for nearly five years.

In 1976, the ACT Foundation, in support of the Congressional intent embraced by Public Law 93-154, initiated free technical assistance and consulting services to emergency medical services systems funded by that enactment. In this effort, in cooperation with the U.S. Department of Health, Education and Welfare (DHEW),

the ACT Foundation has provided on-site assistance to emergency medical services projects and programs at 110 locations in 44 states. Also, since 1976, we have provided DHEW-funded projects with free consultation services related to medical-legal aspects of emergency medical services systems design and operation.

Since 1977, the ACT Foundation has issued a free monthly newsletter, entitled "EMS Action," to medical professionals, paraprofessionals, emergency medical services projects, and public safety organizations throughout the U.S. This information service is used to augment the DHEW program by dispersing relevant information on a current and regular basis.

During 1978, ACT initiated still another information service, a subscription newsletter aimed at the millions of CPR-trained laypersons throughout the country. Named "CPR Citizen," the goal of this publication is to provide citizens who have been trained in this lifesaving technique with current information concerning changes in technique, reports on studies of CPR effectiveness, interesting accounts of successful rescues through the use of CPR by a citizen, and other information aimed at concepts of preventive health and prudent living.

During 1979, we will add to our range of services by introducing a complete videotape package which can be used to

visualize and supplement programs for the training of emergency medical technicians. This program, developed with financial support of the International Association of Fire Fighters and the International Association of Fire Chiefs, was produced at the University of North Carolina. Our distribution of the program will be on a non-profit basis, thus making it available to emergency medical services organizations and training institutions at minimal cost.

Since 1976, we have been the only source of research data relevant to the medical-legal experience of pre-hospital advanced life support services in the United States. In recent months, we have used this data for purposes of advocating the development of low-cost liability insurance coverage for emergency medical technicians, many of whom are volunteers. In February, 1979, the availability of such coverage was announced by Lloyds of London and policies are being marketed through the National Association of Emergency Medical Technicians.

Throughout this endeavor, our contributing pharmaceutical companies have invested nearly two million dollars in the ACT Foundation program. In supporting a proposal to continue the national EMS initiative, we are keenly aware of progress achieved as well as work yet to be accomplished.

Since your Committee will be concerned with the cost of continuing the federal EMS initiative, we would like to share with you a dimension of the citizen participation which has been devoted to this truly national effort. As mentioned, we have been deeply involved in the effort to motivate Americans to learn the lifesaving technique of CPR. Thus, we were most interested in the Gallup Poll report of June, 1977, which reported that 12 million Americans had already taken CPR training and that another 80 million persons in our country were familiar with the technique and were also interested in learning it. (1)

The combined total of persons trained and persons interested in being trained represents the most numerous constituency of Americans to ever express interest (much less agreement) in any health-related topic. The relationship of CPR to the general subject of emergency medical services, when viewed in the context of the personal interest and commitment of an estimated 92 million citizens, would suggest that the EMS initiative is one of the most widely-supported and best understood federal health initiatives ever conceived.

In our view, the most significant aspect of this massive citizen commitment lies in its unselfish nature. Obviously, the CPR-trained citizen has no monetary expectations from learning the skill. One cannot perform the technique on

one's self. In order to be trained, the interested citizen must leave the comfort and security of home, voluntarily enter into a training situation with strangers, admit that there is something s/he doesn't know, risk the hazard of failing the course and/or being embarrassed, and undergo the strenuous requirement of manikin practice for two or more hours. Nonetheless, defying contemporary impressions of self-centered non-involvement, an estimated 12 million Americans have made this commitment to improved emergency medical care.

It has occurred to us that this commitment of time and energy may have an economic value. For example, we note that the 12 million CPR-trained laypersons have devoted four hours each, on the average, to the formal training program (48 million total hours). If we value their time and effort at a mere $3.00 per hour, we find an equivalent value of $144 millions. If we consider their transportation costs (one round trip per trainee at 14 miles per trip at 17¢ per mile), we find an additional citizen investment totalling $28,560,000. Altogether, this represents a voluntary citizen contribution which might be conservatively valued at $172,560,000.

In our analyses of the CPR training phenomenon, we have considered any actual or potential relationships to the national health care situation, including preventive health measures, access to care, utilization of services and facilities, and

health care costs. (2) Viewing preventive health as the primary goal and solution, we note that the typical CPR trainee brings to the instructional setting a willingness to learn something about the human body, its functions and malfunctions, and a specific technique for responding positively to a particular malady (cardiac and/or respiratory arrest). In our publications, as well as our contributions to other contemporary emergency medical services journals, we have urged that the CPR training environment be viewed and utilized as an exceptional opportunity for preventive health education. (2) (3)

In most of the CPR training courses sponsored or conducted by the American Heart Association and the American National Red Cross, trainees received some lecture and/or written reference to the emergency medical services system, with additional information on proper means of accessing those services in the respective communities. To an important extent, this aspect of CPR training serves at least two of the programmatic goals defined in the Emergency Medical Services Act of 1973. (4)

In our daily contacts with CPR training organizations throughout the nation, we have determined that a large percentage of those citizens who have been trained in this technique are failing to return for periodic refresher training and

recertification. As we plan future ACT Foundation programs and projects, this issue of CPR retraining and recertification will be given a high priority. Aside from the potential for widespread CPR skill degradation, we are concerned that the motivation which draws citizens to CPR training not be lost nor neglected during the months and years following that training.

Despite the phenomenal public acceptance of and participation in CPR training, it has been amply demonstrated that the CPR technique has limited life-saving value unless up-to-date emergency medical services resources, including pre-hospital advanced life support services, are available. (5) Despite this limitation, CPR training is available within reasonable distance to nearly every American community. On the other hand, the creation and expansion of advanced life support services (using mobile intensive care units and paramedic personnel) has not yet occurred in most communities. This factor may partially explain the apparent waning of interest among those CPR trainees who fail to return for refresher training or recertification. The communities' emergency health care systems have not kept pace with citizen efforts to prepare for personal intervention in life-threatening medical emergencies.

Against this background, we are quite concerned that federal

government support for the national EMS initiative may be curtailed or discontinued before a truly national network of EMS systems has been constructed. Massive citizen interest and participation, as evidenced by the CPR training experience, could be wasted if the federal health agency were not permitted to complete the mission assigned to it by Public Law 93-154. Aside from the exciting prospect of millions of citizens devoting time and attention to training for a potential life-saving act, the monetary value of this citizen participation suggests a moral obligation for our government to complete its end of the bargain.

We are informed of an Administration proposal to phase out the federal EMS initiative through decreased funding and termination over the next three budget years. In short, we feel that this plan would derail developments occurring throughout the nation, de-emphasize the importance of emergency health care as a local community priority and activity, demoralize those EMS projects which would be deprived of the opportunity to complete development of regional EMS systems, and generate cynicism among the millions of citizens who have already done their part by training for a "first responder" life-saving role.

We are not privy to reasons advanced in support of the proposed phase-out of the federal EMS initiative. However, our

extensive on-site experience with projects funded under the current program gives us an unique perspective upon which to base our recommendation for continued life and adequate funding for this federal activity.

As we view current status, we must conclude that most of the progress made thus far has been in spite of obstacles created by design defects in the federal statute, seemingly unnecessary paperwork burdens imposed by the federal health agency and its regional offices, woefully inadequate staffing of DHEW's Division of Emergency Medical Services, a total lack of technical expertise among DHEW's Regional Program Consultants assigned to this program (with evidence, in at least one case, of outright hostility to the program and its goals), and continuing pressure to generate defensible support data prior to development of information systems which might eventually generate and assemble that data with some degree of efficiency and reliability.

With regard to design defects in the federal statute, we would offer the following scenario of an applicant entity which has completed Section 1202 planning and applied for a Section 1203 implementation grant:

Since notice of grant award will not be received by the applicant until the last day of the fiscal year (about June 30), there can be no commitment of funds nor employment of project staff until that time. Once the notice of grant award is received, staff recruitment must commence immediately.

If the applicant entity is an agency of government, employment of staff is likely to be delayed by burdensome regulations and procedures (including formal approval of position description, advertising, examination, establishment of eligibility list, etc.). Meanwhile, the DHEW Regional Program Consultant will probably require the submission of a modified budget during this time period. Staff recruitment, acquisition of office space, equipment, telephones, and preparing and submitting a modified budget is likely to consume much of the first quarter of the project year, which must be concluded with a formal progress report to DHEW.

The second quarter is vital to a Section 1203-1 project. During this quarter, most of the annual work plan must be accomplished. Progress must be made on each of the 15 programmatic components, and data-gathering must begin in earnest. At the conclusion of this quarter, another progress report must be submitted to DHEW. Also, any changes in the program plan or budget which are deemed necessary must be sought in writing from the Regional Program Consultant.

Most of the third quarter will be consumed by development of a new grant application - to provide federal funding support during the next fiscal year. Even the most efficient

of the funded projects find this time period totally occupied with the process of writing a grant application. In our site visits, we find project personnel during this time period (as well as the second quarter) devoting sixty hours per week and more to their tasks. At the end of this third quarter, another progress report must be submitted to DHEW.

Although the fourth quarter of a project year offers greater liberty of time to EMS project personnel, this time period is accompanied by the discomforting knowledge that the project's funding may not be renewed. Thus, project personnel have no assurance of continued employment beyond June 30th and, indeed, may have nothing more than one-day notices of termination. It is realistic to expect that some of these personnel may spend some part of the fourth quarter searching for more stable and rational employment.

Thus, a project year consisting of twelve months is effectively reduced to less than six months of meaningful labor. We have no specific suggestions concerning legislation which might produce greater efficiency in project management and operations. However, we feel that any Congressional analysis of program performance should consider the elements of failure and inefficiency which have grown from the current law and its administration.

Our reference to demands for defensible support data relates to another issue deserving Congressional scrutiny and clarification. Throughout the nation, among the thousands of physicians, administrators and project personnel pursuing the goals of the national EMS initiative, there has been a perceived need to extract medical and statistical data and to construct from that data proof that this health initiative is causing beneficial results. Furthermore, this sometimes frantic effort is affected by the perceived need to gather data, analyze data, and report findings in a format resembling that of traditional scientific and medical research.

While we appreciate these efforts and look forward to their products, we see this activity - in its present format - as counterproductive and seriously depleting personnel resources at the project level. In most of the projects we have visited, the public policy and health systems atmospheres are far too turbulent and suspicious at the present time to accomodate such a technical form of evaluation.

As a reasonable alternative, we would point to the evaluation project conducted by the King County, Washington, Health Department under grant support from the National Center for Health Services Research. In that instance, professional evaluators and statisticians are conducting a controlled study of the products and results of varying profiles of emergency medical services in a suburban community of 600,000 people. It's important to note that the

King County evaluators are not burdened by the obligations of a Section 1203 or 1204 project. Instead, their investigation and findings are untainted by restrictions of time or the temptation to interpret data with an eye to re-funding of an EMS project.

In our judgement, the use of random samples is a valid strategy in an evaluation effort. We recommend that this strategy be applied to the national EMS initiative. Rather than commission every funded project to prove its worth annually through frantically-produced data and patient-tracking schemes, we would urge that those funds committed to EMS "research" be used to fund major evaluation programs (similar to the King County project) in selected project areas. This change in program management would free project personnel to deal with essential issues of system design and linkages, public policy matters, and long-term financial support of the EMS system. On the other hand, it would offer to the Congress a more reliable fund of information upon which to base future decisions concerning this program.

Since we have suggested that traditional formats of scientific and medical research do not mate well with the emergency medical services environment, we would like to offer a different slant on judging the worthiness of this program. This unorthodox method of evaluation was inspired by a

recent issue of the Journal of the American College of Emergency Physicians (JACEP) and it relates to the aforementioned investigation in King County, Washington. (6)

In that population base of 600,000, it was determined that an EMS system utilizing CPR-trained laypersons, basic life support first responders, and advanced life support mobile intensive care units could save two lives per 10,000 population per year from death due to cardiac arrest. If we apply neighboring Seattle's long-term survival rate to this figure, we see that 36 of the resuscitated cardiac arrest victims are likely to return to active and productive lives.

In the King County study, the average age of cardiac arrest victims was 61, four years less than the traditional retirement age, and about ten years less than the average male life expectancy. If those long-term survivors went on to work and pay taxes for another four years following their near-fatal episode, what would be the tax revenue benefit to our federal government? Presuming that each of those long-term survivors were married, filed a joint return, and had a taxable income of $20,000 per year, the combined income tax revenue during that four-year period would be $501,696.

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It's interesting to note that the King County study relates only to cardiac arrest. It does not consider those patients who are prevented from suffering cardiac arrest through early prophylactic intervention of mobile intensive care in the field. Those who work in the pre-hospital care environment will readily acknowledge that beneficial response to such care is a common occurence.

Furthermore, the King County data has only limited application to the life-saving potential of modern emergency care for trauma patients. We need only look to Wyoming for evidence that modern systems of basic life support can save the lives of numerous victims of highway trauma. In Wyoming, a recent medical audit of 16,000 ambulance responses disclosed that 147 persons were saved from premature death due to traumatic injuries. This result was attributed to the performance of properly-trained personnel and their properly-equipped ambulance vehicles. (7)

What if we were to speculate on system benefits to non-arresting cardiac patients, and to trauma patients? What would happen if we added to the two-per-10,000 figure in King County another three lives per 10,000 population per year? It has been estimated that the modern EMS system in that locale might cost as much as $1,650,000 per year. How would five saves per 10,000 population per year stack up against those costs?

Such system performance would produce 300 total saves per year. The per-capita cost per save (based on 600,000 population) is less than one cent. ($1,650,000/300 = $5,500/600,000 = .009¢) If we presume a 30% long-term survival rate, the per capita cost per life saved rises to three cents ($1,650,000/90 = $18,333/600,000 = .03¢) If we apply our earlier presumptions concerning federal tax revenue benefits, we find that these ninety long-term survivors would pay income taxes totalling $1,254,240 during the four years following their near-fatal episodes.

Let's apply similar logic to the Wyoming experience. As we know, trauma is the major killer of young people. Thus, the 147 survivors in Wyoming in 1977 might be expected to have an average age of 30 or less. If we presume that only half that number are able to return to active and productive lives, we can still get a glimpse of the economic importance of a good EMS system. Once again, presuming that these survivors are married, file joint returns, have an average annual taxable income of $20,000, and work until they are 65 years old, the 73 working survivors will eventually pay their federal government nearly nine million dollars in income taxes. ($3,484 x 35 yrs. x 73 = $8,901,620.)

What about the life insuror who gets a thirty or forty year respite from paying a $50,000 death benefit - thanks to the life-saving performance of a modern EMS system. Held in

reserve for another thirty to forty years, and managed by professional investment experts, how much will that $50,000 earn? How much does the Social Security system benefit when a premature death is prevented and the participant contributes for another five to thirty years? How much will the system save in benefit payments to a surviving spouse and dependent children? How much do state and local government entities benefit from extended tax contributions of one whose family might have become public aid recipients had he or she not been retrieved from the threshold of untimely death?

Obviously, not every patient recovers sufficiently to return to normal and productive life. But there is evidence that a modern EMS system can improve that potential and reduce the costs of long-term care and rehabilitation. We can think of no better example than the seven-year experience of the Midwest Spinal Cord Injury Care System in Chicago. That system treats an estimated 29% of all new spinal cord injuries occuring within 200 miles of Chicago. In the first five years of the program, it recorded a gradual increase in mobility and self-care dependence of patients at discharge, even though the average level of patient function on admission decreased during that same period.

During 1972-76, the number of patients admitted to the Midwest Regional system within 72 hours of injury increased by 425%

and the post-injury admission time dropped from an average of 45 days in 1972 to just 12 hours in 1976. Comparing early and delayed-entry patients, those who are transferred early spend 16% fewer days in the hospital following their injury. Most important, the 1976 cost savings averaged $6,600 per patient. If we could build such a system in New Jersey, for example, the annual savings for spinal cord injured patients alone would average $1,386,000.

With all this evidence that modern EMS systems save lives and money, with all this outpouring of time and energy by millions of good citizens, we might be temped to conclude that our federal government has done its job, produced the enthusiasm, stimulated the momentum, and should now fade out of the picture. But that temptation is countered by evidence that the job is far from done.

The human wave of EMS participation in America has escaped the attention of a good many public officials. Still others lack sufficient information and understanding to make rational judgments on importnat public policy questions related to modern emergency care. For example, last Novmber 4th, at a special legislative committee meeting in Oklahoma, a State Senator spoke out against an EMS bill which would require ambulance services to be licensed and manned by trained personnel.(8)

His opposition, he said, was based on his fear that such regulations would put many ambulance operators out of business and leave vast areas of the state without ambulance service. In state after state during the past decade, that fearful argument has been put to rest. But this recent revival of support for the deadly status quo tells us that the public's right to state-of-the-art emergency care and transportation is not secure.

Within the past few days, similar arguments have been heard in the State Legislature of Virginia. In at least two other states, volunteer ambulance personnel are threatening to seek legislation relieving them of responsibility for refresher training and periodic recertification.

Last month, in New Jersey, a superb plan for medical control of advanced life support operations and critical patient transfer networks was unveiled by a group of peerless medical specialists. Immediately , there was an angry reaction from a powerful volunteer first aid organization. Although sincere in their concerns, the volunteers completely overlooked potential benefits to emergency patients in their emotional campaign to kill the plan. Having failed to persuade the State's Health Care Administration Board, the angry first-aiders were last

seen at the State Legislature, seeking legislation which would prohibit further consideration of this modern plan for comprehensive emergency medical services.

From California, we have received word that the State Health Department plans to eliminate its Bureau of Emergency Medical Services at the end of this fiscal year. This decision comes on the heels of a notice that California, alone among the states, will be excluded from new, low-cost liability insurance for EMTs and paramedics made available by Lloyds of London. The exclusion of California, we presume, is based on the absence of statewide training standards, the predominant absence of medical control, and the devastating legal consequences of those defects. Yet, the California Department of Health has dropped EMS from the bottom of its priority list.

From another western state, we have received newspaper clippings reporting a border skirmish between neighboring EMS operations. According to these reports, the competition for emergency patients has pitted helicopter against ground-based mobile intensive care units, not to mention physicial and verbal confrontations on the streets over the possession of injured persons.

In essence, our federal government now has a bigger responsibility than if it had done nothing at all to create and improve EMS systems. Through federal initiative, we have been introduced to what's possible. Through federal support and leadership, public expectations have been elevated and public participation has been inspired. But, as we all know, many of the advances made thus far are fragile. Whether it's a State Senator in Oklahoma, a public health official in California, or an angry mob of volunteers in New Jersey, the unwitting enemies of improved emergency health care are numerous, vocal and energetic. Without continued federal support and effort to finish the job undertaken, the expensive progress made thus far is likely to become a domestic version of some half-hearted international misadventure.

We have tried to analyze the level of federal support which might be needed to finish the task. In our judgment, five additional years of full-scale effort are required. Further, we recommend that, in addition to some timely efforts to modify the authorizing law in the interest of streamlining and efficiency, appropriations in the amount of $50 millions per year be authorized.

While we recognize the traditional approach to scaling down

and phasing out federal programs, we feel such an approach is in appropriate in the case of the EMS initiative. The "slow death," approach would detract from the importance of the program in its terminal years. It would take from project administrators the advantage of a strong and visible federal commitment. It would cause some projects to abort mid-course in their planned programs to develop regional systems. And, it would do little to quiet the outrage of those many citizens who have made a personal commitment to the goals of the program.

In our view, the federal EMS program's relative success has been due, in large part, to its clearly-defined task orientation. We would urge that the future of this program be viewed in the same manner. There is a clearly-defined task to be accomplished. With sufficient authority and resources, that task can be accomplished in the next five years. At that point, we would recommend that federal funding support be concluded. In the meantime, however, we would urge that the program be spared the debilitating effects of "lame duck" status.

In conclusion, on behalf of the ACT Foundation and its supporting pharmaceutical industry supporters, I would like to assure your Committee of our continuing support and assistance

to the federal EMS program and EMS projects and programs throughout the nation. Should the Congress elect to continue this program, you can count on the full energies and resources of our organization devoted to the common goal of modern and comprehensive emergency medical services for every citizen of our nation.

Thank you for the invitation and the opportunity to present this message.

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CPR Training

The Constituency of Millions

By James O. Page, JD

IF WE WERE to judge by most of the recent media presentations on the subjects of quality and cost-effectiveness in health care, we would have to conclude that there is much need for improvement. Aside from the quality issues, the rising national expenditure for health care and associated activities has been convincingly portrayed as the most likely precursor to national bankruptcy.

The dire predictions are supported by the statistics. In the decade between 1965 and 1975, the private share of national health expenditures dropped from 75 percent to 58 percent while the federal share rose from 12 percent to 28 percent. During that same time, state and local government sources remained constant at about 13 percent.[1] Since 1975, nothing has occurred which might suggest a levelling off of the rapidly ascending curve of federal health care costs.

For many years, health-related philanthropy has provided significant assistance to health research, care facilities and direct services. But this source of finance seems to be softening in proportion to the increasing federal role. It is still an important source of funds — $4.4 billion in 1976. However, at the end of the '66-'76 decade, health causes received only 15 percent of all philanthropy compared to nearly 18 percent at the beginning of the decade. During the same period, philanthropic giving to all causes almost doubled — growing from 15 to 29 billion dollars. Forty-four percent of that amount goes to religion.[2]

HEW Secretary Joseph Califano has some interesting thoughts on this subject. "For too long, all of us in health care have been using our affluence to cure problems, rather than our ingenuity and self-discipline to prevent them," he says. "We have not been willing to confront the hard fact that resources are limited . . . We can no longer buy our way out of difficulties," says Califano. "We must think our way out."[3]

What has this to do with education and training of the lay public? Everything, in my view. I am influenced by the words of Dr. Lewis Thomas, president of the Memorial Sloan-Kettering Cancer Center in New York. "The general belief these days," says Dr. Thomas, "seems to be that the (human) body is fundamentally flawed, subject to disintegration at any moment, always on the verge of mortal disease, (and) always in need of continual monitoring and support by health-care professionals . . . There is a public preoccupation with disease that is assuming the dimension of a national obsession."[4]

Dr. Thomas attributes the public preoccupation with disease, in part, to the well-intentioned efforts of health-related agencies to obtain philanthropic contributions by spotlighting the imminent perils of their respective disease entities. He points out that there is no discernible counter-propaganda. Thus . . ."The health care system is being overused, swamped by expectant overdemands for services that are frequently trivial or unproductive."

In identifying the need for training and education of the lay public, my first impulse would be to offer you the worn-out statistics of accidental death and disability, death rate due to heart disease, percentage of out-of-hospital cardiac deaths which might be preventable, etc., etc. We can't argue with the importance of those figures. Although depersonalized by sheer volume, they do relate to real human beings.

But I am influenced also by questions of Effectiveness, Efficiency and Economy. Lurking behind each of those buzz words are question marks. The question marks have achieved a label in the language of "federalese." They are called "consumers." They are the very reason for a health care system. They are the object of governmental schemes to make the health care system serve them without limit, without undue financial burden, and without error. Aside from the obligation to support the system through taxes and premiums, however, the consumer has been given no obligation of education, information, prudence or restraint. As suggested by Dr. Thomas, the uninformed, imprudent and unrestrained utilization of the health care system threatens to overwhelm it.

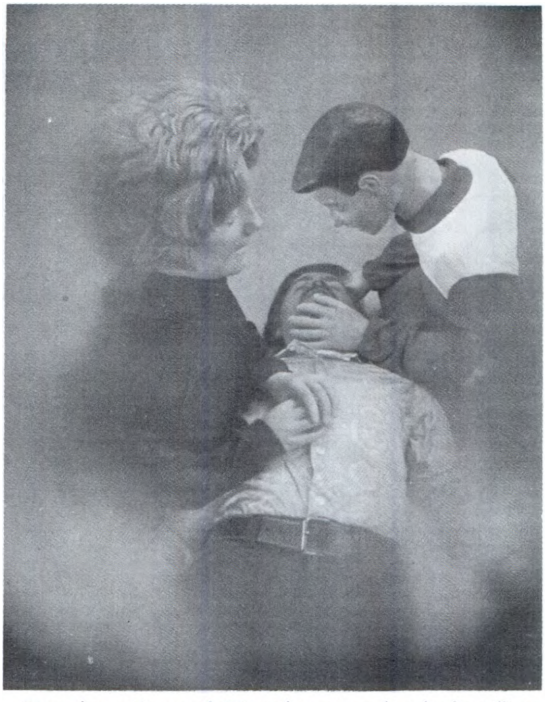
We have heard emergency medical services (EMS) referred to as the "ground floor of the health care system."[5] By design and regulation, as well as legal precedent, emergency medical care must be provided without prior concern for ability to pay. It has been described as the "first (health care system) that will take on all comers at all hours." Certainly, that is a desirable floor upon which to build a system intended to serve human beings. But the absence of any perceived two-way responsibility threatens to erode that floor before construction of the system is complete.

Nearly every American can expect to need and utilize emergency health care services at least once. Thus, it is hard to distinguish the "consumer" from the "lay public." The lay public consists of consumers and consumers are members of the lay public. Unless the lay public can be educated in the proper use of the health care system, the lay public may be viewed by history as the "enemy" that destroyed the system.

Of course, there is a "need" for education of the lay public. But how? Literature? The media? Changes in our public school curricular? Public meetings? Legislation? (The most popular of current responses to problems.)

In my opinion, the need to *educate* the lay public can be met by programs to *train* the lay public. The programs already exist in thousands of communities and in every state. They are producing millions of trained laymen, but very few of these programs are making any effort to educate.

I'm talking about CPR! Training the lay public in CPR. It's been a mere five years since the National Conference on Standards for CPR and Emergency Cardiac Care was held in Washington,



Trained practitioners of CPR are being turned out by the millions — but are they also being educated?

D.C.[6] That 1973 Conference was the launching pad for a bold new endeavor — the training of the lay public to perform a technique which was not even included in the curriculum of most American medical schools.

I doubt that very many of the conferees at that Washington meeting realized the sociological and historic significance of their combined actions. I know there were cynics present who felt that the Standards and the goal of training the masses were mere platitudes. What reason was there to believe that millions would expend the emotional, mental and physical energy to learn a skill that could benefit others?

In the interim, President Ford's "WIN" buttons went begging and President Carter's pleas for energy conservation went unheeded. Yet at the same time, millions of Americans were pulling themselves away from their TV sets, leaving the comfort and safety of their homes, shedding their anonymity by congregating with a group of strangers, admitting there is something they don't know, and getting down on their knees to press the sternum of a rubber manikin. The risks were ominous — admitting ignorance, looking ridiculous, and subjecting oneself to the possibility of failing the course.

Within four years after the 1973 Conference in Washington, CPR training for laymen had been the subject of numerous articles, radio and television broadcasts. The subject had achieved such national importance as to warrant attention of the Gallup Poll, which disclosed that twelve million Americans had already been trained in CPR. Furthermore, two Americans in three had heard about CPR. Of these, more than half (54 percent) said they would be interested in taking a course in CPR. That figure projects to about 80 million people![7]

Think about that. Eighty million people. How often do we find 80 million Americans agreeing on anything? Eighty million people ready to *learn* something without any expectation of being paid for their efforts. Eighty million curious "consumers" who are ready to learn something about their bodies and about the health care system. Eighty million people could turn this country around overnight. It is *your* constituency. It is a constituency that is ready, willing, able and waiting. Throughout our country, nurses, respiratory therapists, paramedics, EMTs, first aid instructors and others are doing a reasonably adequate job of conveying some basic life support skills to the millions of trainees who flock to organized classes sponsored by the Heart Association and the Red Cross.

In many areas, training is not available because volunteer instructors are not available. Even where the classes are available, the course is generally limited to the development of skills with less time devoted to health education. The magnificent opportunity for providing some health "education" to this captive audience — this constituency of millions — is lost.

Nevertheless, the horizons of opportunity are expanding. Presently, throughout the country, there is a massive populist movement to include CPR training as a required part of secondary education. Several months ago, the ACT Foundation featured a small article on this subject in our monthly newsletter. We briefly described the high school CPR program developed by Dr. Allan Brandt in Milford, Connecticut. As a result of that article, Dr. Brandt was swamped by requests for information. People from several localities arranged for him to travel to them and help establish similar programs.

In California, a state law now requires that CPR be taught to students before they graduate from high school. We reported that fact in our newsletter and we were swamped by requests for copies of the law. In Grand Rapids, Michigan, Dr. Mark Vasu has developed a scaled-down version of an EMT course for high school students, including CPR. It is an elective course, but the four high schools in Grand Rapids expect to train 850 students in the course this year.

In Bellingham, Washington, Dr. Marvin Wayne proudly reported that CPR training was required of all high school students. Later, he acknowledged that it wasn't required. Nearly universal enrollment of Bellingham students in the course had led him to believe it was mandatory.

What about the qualifications of high school students and their relative ability to become adept at CPR? I could reveal some anecdotal instances of high school students successfully employing their CPR techniques.[8] More important, however, is the fact that CPR training for high school students is here to stay. It's too late to question whether they are qualified to perform the technique.[9]

Which leads me to the next observation: Today's high school student is also today's consumer of health care services and tomorrow's voter. Are you satisfied to see this massive body of future taxpayers "trained" in CPR, or would you prefer to see them "educated" in CPR and other important health care issues?

Please understand that I am not suggesting that CPR training be turned into a soapbox for propaganda. I'm suggesting that there is a very important message to convey. It is a message of health education, the benefits of and responsibility for caring for oneself, the limits of medical science to perform "Marcus Welby" miracles, and the overwhelming hazards of abusing the system. It is a difficult message to convey satisfactorily by the media. It is a message that, standing alone, will fail to captivate an audience. But it is a message that could find receptive ears in a roomful of CPR trainees.

Before you reject the idea of health education for the lay public, consider the excellent resources that are already available. An example is the American Heart Association's Manual for Instructors of Basic Cardiac Life Support (copyright 1977). It is an excellent training package. But you will note that the section on the EMS system occupies less than two pages. The section on prudent heart living consists of one short paragraph. I have attended CPR training classes where a volunteer instructor clumsily read these materials to an audience that was thinking, "When do we get to practice on the manikins?"

Press reports and lawsuits notwithstanding, the average citizen still holds most elements of the health care system in high esteem — especially when in personal contact. We need to build on this base of confidence to convey the important information that should be part of CPR "education" for the lay public. There could be no better opportunity to mount the assault that is generally agreed to be the only buffer against the complete breakdown and bankruptcy of our health system (and possibly our nation) — the education of the public in matters relating to prevention and proper use of the system.

In the aftermath of the CPR training phenomenon, we are beginning to see a disturbing development. It relates to the subject of retraining and recertification. The Standards suggest recertification for nonmedical groups one year from the initial course and then at least every three years thereafter, or more frequently where indicated. I have seen no statistics concerning recertification of CPR-trained laymen, but many of the trainers say that laymen, once trained, don't appear interested in coming back for refresher training. In Palatine, Illinois, for example, 800 citizens were trained in a short period by paramedics employed by the local fire department. A year later, despite widespread community publicity, only 22 people showed up for refresher training.

This problem has special significance to us at the ACT Foundation. We have a motivational film that has been seen by an estimated fifteen million Americans already. We have played a big role in motivating citizens to sign up for CPR training. We have been very proud and pleased by the response. Now, however, we are very concerned that these trained laymen are disappearing into the populace never to be heard from again. We are very concerned that their encounter with health-related training may have been a one time experience. We are concerned that their training may have been lacking in education.

The ACT Foundation is planning to do something about the problem. The Foundation has plans for a new quarterly newsletter publication, to be named "CPR Citizen." If we can enlist the cooperation of CPR training programs and projects throughout the nation, we hope to obtain from the population of CPR trainees subscribers to "CPR Citizen." In this planned publication, we hope to provide a continuing link between the trained layman and the EMS system. We hope to maintain interest by sharing anecdotal accounts of how other CPR citizens have used their skills to save a life. We hope to gradually introduce our readers to other aspects of the EMS system. Also, we hope to impress upon them the need to maintain their skills through periodic retraining and recertification.

It has been my observation that most recently trained laymen possess an abundant enthusiasm. They are proud of what they have learned and what they can do. Sometime thereafter, however, the enthusiasm seems to give way to other interests. After all, the trained layman doesn't get a chance to save a life every day. We hope to do our part in keeping the spirit alive.

If you don't presently have a CPR training program (or any other form of health education program for laymen) in your community, you may be interested in creating one. You may be inspired to build a component of health education into that program. The scientific mind will automatically ask: "Where is the evidence that such education will produce the desired benefits?" I don't have that evidence. I don't know anyone who does. If trainees are being allowed to disappear into the general population at the conclusion of their training experience, with shallow impressions and no lasting links with the system, such evidence is not likely in the foreseeable future.

When CPR training for the public was first proposed, there were demands for evidence that it would work. It was not available. In the interim, however, public demand for initial CPR training has outstripped the supply of instructors, materials and training equipment. In terms of evidence that CPR *training* will produce the desired results, the evidence has begun to arrive. But we have no way of measuring whether that training was accompanied by any degree of health *education*, and, if so, what were the results.

I'm suggesting that health education is worth a sincere effort, even without evidence that it will produce the desired results.

I'm suggesting that health education is worth a sincere effort, even without evidence that it will produce the desired results.

I mentioned that public demand for CPR training has outstripped supply which, of course, raises the issue of costs. What costs can be anticipated for publicity, training, equipment, instructor training and wages, if applicable?

The national experience suggests that these costs are highly variable and that the methods for meeting them are likewise diverse. The California Chapter of the American College of Emergency Physicians has determined the contents of an ACLS (Advanced Cardiac Life Support) training module, containing multiple manikins, for use in its statewide training program. Including tax and 15 percent reserve for equipment maintenance, the price of each module is set at $13,304. Working through the ACT Foundation, Cal/ACEP was able to obtain a no-interest loan for two such modules from the Burroughs Wellcome Co. The loan will be repaid through registration fees.

Many training programs have been initiated with a much smaller capital investment. Many have started with borrowed equipment just to give the program visibility while seeking financial support. In these cases, the adage that "success breeds success" has proven appropriate. For example, the student-operated Emergency Medical Association at the University of North Carolina at Greensboro wanted to start a community CPR training program several months ago. They were flat broke. They borrowed some equipment to prove that they had the capacity to operate the program. The ACT Foundation then directed the program to the Charitable Foundation of the National Automobile Dealers Assn. That contact produced enough money for one manikin. Within weeks, local service clubs and community groups were stumbling over each other to donate funds and equipment to the program and to share in its limelight.

A mistake often made is to insist on complete financial security before initiating the program. Although that must be viewed as a prudent and businesslike approach, it hasn't worked very well in CPR training programs that must rely on community donations and support. The potential philanthropists don't tend to open up until there is some sort of operational program. This reality produces some initial begging, borrowing and stealing.

In Palatine, Illinois, the local fire department put its citizen CPR training program to life on a wing and a prayer. The public in Palatine was impressed. Public employees were offering a service without asking to be paid in advance. The public gratitude began to produce community donations. Today, the Palatine Fire Department has one of the nation's best equipped CPR training facilities and more than $25,000 in the bank — all public donations.

In Billings, Montana, a nurse employed by the County Health Department took on the task of training the public. She organized a cadre of volunteers and began to show the ACT Foundation film, "A Life In Your Hands," throughout Yellowstone County. Within nine months, nearly 3,000 citizens had been certified and $7,000 worth of training equipment has been donated. The program reached a peak in January. Using 65 instructors and 65 manikins, the nurse and her volunteers trained 1,028 public school teachers in two days! The instructor/student ratio was one to seven and each student spent two hours at manikin practice.

Although many programs use volunteer instructors, the increasing public demand for CPR training is wearing the volunteer spirit a little thin in some locations. In Washington, D.C., the Heart Association is now using off-duty D.C. firefighters as instructors, paying them at the rate of $4.50 per hour. Costs for instructors and equipment are covered by a $5.00 registration fee. After some experience with this arrangement in Washington and elsewhere, it is generally concluded that trainees take the experience more seriously if they have five bucks invested.

With a little bit of innovation and effort, there should be no need to spend money on publicity for a citizen CPR training program. After the program is operational, it will generate its own publicity. Media people seem to gravitate toward stories about citizens who intervene in a medical emergency. The nurse in Billings, Montana, sums up her experience in a recent letter: "Our citizens' CPR program here in Yellowstone County has grown to the point where I am having a hard time trying to keep up with it." Obviously, she does not need more publicity.

I mentioned earlier that we were beginning to see evidence that CPR training will produce the desired results. Dr. Mickey Eisenberg is presently serving as Director of Project Restart, an outcome evaluation of paramedic programs in King County, Washington. The study involves a study community and two control communities, not including Seattle, and it has been ongoing since April, 1976. Data released this January reflects the impact of bystander-initiated CPR. Thirty-four percent of patients receiving CPR initiated by bystanders were admitted, compared to 24 percent who had to wait for emergency personnel to initiate the CPR. Twenty-two percent of those who received bystander-initiated CPR were ultimately discharged, compared to only 13 percent of those who had to wait for emergency personnel to commence the technique. The study population involved 141 and 488 patients respectively. All cases studied involved cardiac arrest due to primary heart disease.

To those of us who had committed our organizations and selves to the concept of citizen CPR training without solid proof that it would make a difference, these statistics are very welcome. But they are only partial evidence of success. If we continue to train without some degree of health education, history may judge this national phenomenon as a lost opportunity.

James O. Page, JD, began his career in the fire service, and was active in rescue and emergency medicine as well as fire suppression and prevention. He was graduated from Southwestern University School of Law and is a member of the California Bar. He was organizer and director of EMS systems for the State of North Carolina and the Lakes Area of New York. He is currently executive director of the ACT Foundation, a nonprofit organization for the promotion of Advanced Coronary Treatment, and emergency care in general. □

FOOTNOTES

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EMS ACTION
Emergency Medical Services
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Machine vs. Manual CPR Tested

In a detailed report to a joint meeting of the American Association of Automotive Medicine and the International Association of Traffic Medicine, B.G. Roberts recently described tests in Dallas, Texas to compare machine CPR versus manual CPR in moving vehicles. Roberts is Division Chief with the Dallas Fire Department and supervises that City's emergency medical services program. He addressed the AAAM/IATM meeting in Ann Arbor, Michigan in mid-July.

"Cardiopulmonary resuscitation (CPR) is an exhausting procedure compounded by the difficulties of execution in a moving ambulance," Chief Roberts told the group. He went on to describe research in Dallas comparing the performance of CPR with a machine against manual performance in identical circumstances. Following the 1976 tests, the City of Dallas obtained a grant from a local foundation and purchased 24 mechanical cardiopulmonary resuscitators for use on the fire department's mobile intensive care units (reported in **EMS Action**, March 1978).

"The CPR machine showed a clear superiority in the tests," Roberts reported. Recording manikins were used to determine proper hand placement, proper compression rate, compression force and missed beats on all tests. Recordings were made from the initial onset of CPR until the patient (manikin) was delivered into the hospital. Both machine and manual tests involved simulations of actual cardiac emergencies. Each test sequence began with "detection" of the patient on a floor of a building, followed by immediate initiation of manual CPR in accord with American Heart Association standards.

In all test situations, the manikin was loaded onto a stretcher, wheeled to a waiting ambulance, loaded into the vehicle, and transported under emergency conditions to a hospital 28.9 kilometers from the starting point.

According to Roberts, "Principal differences in machine versus manual tests were nonvarying rate of compression over 21 minute tests, constant compression, stroke depth, no missed beats because of curves, or stops and starts, and no incorrect compression placement." In the manual method of CPR administered during the tests, the following observations were made: there were 336 incorrect pressure points, 24 missed beats altogether, the rate ranged from 60 to 84 beats per minute, and varied periodically from not enough pressure to too much pressure. The machine observations showed a 30 second period of inadequate compression on set up and a 12 second period of inadequate compressions on switchover from portable to fixed oxygen source. Compression rates produced by CPR machines were consistant throughout the tests.

Summarizing the results of the Dallas tests, Roberts offered several conclusions. "The machine can perform CPR in a moving vehicle better than man. There are less interruptions of CPR in a moving vehicle during transport when using the machine CPR. The compressions of the chest are constant in depth and in location if the machine is used, where the rescuers' are not," he said.

Continuing, Chief Roberts concluded, "The evaluation of the tapes used in the tests indicated no pause at the end of compression when men performed the CPR. This problem was eliminated when using machine CPR. Fatigue was not a factor with the use of the machine, and less personnel were required to transport the victims to the hospital when mechanical CPR was performed. Also, the patient was more accessible to the paramedics for administering drugs, defibrillating and monitoring of the patient's condition when the machine was used because there were two less people necessary to perform the same functions."

Copies of the nine page research report are available from: B.G. Roberts, Division Chief, Dallas Fire Department, 2111 Main, Dallas, Texas 75201.

URBAN EMS DILEMMA

A national symposium entitled, "The Urban EMS Dilemma," will be presented in New York City immediately following the National EMS Public Information/Education Symposium. "The Urban EMS Dilemma" will be presented by New York City's Health and Hospitals Corporation, the Emergency Care Institute of Beekman Downtown Hospital, and HEW's Division of EMS, at New York City's Plaza Hotel, September 13–15, 1978. According to the sponsors, the program will address the unique problems of urban EMS systems. For information, contact: Emergency Care Institute of Beekman Downtown Hospital, 170 William Street, New York, N.Y. 10038 (212/233-5300, ext. 385).

AN EXERCISE IN REDEMPTION

by James O. Page, J.D.
Executive Director
ACT Foundation

For several days following the recent American Medical Association/American Hospital Association Conference on Categorization, we heard from folks who had not had the opportunity to attend. "How did it go?," asked one of our callers. "Did they get anything done?," asked another. "I suppose they just rehashed the old guidelines," suggested still another.

Before and after the conference, we detected a predisposition that no significant progress would come from this invitational gathering of medical and hospital people. There seemed to be a cynical presumption that organized medicine and the hospital establishment would not take seriously a scheme which might upset the balance of status quo. We are pleased to report that the cynics were wrong.

Of all the components of a comprehensive EMS system, categorization of hospital emergency capabilities has been the most elusive. Even where categorization exists on paper, there is no evidence that it is an operational reality in more than a few isolated locations in the country.

Resistance to the concept is multi-faceted. It is based in the economics of the patient census, cost containment mandates which are based on patient days and have no relationship to emergency care systems, and aloof traditions of University medical centers with regard to rural and suburban practitioners. Resistance to categorization also can be traced to legal apprehension and the pride of hospital trustees, among other factors.

The recent conference in Chicago set out to ford these turbulent waters through an examination of the 1971 AMA guidelines for categorization. In their application, those guidelines tended to rate hospitals according to their weakest service. A hospital with an excellent burn treatment program might be rated on the basis of a lower priority service (such as a coronary care unit, for example). It made no difference that there was a top-rate CCU across the street at another hospital. For lack of a better term, this approach became known as "horizontal categorization."

During 1975, HEW offered an alternative – something called "vertical categorization." Under this concept, the emphasis is on specific patient condition (medical problem), rather than a hospital's ability to deal with **every** type of critical medical emergency. The goal is to make certain that the critical burn patient (for example) is directed to the medical center which is properly staffed and equipped to handle critical burns properly – without encouraging all hospitals to establish a burn center.

Against this background, the 1978 AMA/AHA Conference on Categorization came to grips with the issues. Workshops were divided into disease-specific groups. Workshop faculty hammered out detailed requirements for hospitals to serve as referral centers for that 5% of emergency patients who need highly specialized care. For me, a highlight of the conference was the statement of a surgeon as his Workshop began to veer off course: "We are going to deal with the problem and not worry about how a surgeon is going to make his living."

As the Workshop reports were delivered on the last day of the Conference, it was apparent that status quo had been assaulted. The reports zoomed in on critical illness and injury and how best to deal with it on a regional basis without feeding a medical/hospital arms race.

From one of the Workshops came the recommendation that the Joint Commission on Accreditation of Hospitals adopt the final guidelines produced by the AMA/AHA Conference (JCAH jumped the gun recently with categorization criteria that bears all the ills of the earlier AMA guidelines). Furthermore, in recognition of eventual phase-out of HEW-funded EMS projects, it was recommended that the job of hospital assessment and reassessment for categorization be assumed by JCAH.

Even though the recent Chicago conference was an invitational event, it was not a closed shop for doctors and hospital administrators. Nurses, EMTs, health planners, and government officials were present; there was even a token lawyer. The value of interdisciplinary involvement became apparent in the early stages. As first-day discussion took a brief tour beyond reality, Jeff Harris (National Association of EMTs) rose to report that EMTs are categorizing on the streets everyday – without the benefit of guidelines. Gasp.

At this point, organized medicine can be very proud of its latest effort to deal with the problem of stratified care for critical patients. But there is much sifting, editing and revising to be done before the Conference report hits the streets. This token lawyer sincerely hopes that the final report reflects the spirit of the Conference. Anything less will see medical judgments eventually being made retrospectively in the place they least belong – the courts.

EMS MEDICAL DIRECTORS MEET PLANNED

Initial planning for a national meeting of EMS Medical Directors has begun in Wisconsin. According to George Anast, M.D., the meeting will be held in Madison late in the fall or early next winter. Dr. Anast, Wisconsin's EMS Medical Director, has announced that a final date will be announced as soon as possible.

Reportedly, the Wisconsin meeting will serve as an opportunity for EMS Medical Directors to share their thoughts and concerns with Dr. David Boyd, national director of the Department of HEW's emergency medical services program. "Feedback given to Washington could bring to light the difficulties in policy implementation so that unnecessary time lags and/or costly mistakes could be avoided," Dr. Anast said.

For additional information concerning the proposed meeting, contact Roberta Peneski, Program Coordinator, Northeastern Wisconsin EMS Council, 913 E. Walnut St., Green Bay, WI 54301 (414) 435-2056.

NEW CPR FILM AVAILABLE

The availability of a new 30 minute CPR training film has been announced by its producer, Eagle Production Corp. According to the producer, "CPR – Minutes Into Years" conforms to latest national training standards and recommended protocols for CPR, obstructed airway, electrical shock and drowning.

In a letter to **EMS Action**, representative Christy Burns reports that the new film was made in cooperation with the National Red Cross, American Heart Association, and the International Association of Firefighters. The film has been priced at $250.00. For additional information, contact Eagle Production Corp., 1875 W. Dartmouth, Suite 1, Englewood, Colorado 80110.

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COSTAS T. LAMBREW, M.D.

Costas T. Lambrew, M.D., a member of the ACT Foundation's Medical Advisory Board, has made many pioneering contributions to emergency medical services in the U.S. A graduate of Wesleyan University and Cornell University Medical College, Dr. Lambrew trained in Internal Medicine and Cardiology at the New York Hospital-Cornell Medical Center.

Between 1962 and 1964, Dr. Lambrew served at the Cardiology Branch of the National Heart Institute as physician in charge of the Diagnostic Service. Later, he was appointed to the faculty at Cornell's Division of Cardiology. In 1966, he became Chief of the Division at the Nassau County Medical Center (Long Island, New York).

While serving at Nassau County, "Gus" Lambrew initiated one of America's first pre-hospital paramedic programs and pioneered the concept of medical control of advanced life support operations. Establishing Nassau County Medical Center as a regional resource hospital, Dr. Lambrew and his staff commanded numerous paramedic units throughout the populous western end of Long Island.

In 1973, Dr. Lambrew was named Chairman of the Department of Medicine at the Medical Center and Professor of Medicine at the State University of New York at Stony Brook. In late 1977, he moved to Maine to serve as Physician Educator in EMS for the State of Maine and the Maine Medical Center. In this role, he is responsible for developing public education and EMS training programs on a regional and statewide basis. At the same time, he is investigating the physiology of resuscitation as a visiting research associate at the University of Maine's Biomedical Research Institute.

Dr. Gus Lambrew is well known throughout the country for his service as a Physician Technical Advisor to HEW's EMS program, and as a member of the American Heart Association's Subcommittee on Emergency Cardiac Care. In addition to his service to the ACT Foundation's Medical Advisory Board, he has been appointed as a physician consultant to the IAFC/IAFF EMT Apprenticeship Program.

In the near future, Dr. Lambrew will contribute to the ACT Foundation's **CPR Citizen** publication (Volume 1, Number 2, October 1978) with a discussion of recent changes in the technique of CPR.

PLEA TO RESCUE EMS

The downtown shopping mall in Redding, California was the scene of EMS action on July 21st. Members of a committee called "Save Emergency Medical Services" staged a display of modern EMS vehicles and equipment to drum up support for the regional EMS system which had been built with a Robert Wood Johnson Foundation grant and federal funds. A financial crisis in the wake of California's Proposition 13 threatens to end the regional project.

Cont. on p. 4

CPR CITIZEN BULK PURCHASES

CPR Citizen, the ACT Foundation's newest publication, was unveiled in July. Subscriptions to the quarterly information service have been arriving at a brisk rate. **CPR Citizen** is intended to serve the interests and needs of CPR-trained laypersons. The $3.00 annual subscription rate includes first class mailing.

Within days after **CPR Citizen** was announced, we received suggestions concerning bulk purchases of the publication. For example, Alaska's Southern Region EMS Council reported that the organization would like to issue complimentary copies to its CPR trainees with the recommendation that they subscribe. A major corporation in Pennsylvania proposed to buy **CPR Citizen** in bulk – to be distributed to CPR-trained employees as a free employee benefit.

Through bulk shipments, cost for mailing and processing can be reduced. Since our main goal is to serve the information needs of CPR Citizens, we are pleased by the opportunity to distribute our new publication in bulk quantities and to pass along the savings. Effective immediately, **CPR Citizen** will be available in quantities of 100 or more at the reduced rate of $1.75 per year (four quarterly issues).

To minimize packing and administrative costs, we must insist that bulk orders be in increments of 50 or 100 (100, 150, 200, 250, etc.). Bulk purchase orders must be accompanied by a check in an amount equal to the number ordered, multiplied by $1.75. For example, a request for 100 copies should be accompanied by a check in the amount of $175.00. This payment will result in four (quarterly) shipments to the purchasers. Distribution at the community or corporate level will be the responsibility of the purchaser.

The new bulk purchase arrangement was announced by ACT Foundation Executive Director James Page. "This should be an efficient means of keeping CPR trainees on the team after they have completed their training," he said. "For less than two dollars, a local CPR training project can use the **CPR Citizen** publication to maintain interest, to inspire refresher training, to continue EMS education, and to build local citizen support for emergency care improvements," Mr. Page concluded.

DOL FUNDS FOR CPR IN NORFOLK

In Norfolk, Virginia, three organizations have kicked off a CPR Public Education Project to complement that City's advanced life support system. Although the idea for the program was conceived by Eleanor Williams, Executive Director of the Southeastern Tidewater Opportunities Industrialization Center, the idea quickly gained support and assistance from Larry Hatfield, Superintendent of Norfolk's Department of Paramedical Rescue Services, and the local affiliate of the American Heart Association.

Goals established for the program included one in five Norfolk citizens trained in CPR, one CPR-trained person in every household where there is a high risk resident, and to train all public service employees. As with all such plans and programs, however, there was the question of staffing. A grant application was submitted to the U.S. Department of Labor under the Public Service Employment Act, Title VI.

Cont. on p. 4

FIRST CPR CITIZEN SUBSCRIPTION TO ERIC BRANDT

After months of planning and preparation, receipt of the very first subscription to **CPR Citizen** was an exciting event at the ACT Foundation. We did a little checking and found Subscriber Number 1 to be an extraordinary fellow.

He is Eric A. Brandt, an Emergency Medical Technician training coordinator at Southeastern Community College in Whiteville, North Carolina. Mr. Brandt is a native of Massachusetts who attended Southern Connecticut State College before moving to Western Carolina University in 1974. He graduated from WCU's Emergency Care program in 1977 with a Bachelor's degree in health services. While at WCU, he was a leader in the University's Student Emergency Care Team.

Eric Brandt (center) instructs EMT trainee as State EMS Coordinator Al Schomp looks on. Credit: North Carolina Office of EMS

At Southeastern Community College, Eric Brandt coordinates an innovative self-paced, self-instructional EMT course. This modular EMT training program was developed for North Carolina's Office of EMS in 1974 to assist volunteers with limited time for training. The course involves an open training lab and trainees may schedule their training time when it is most convenient to them. Individual tutoring and a small student/instructor ratio also result from this program.

Eric Brandt, who also serves as a professional EMT with New Hanover Ambulance Service in Wilmington, N.C., is exemplary of many young people who have responded to the challenge of North Carolina's statewide EMS program. That program, backed by adequate funding from the State legislature, has generated EMS excitement and involvement found in few other states. North Carolina's first EMTs were certified on April 1, 1974. Nearly 20,000 have been trained since that date, colleges and universities throughout the state have become involved with the program, and nearly all elements of a comprehensive EMS system are being developed throughout the Tar Heel state.

We are proud to acknowledge Eric Brandt, representing a new breed of EMS professionals, as our Subscriber Number 1 for **CPR Citizen**. As Eric recommends **CPR Citizen** to the many laypersons he trains in the technique of CPR, we hope to help him build and maintain the ultimate EMS team. We've only just begun.

Plea, *Cont. from p. 3*

Shoppers were asked to sign petitions to be sent to Governor Jerry Brown and the State Legislature. "The elimination of life-saving medical care is not what California intended with the passage of Proposition 13," the sponsoring group said in a written statement. A legislative bill which would provide partial continuation funding for regional EMS projects was placed in a "Suspense File" by legislators. Meanwhile, an official of the Northern California Emergency Medical Care Council described his organization as in "full arrest."

DOL, *Cont. from p. 3*

Funding for the project was awarded in February, 1978. The grant provides for nine instructors, as well as manikins and other training equipment. The nine instructors were selected from a group of 17 applicants who had quasi-medical backgrounds. An in-depth training program prepared the new instructors for their certification as Basic Life Support Instructors.

The federal funding support for the Norfolk CPR program was limited to six months on an experimental basis. However, the program achieved a rapid pace from the outset. It is estimated that nearly 7,000 citizens will have been trained by next month (actual training began in May). Commenting on the success of the program, Hatfield reported to **EMS Action**, "it is anticipated that additional funding can be secured and the program will be doubled or even tripled in size and scope."

For additional information concerning the program, contact: Larry Hatfield, Superintendent, Paramedical Rescue Services, City of Norfolk, Room 181, Public Safety Building, Norfolk, VA 23510.

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CPR CITIZEN

Cardiopulmonary Resuscitation

Vol. 1, No. 3

CPR LIFE LINK REVEALED

An on-going research program in King County, Washington, continues to produce revealing data concerning the value and effectiveness of CPR and pre-hospital emergency care. Labelled "Project Restart," the research project has six suburban Seattle communities under scrutiny, two of which are designated as "control" communities (for statistical comparison of areas with paramedic services versus areas in the same region without paramedic services).

Another feature of the study is to determine the effect of bystander-initiated CPR in cases of out-of-hospital cardiac arrest due to primary heart disease. Between April 1976 and December 1977, 629 instances were evaluated and the dramatic life-saving effect of bystander-initiated CPR was evaluated. Long-term survival rates (meaning that patients were discharged alive from the hospital) were significantly higher where CPR had been initiated by bystanders – compared to cases where CPR was initiated only after arrival of emergency rescue personnel. The following figure illustrates some of the Project Restart findings:

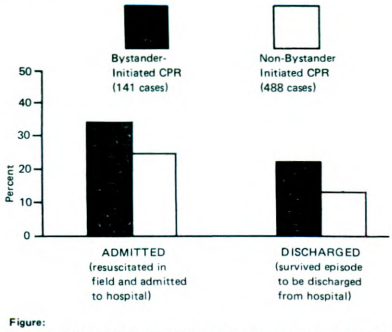

Figure:
Bystander-initiated CPR and outcome of cardiac arrests due to primary heart disease, April 1976 to December 1977, Project Restart, King County, Washington.

Last July, Mickey Eisenberg, M.D., Director of Project Restart, presented additional findings to a national symposium in Seattle. For example, he stressed the apparent need for bystander-initiated CPR to be followed promptly by advanced life support measures (definitive care delivered by paramedic personnel).

Based on a study of 676 cases of out-of-hospital cardiac arrest over a 22-month period, Dr. Eisenberg concluded, "If CPR was initiated within four minutes and definitive care was provided within eight (minutes), 51% of the patients survived. If either time was exceeded, the chances of survival fell dramatically." Dr. Eisenberg further asserted that citizen CPR programs which are not coupled to a definitive community emergency care program will not succeed.

Within a few weeks after Dr. Eisenberg's report in Seattle, the following item appeared in the Orlando, Florida **Sentinel Star**: "A local official expresses in no uncertain terms his disapproval of the idea of emergency medical technicians. He feels they should render no first aid, but merely get the patient to a doctor as soon as possible. Said the official, 'I don't go for that sticking needles in people. I'd never be dead enough I couldn't hit one if they tried to stick a needle in me.' "

Obviously, the Orlando public official was expressing disdain for the second essential element of survival – the definitive community emergency care program. According to Dr. Eisenberg and many other medical experts, the early commencement of invasive care – including field administration of medications – makes the difference between life and death for many victims of sudden cardiac arrest.

But resistance to the lifesaving concepts of modern emergency care can take other forms as well. For example, recent issues of the Bethlehem, Pennsylvania **Morning Call** have reported a local controversy concerning the implementation of a paramedic service. The Mayor of Bethlehem is reported resisting the advent of paramedics on the basis of cost. The Mayor's concerns are countered by the contention of Dr. Joseph Pomponio, head of a local hospital emergency department. The doctor told a reporter that every heart attack case handled by the city's present ambulance service could have "an unfavorable outcome" without paramedic care.

LIFE LINK, continued from p. 1

In the early 1970's, as the "Emergency!" television program was introducing Americans to the new concept of pre-hospital advanced life support, public officials dared not argue against paramedics. However, as the newness wore off and money got tighter, paramedic concepts began to lose some of the early "motherhood and apple pie" luster. As citizens took for granted the lifesaving benefits of sophisticated pre-hospital care systems, they failed to question candidates for public office on their attitudes concerning this public service issue.

What is the situation in your community? What services are available as a follow-up to your initiation of CPR on the victim of cardiac arrest? Will the patient merely be raced to a local hospital in a police station wagon or a "scoop and swoop" ambulance service? Or, will properly trained and equipped paramedics, operating under appropriate medical control, commence invasive life-saving procedures right at the scene — including "sticking needles" (which will contain medications to combat acidosis and stabilize cardiac rhythms)?

How do you feel about the cost of an advanced system of emergency care in your community? Compared to other public safety and tax-supported community services, what kind of priority would you give to the emergency medical services system? Can such a system be implemented in your community by using available, under-utilized (and already paid for) public employees? Or, would your community be better served by a properly-regulated private service?

The ACT Foundation and its staff have been deeply involved in development of emergency medical services systems throughout the country since 1971. We have seen all profiles and varieties tried and implemented. From that experience, we have concluded that there is no single "best" method which applies in every community. It is a matter of community history, attitudes, resources, and public policies, coupled with the absolute need for strong linkages between paramedics and a medical control physician and resource hospital.

We ask the foregoing questions as a test. You have been trained in CPR. In your hands and in your mind are the basic tools of survival for a friend, neighbor, family member or fellow citizen. But is that half a loaf? Would your lifesaving efforts be futile for lack of the back-up system that might provide years of useful and productive life for the cardiac arrest patient?

Look into it. Check on the resources available in your community. If you conclude that improvements are needed, and if you conclude that your community is willing to pay the cost of those improvements, you can make it happen. You and your fellow CPR-trained citizens represent one of the most powerful and numerous groups of health-oriented consumers our nation has ever known.

CPR AND THE LAW

The ACT Foundation has prepared a six-page pamphlet entitled, "CPR and the Law." This new pamphlet concisely reports the basic elements of the civil law of negligence. Also, the document discusses the relative legal safety of performing CPR under appropriate circumstances.

"CPR and the Law" is being offered without charge to all subscribers to **CPR Citizen.** For your free copy, just write to ACT Foundation, Basking Ridge, N.J. 07920.

A SAFER PLACE TO WORK

The main factory building at General Dynamics in Fort Worth, Texas, is about a mile long. Two years ago, the company's local chapter of the National Management Association decided to make the mammoth facility a safer place to work. Borrowing one training manikin and the services of a Red Cross volunteer instructor, the Management Club started to build a training program that is exemplary in many respects.

In the first year of the program, 300 General Dynamics employees completed the course. In the second year, another 346 people were trained, with an additional 77 completing the review course. The target for the current year is 600 CPR-trained employees. The ultimate goal is 25% of the 11,000 people employed at the plant. From the original borrowed manikin and instructor, the Management Club's CPR training program has grown to include 26 Red Cross certified instructors and eleven manikins.

In their introduction of CPR to General Dynamics employees, Management Club volunteers used the ACT Foundation's film, "A Life in Your Hands." The film was shown in luch rooms throughout the plant during lunch periods. Both instructors and students participate in the program during their own lunch periods.

The Red Cross Modular CPR Training Program is the basis for the Management Club's project at General Dynamics in Fort Worth. Reading and work book assignments are completed at home. Each student is scheduled for eight 30-minute practice sessions on manikins (two students per manikin). Lunch periods at the plant are 45 minutes long but they are staggered for different employee groups. This factor allows for as many as three training groups using the same manikin each day.

General Dynamics employees engage in manikin practice during lunch period at the company's electronics lab. Upon completion of the course, these employees will wear the Red Cross CPR emblem on their company ID badges.

Since the Fort Worth plant is as large as some towns, classes are offered at four different locations within the building. The locations are changed from time to time to accommodate trainees. Participants have included all levels of personnel, including supervision, engineering, office and factory workers.

Is CPR training offered at your place of employment? Do you belong to a professional or occupational organization that might follow the example of the folks at General Dynamics in Fort Worth? Feel free to share this article with those who could bring CPR training to your work place. Better yet, write for detailed information: F.L. Saffarrans, Manager-Executive Health, General Dynamics/Fort Worth Management Club, P.O. Box 748, Fort Worth, Texas 76101.

9-1-1 AND THE PULSE CHECK

Several of our **CPR CITIZEN** *subscribers have written with questions about recent changes or clarifications in standards for CPR. In this issue, Stephen W. Carveth, M.D., provides us with important information concerning the sequence of initial procedures in performing CPR.*

Dr. Carveth is a cardiovascular surgeon in Lincoln, Nebraska. He is Past Chairman of the American Heart Association's Emergency Cardiac Care Committee. Presently, he serves as General Chairman of the Nebraska Statewide CPR Campaign and he is a member of the ACT Foundation's Medical Advisory Board.

Two modifications of Standards in CPR have taken place as a result of the experience gained from emergency medical service units around the country. These two alterations can assist a lay person who does CPR, will help the "911" or emergency medical dispatcher, and most important, will provide better care for the victim of respiratory or cardiac arrest.

The first modification is in the sequencing of notification of the emergency medical service operator ("911"). Basically, the "911" (or other emergency operator in locations without the "911" system) operator should be called **after** the pulse check, because at this point three vital pieces of information have become obvious to the rescuer.

The three vital pieces of information include: (1) level of consciousness, (2) the presence or absence of breathing, and (3) the presence or absence of a pulse.

This slight change in the sequencing of notification to the "911" operator can be more fully explained by the following description: A single-person rescuer finds a victim who is unconscious. The first manuever is to establish the presence or absence of consciousness (usually accomplished by the "shake and shout" and "are you okay?"). If there is no response, the rescuer should shout something such as, "Hey, I need help!"

The rescuer then proceeds by the placement of the unresponsive person on a hard surface and in the supine position. After the airway is opened (by either the head tilt/chin lift or head tilt/neck lift technique), the rescuer "looks, listens, and feels" for a voluntary respiratory effort. If no voluntary respiratory effort is present, the rescuer immediately gives four quick breaths and then feels for a pulse. If no pulse is present, then the rescuer asks someone to call the "911" dispatcher or the emergency medical service number in that area.

As previously indicated, the "911" dispatcher can utilize the very important information of (1) level of consciousness, (2) presence or absence of breathing, and (3) presence or absence of a pulse. This vital information can be relayed to the second and third-level responding personnel (such as emergency medical technicians, paramedics and/or registered nurses operating advanced life support units).

The second modification notes the importance of a second pulse check performed by the second rescuer as he or she arrives on the scene. The procedure is explained as follows: A second rescuer is told that someone has already summoned the advanced life support unit by calling "911" (or other emergency operator in locations without the "911" system). The second rescuer declares he knows CPR and positions himself to feel the pulse to determine the adequacy of external cardiac compression by the first rescuer.

After a pulse is palpated with each cardiac compression, the second rescuer calls to stop compression to determine the presence or absence of a pulse. At this point, both rescuers now realize and have confirmed the presence or absence of a pulse. If no pulse is found, both rescuers are ready to begin two-person CPR. The second rescuer ventilates and the first rescuer follows by commencing external cardiac compressions at a rate of 60 per minute.

A second pulse check reinforces the presence or absence of a pulse found by the first rescuer. The American Heart Association has made this modification to impress on all rescuers the importance of knowing the pulse status before proceeding with external cardiac compression. These modifications are not to be viewed as changes in the Standards, but merely clarification of certain aspects of the Standards for Cardiopulmonary Resuscitation, as set forth by the American Heart Association.

N.J. EDUCATORS ADOPT CPR TRAINING

At its June 7, 1978 meeting, the New Jersey State Board of Education adopted the following resolution:

WHEREAS, cardiopulmonary resuscitation (CPR) has been demonstrated to be an effective emergency care technique for heart attack and smoke victims, especially when applied in the first minutes of an attack; and

WHEREAS, the success of the technique depends on its widespread dissemination as well as its efficacy; and

WHEREAS, the CPR technique has been mastered by great numbers of high school students in the United States; and

WHEREAS, teaching of the CPR technique in physical education, health and safety classes of New Jersey high schools would increasingly provide the State with CPR-qualified citizens thus making the life saving ability available to more people; and

WHEREAS, organizations including the American Heart Association, the American Red Cross and local hospitals and first aid squads would be available to train teachers and teacher trainers to conduct CPR courses within the high school health education courses, now therefore be it

RESOLVED, that the New Jersey State Board of Education urges all New Jersey high schools to include Cardiopulmonary Resuscitation training in their physical education, health and safety classes as soon as may be practicable.

Before proposing the resolution to the Board of Education, New Jersey's Department of Education referred the matter to the Medical Society of New Jersey for that organization's opinion on the teaching of CPR to high school students. Dr. Jack Karel, chairman of the Medical Society's Committee on Emergency Medical Care responded affirmatively and the Board of Education acted on the matter within six weeks.

Readers of **CPR Citizen** may wish to consult educators in their respective states concerning a similar resolution. Possibly, the format of the New Jersey Resolution will be helpful in seeking such support for high school CPR training programs.

CPR CITIZEN is published for the education and interest of laypersons who have been trained in the lifesaving technique of cardiopulmonary resuscitation. If you know of someone who might benefit from information reported in **CPR CITIZEN**, please recommend us. Healthy New Year!

SKILL RETENTION MEASURED

Even though millions of Americans have been trained in the technique of CPR, unanswered questions concerning skill levels, skill retention and refresher training linger. The American Heart Association recommends that non-medical groups receive "re-certification one year from the initial course and then at least every three years thereafter, or more frequently where indicated." Critics contend that this is little more than a general statement which fails to acknowledge variations in the quality of training and individual differences in comprehension and knowledge/skill retention.

Although there have been several studies of the effect of by-stander-initiated CPR in cases of cardiac arrest, there has been little research into the questions of skill retention and refresher training. One such study by Lynn Mandel, a researcher at the University of Washington, disclosed significant deterioration in several CPR skill areas (reported in **CPR CITIZEN**, Vol. 1, No. 1).

Aside from Ms. Mandel's study, some of the most important research on this issue has been performed by Bradford L. Barick, PhD, Director of Sentry Laboratories, Sentry Insurance Company, Stevens Port, Wisconsin. An article based on Barick's study was published in the October 1977 issue of JOPER (Journal of Physical Education and Recreation).

In his study, Barick utilized three study groups: two groups of professional rescue and nursing personnel from Tennessee and West Virginia locations, and one group of undergraduate students at West Virginia University who had no prior CPR training or experience. The CPR cognitive and practical skill tests and the recommended evaluation criteria, developed by the American Heart Association, were selected as skill and knowledge measurements in the study.

At the beginning of the study, all three groups were tested. Great variance was shown between the professional groups, with group scores of 76% and 89% registered on the cognitive (knowledge) test, and 60% and 92% registered on the practical skills test, respectively. On both tests, the same professional group achieved the lower of the scores.

The same tests were administered to the untrained students. At this point, the student group averaged scores of 64% on the cognitive test and 5% on the practical skills test. The students were again tested immediately after training. On that post-training test, the average scores were 83% for cognitive skills and 87% for practical skills.

Barick's study then sought to measure skill and knowledge retention for the student group by re-testing at 90 days and again at 268 days (approximately nine months). He found that cognitive skills had dropped to 80% at the 90-day mark, and to 77% at the nine-month mark. Practical skills were measured at 85% at the 90-day test, and 80% at the end of nine months.

Summarizing, Barick said, "By the ninth month, a statistically significant amount of information is lost – warning signs and symptoms of heart attacks, preventive measures for heart attacks, and procedures to follow in the event of cardiac arrest. Since the regression of skill may not be linear, the point when CPR skills become unacceptable is unknown."

Dr. Barick also suggested that his research shows that CPR-trained laypersons may not retain recommended levels of skill and knowledge for as long as one year after the initial training.

In addition, he asserted, "It is probable that many professionals do not measure up to recommended standards . . . "

"I hope these findings will be looked upon only as an indicator of CPR training results, and present a challenge to identify the inadequacies of CPR training and to improve it in ways that will be most feasible and practical," Barick wrote. He then suggested four courses of action, including additional studies to test his results, studies which would measure skills over longer periods of time, more time devoted to skill development in CPR courses, and division of CPR courses into segments on different days over given time periods.

"Only through a continued effort by interested individuals and responsible organizations, to improve methods and techniques of CPR education and training for the general public will the ultimate goal of CPR – saving lives – be achieved," concluded Bradford L. Barick.

CPR AND GOOD SAM MEET IN PENNA

The 1978 session of the Pennsylvania Legislature approved an expanded version of that State's "Good Samaritan" law to include protection from liability for CPR-trained laypersons. Previously, only firemen, policemen, ambulance personnel or members of the National Ski Patrol were within the protections of the Pennsylvania law.

The new Pennsylvania law states that **any person** who renders emergency care shall not be liable for any civil damages as long as he or she holds a current certificate evidencing completion of a basic life support course sponsored by the American Red Cross or the American Heart Association and is employing techniques and procedures consistent with the level of training for which their certificate has been issued.

In recent months, ACT Foundation Executive Director James Page (who is an attorney and a member of the California Bar) has argued against so-called "good samaritan" legislation for CPR-trained laypersons. "If a person is certified and performs CPR in accord with the Pennsylvania law, there is no way he or she can cause injury which is necessary to civil liability," he explained. "CPR, performed in accord with approved techniques and procedures on a person who really needs it (pulseless and non-breathing), cannot possibly make the victim worse off. In order for a civil lawsuit to be successful, it must be proven that the defendant was negligent and that that negligence made the other person worse off," he explained.

"We have no real argument against legislative support for the concept of CPR training for the masses," Mr. Page continued. "However, my concern is that so-called 'good samaritan' laws for CPR-trained citizens will detract from the need for refresher training and skill maintenance. The average citizen does not remember the precise language of such a law and may be lulled into sloppiness by the presence of a law which is dubious as to need and effect," he said.

In September 1977, Mr. Page presented an editorial on this subject in **EMS Action** ("CPR and Red Herring"). Despite the ACT Foundation's intensive involvement in the national CPR phenomenon, we have received no substantiated reports of lawsuits against CPR-trained citizens who have performed the technique on a person who truly needed such assistance.

HIS FRIENDS CALL HIM "HANK"

Enrico Emilio Henry Joseph Longo, better known as "Hank," probably is one of America's most extraordinary CPR instructors. But, in his own community of Yonkers, New York, he didn't attract much attention until April, 1975. Within four days, Hank Longo made the difference between life and death for two Yonkers residents.

At the time, Hank was a Lieutenant on Rescue Company #1 for the Yonkers Fire Department. Also, he was a certified Red Cross CPR instructor. On April 6th, Longo and his rescue company responded to a residential fire and located a two-year-old girl in the thick, black smoke that filled the structure. No breathing nor pulse could be detected and Hank Longo immediately commenced CPR. The child recovered completely and Longo's prompt life-saving efforts were credited with saving her life.

Lt. Hank Longo rushes two-year-old fire victim to ambulance after restoring her breathing and circulation with CPR.

Four days later, Hank was off duty at home when Mrs. June Webber, a next-door neighbor, encountered severe respiratory difficulties and asked Longo to drive her to the local hospital. As they began their journey in Hank's station wagon, the 27-year-old June Webber lapsed into cardiac and respiratory arrest. Immediately, Longo stopped the car, pulled Mrs. Webber into the back of the vehicle and began CPR.

Nancy Longo, Hank's wife, and another neighbor lady witnessed the emergency as it unfolded. As Hank continued to perform CPR, the neighbor lady slipped into the driver's seat and began to drive the vehicle slowly toward the hospital. Nancy Longo phoned the hospital to prepare the emergency department staff for the arrival of the cardiac arrest patient. Ironically, the patient (June Webber) was employed as a registered nurse at the hospital.

Recalling the event, Hank reports that he was able to perform CPR without interruption from the moment of arrest until he was relieved by hospital personnel. "CPR was never stopped for more than five seconds," he said. A full range of advanced life support techniques were applied by emergency department staff After several days, Mrs. Webber regained consciousness and was released from the hospital without any apparent disability.

Incidentally, June Webber, R.N., is now working at Dobbs Ferry (New York) Hospital and keeps busy helping others in her off-duty time. The young mother of two has become a CPR Instructor, certified by both the Red Cross and the American Heart Association.

Hank Longo's rescue work earned him two Certificates of Merit from the American Red Cross, both signed by former President Gerald Ford. But the satisfaction of his lifesaving achievements during 1975 were to be off-set by firefighting injuries which might bring his career to a premature end. On two separate fires, Hank was overcome by toxic chemical fumes and by smoke. The consequent damage to his health forced him to take an extended disability leave.

Rather than feel sorry for himself, Hank Longo merely shifted gears. In addition to volunteer work for the Red Cross and the March of Dimes, he serves as President of the Firefighters Burn Foundation, educating the public in fire safety and burn care and aiding burn care facilities. He teaches CPR several times a week at local schools and service clubs and he's been trying to convince Yonkers school administrators to include CPR as a required course for students.

Community service is a family affair with the Longo's. Hank and Nancy serve as foster parents to as many as 53 newborn infants at a time. Most of the babies are born to teenage unmarried mothers and the foster parents care for them until the mother decides whether to keep the baby or make it available for adoption.

With the round-the-clock diaper changing and bottle warming, the foster parent challenge would seem to be enough for one family. Nonetheless, son Robert, 20, is a CPR Instructor and daughter Diane, 18, works for the Muscular Dystrophy Association. Debbie, 14, and Connie, 9 are getting into the spirit by accompanying their parents to Red Cross lectures or cerebral palsy fundraisers.

"I love helping people," says Hank Longo, still enthusiastic and energetic despite his disability. "That has always been my ambition, and for my family it's a way of life."

AHA/ARC JOIN IN OK CAMPAIGN

How do you teach CPR to 160,000 high school students — scattered throughout 750 schools — every year?

Those are questions faced in Oklahoma after that State's Legislature passed a law requiring CPR training for all students in grades nine through 12. In response to this challenge, the Oklahoma Affiliate of the American Heart Association, the American Red Cross, and the State Department of Education have joined forces to see that the training is provided by October, 1979, the implementation date mandated by the new law.

The Heart Association and Red Cross have divided the state into multi-county areas and plan a series of two-day workshops to train school faculty members (primarily physical education teachers, school nurses, and driver education instructors) as CPR Instructors. Using existing Instructor-Trainers and training equipment, the two organizations are optimistic that the challenge can be met.

On the recommendation of both training organizations, the State Department of Education has established guidelines for the massive training program. Those guidelines call for a minimum of eight classroom hours of CPR training for a group of ten students per Instructor and manikin. Individual schools are responsible for supplying their own equipment and materials for the CPR program. All CPR classroom instructors are required to be currently-certified Heart Association or Red Cross Instructors in the Oklahoma program.

How do you teach CPR to 160,000 high school students? Ten at a time. Oklahoma is convinced it can be done!

SELF-CARE SUBJECT OF BOOKS

Was that recent trip to your doctor's office (or local hospital emergency department) necessary? Some estimates contend that more than 50% of such visits are unnecessary. According to respected authorities, home health measures can be used to adequately deal with most real, suspected or imagined illnesses.

A trip to your local bookstore will expose you to a wide variety of health-related books. Some of those publications suggest that you can avoid the doctor-hospital visit in many cases; included are suggestions on making a wise choice of doctors if self-care seems inappropriate.

On the subject of self-care, two recent books have received high marks. For example, **Take Care of Yourself: A Consumer's Guide to Medical Care**, has earned the faith of Blue Cross/Blue Shield. That organization is making the 269-page publication available to consumers for only $2.00. **Take Care of Yourself** identifies and offers treatment advice for 68 common ailments and emergencies, including indications as to when a physician should be consulted. The book includes information on preventive health measures, choosing and using a physician, and stocking a home pharmacy. It is available for $2.00 from the National Consumer Affairs Department, Blue Cross/Blue Shield, 1700 Pennsylvania Ave., N.W., Washington, D.C. 20006.

Dr. Taylor's Self-Help Medical Guide goes into greater detail, dealing with about 200 medical ailments in 380 pages. The author, Robert B. Taylor, M.D., a small-town doctor from upstate New York, advises when you should and shouldn't treat yourself for the various ailments which are listed alphabetically from "abrasion" to "whooping cough." The book is published by Arlington House and is priced at $9.95.

CPR WINDOW SIGNS

"CPR Trained," announce the window decals which have begun to pop up in Southwestern Pennsylvania. Displayed in windows at the homes of CPR citizens, the 5" x 8" decals indicate that a resident of the home has been trained in the lifesaving technique of cardiopulmonary resuscitation.

The decals grew out of a brainstorming session at the Pittsburgh-based Emergency Medical Service Institute (EMSI). That organization is coordinating a 12-county training project which is aimed at training 100,000 CPR citizens in Southwestern Pennsylvania. The project is called "Start-A-Heart" and it is guided by an all-volunteer committee.

Margaret Albert chairs the volunteer committee. She explained the window card idea to us recently: "We knew that doctors in the area put green cross decals on their car bumpers and that paramedics or EMTs often display the Star of Life in the same way, but we got to thinking about the number of cardiac arrests that occur in homes. We wanted some way of alerting people to the fact that help was available within their immediate neighborhood," said Ms. Albert. "The window cards were a natural answer," she said.

The cards are printed on lightweight cardboard and propped or taped in windows. This arrangement lets CPR citizens easily remove the card when they are unavailable or when their certification expires. Already, 30,000 of the cards have been distributed. Another quantity of the cards has been ordered by the EMSI committee with a slight modification. The newer "CPR Trained" cards will include the year of training in hopes that an out-of-date card will remind CPR citizens to return to the classroom for refresher training and recertification.

Following widespread reporting of allegations by Dr. Henry Heimlich, the American National Red Cross has dispatched an information bulletin to all of its Division Offices. The bulletin was in response to persistent allegations by Heimlich concerning Red Cross training and procedures with regard to obstructed airways. Heimlich contends that the abdominal thrust technique which bears his name is the only proper method for relief of choking victims. Red Cross teaches a combined back blow/abdominal thrust sequence which has been recommended by the National Academy of Sciences/National Research Council.

The Red Cross communication, issued December 8th, was uncharacteristically strong and seems to have been inspired by Heimlich's apparent misrepresentation of facts concerning a legal matter in Pennsylvania. That case involved a retarded child who experienced a choking accident at school. Referring to media accounts of Heimlich's statements concerning the case, Red Cross reported (Heimlich) " . . . erroneously pictured the case as involving a judgement of the relative merits of first aid measures, the Heimlich maneuver included. This case simply did not do that." Complete text of the Red Cross bulletin should be available from the organization's Division Offices. Meanwhile, the American Heart Association is collecting all available case reports concerning obstructed airway incidents for use in developing a conclusive and proven approach to choking emergencies.

ACT Foundation
Basking Ridge,
New Jersey 07920

FIRST CLASS MAIL

Burroughs Wellcome Co.
Pharmaceuticals Division, CIBA-GEIGY Corporation
Hoechst-Roussel Pharmaceuticals Incorporated
Marion Laboratories, Inc.
Merck Sharp & Dohme, Division of Merck & Co., Inc.
Ortho Pharmaceutical Corporation
Pennwalt Corporation Pharmaceutical Division
Roche Laboratories, Division of Hoffmann-LaRoche, Inc.
Sandoz Pharmaceuticals
G.D. Searle & Company
Smith Kline & French Laboratories
Division of SmithKline Corporation
The Upjohn Company

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PUBLIC HEARING

UNITED STATES SENATE

COMMITTEE ON HUMAN RESOURCES

SUBCOMMITTEE ON HEALTH AND SCIENTIFIC RESEARCH

Testimony

presented by

Gerold K. V. Klein, M. D.
President of the Maine Division

of the

American Trauma Society

to consider

S.497 to Revise and Extend the Emergency

Medical Services Act Legislation

(Title X and section 789 of the Public Health Service Act)

February 28, 1979

Gerold K. V. Klein, M. D.

Mr. Chairman: Being active in private surgical practice in Maine and a Founding Member of the American Trauma Society, I have been deeply concerned with national security and survival as a prerequisite for my family's and my patient's survival when their lives should be threatened by trauma, which to me means sudden disruption of an individual's normal life process with the possibility to restore it by immediate medical action.

I have testified to that before this Committee in January of 1976, and I was deeply impressed by having federal authorities in this, my adopted country, not only allow me as a concerned citizen to present my concerns but also immediately act upon them. I so witnessed proudly in the subsequent years, as active participant as well as recipient, the implementation of the Emergency Medical Services Systems and Burn Demonstration Programs for which I had testified. I saw them produce in a very short time more positive results than any other program that I know or can remember.

Being confronted now with the sudden suggestion of our federal administration to phase out their support for these programs leaves me at loss to understand the motive for this action in a time when national security and survival seem to be in need of increasing safeguard against threatening instabilities in many parts of this globe.

I fully appreciate as a tax payer the urgent need for a balanced budget. However, the survival of a family is in jeopardy when the bread-winner is suddenly eliminated by trauma and insufficient steps are prepared or taken to restore his function by immediate medical action. So is the survival of a nation in jeopardy when the restoration of life

and function of its citizens threatened by trauma is limited by priority-ignoring budget concern. The best budget plan is useless when there is a decrease of people who keep the purse of the budget filled, or worse even, when the people for whom the budget was designed are gradually eliminated by trauma.

I cannot conceive that this basic fact of priority should not be understood by our administration which I proudly see proclaiming preservation of human dignity as a supreme law and which therefore should be aware of the highest priority in health care being preservation and restoration of life and function and relief of suffering. Quality and dignity of human life can only be preserved and improved if human life itself is protected against extinction by trauma. Trauma care, therefore, seems to me justified as one, if not the top priority, in health care.

What then may lead our administration to interfere with trauma care by trying to phase out support for Emergency Medical Services and Burn Programs, instituted in the first place to take care of such priority?

Could it be the belief that these programs have accomplished their goals? Certainly I witnessed great accomplishments in these fields in the past years.

In my home State of Maine, just some four years ago, we were frustrated by not being able to get an Emergency Medical Services System going or D.H.E.W./EMS grant approved until Dr. David Boyd came to Maine and explained the program to the Health Planning and Provider Community.

Not by written guidelines only mailed from his Washington office but by dynamic personal on-site advice and guidance to the point of personally participating and critiquing in demonstrations of the implementation and advantages of an Emergency Medical Services System did he give indispensable technical assistance on successive occasions and even went out and recruited dedicated and competent physician -and other professional- leadership. The result of this sound federal and state cooperation is that we now have in Maine probably one, if not the best, rural Emergency Medical Services program in the country as documented in the attached fact sheets submitted by the outstanding Director of the State of Maine Emergency Medical Services, Dr. H. Alan Hume. The entire Emergency Medical Services community, including a dedicated corps of volunteers, as well as a highly successful coordinated cooperation of all agencies connected with emergency medical care -such as the Department of Transportation to mention only one as an example of the equally acting other agencies- are pulling together with Emergency Medical Services Systems being the lead agency in the State of Maine to provide the best possible medical emergency care to our citizens. This story I know has been replicated across the country and can be used as a baseline for a National Health Care built on a selfless cooperation of all national agencies concerned with emergency medical care with the federal office of D.H.E.W./EMS as a lead agency responsible to the highest federal authority for cost-containing utilization as well as immediate life preserving action capability in daily medical emergencies of individuals everywhere in the country but also indispensable to guarantee national security and survival in case of mass catastrophes and international crises.

But I also know that in spite of this progress, the job is far from being completed in the State of Maine as well as in certainly other areas of the country. Probably only a third of the nation can now see day-to-day a sound effective Emergency Medical Services Systems in their communities. In fact, the hard part is yet to come: more difficult rural, wilderness, and urban communities must be provided. The same grants, technical assistance, and other opportunities are in need if the intent of Congress is to achieve a truly national Emergency Medical Services program, a now obviously obtainable goal.

Could the proposal of the federal administration to phase out assistance for Emergency Medical Services programs then be induced by a belief that the different states and communities can now continue these programs under their own responsibility?

From my observation, I firmly believe that in spite of all the positive results obtained in a shorter time period than any other program I know, the nation-wide implementation has not yet far enough progressed to be sure that the different states and communities are capable to maintain and continue on their own a guarantee of life preservation for their citizens in case of emergency medical need on an excellency level outlined by a national Emergency Medical Services program and, to my knowledge, firmly accepted by the Congress of the United States as a necessity to assure national security and survival. Until firm and responsible state and county commitments, based upon realistic economic projections have been established, phasing out federal help would probably

not only stop completion of many programs started in the past years by federal help, but eliminate much of the so-far reached accomplishments.

Besides that, phasing out federal guidance would undermine one of the now evolving basic advantage of a national Emergency Medical Services Systems in safeguarding national security and survival, i.e. serving as lead agency for all -and I am told, more than twenty- federal agencies involved in emergency medical care. Proper coordination of these agencies by an Emergency Medical Services lead agency with authority to coordinate action as well as funding, and accountable to the highest office of this country, could assure the most excellent performance of all these agencies in case of national emergencies as well as the most economic cost containment in the daily delivery of emergency medical care in the country.

From my observation, the national Emergency Medical Services program has brought together every professional and consumer group into a cohesive voice and action for emergency medical services of a highly sophisticated level. Emergency rooms, critical care units and organizations, physicians and surgeons, health care planners, governmental health personnel and consumers, are brought together into a massive volunteer effort to confront this major national health problem of trauma and emergency medicine. The testimony of the American Trauma Society documents these facts so well that repetition here is not needed.

Let me add just one personal recent observation. I have just returned from the American Burn Association annual meeting in New Orleans where the Burn Demonstration Programs were one of the major discussions at all professional levels. As you may remember, these Burn Demonstration Programs were funded three years ago in a firm stand of Congress against the

administrations lack of support. This approach of Congress to take a first-hand look at the national burn problem in terms of medical needs, clinical effectiveness of existing treatment facilities as well as overall cost data, was the center of many discussions, with the accuracy and importance of this first-hand data documentation, being considered by a large number of physicians and nurses as to be an effective pilot program for a similar approach in all other health care fields, to start with in the field of trauma care in its top priority for national survival. The emerging impact of such an approach on cost containment of medical care seems to me to be worthwhile to be applied to the entire national health care in a time when health care costs seem to be interpreted as uncontrollably spiralling. An accurate documentaton such as in the Burn Demonstration Projects may very well clear some of the many controversies and may so prove one of the main leads to medical cost containment. Therefore, the completion of the present Burn Demonstration Programs and their application to a trauma demonstration program with additional emphasis on public orientation and education in the trauma problems and an organization of national continued education of physicians and nurses in trauma management seem to me to be at this date a worthwhile step to be taken into consideration for federal funding as suggested and outlined in the testimony of the American Trauma Society.

Mr. Chairman, as in my testimony before this Committee in January of 1976, I again express my deep graditude for asking me to present my concerns and thoughts, which I can assure you are the concerns of all my patients and friends and which I am sure are your and our administrations concerns. Your willingness as well as -I am sure- the willingness of our Executive Branch to listen to me as a private citizen assures me that indeed the basis on which my chosen country is built -utmost regard for the individual- will induce the administration to take another hard look at its proposed "phasing out" of Emergency Medical Services funding and on the advice of Congress will continue to help building a nationwide network of emergency medical service and trauma facilities as one of the, if not the first priority, of national health care to insure national security and survival.

Thank you.

48-284 O - 79 - 24

MAINE EMS

Basic Life Support services available as percent of regional population:

Region 1 - 100%
Region 2 - 100%
Region 3 - 100%
Region 4 - 100%
Region 5 - 98%

Advanced Life Support services available as percent of regional population:

Region 1 - 37%
Region 2 - developmental stage
Region 3 - 75%
Region 4 - 5%
Region 5 - developmental stage

Physicians and nurses certified in ACLS as percent of total available personnel (see, as total projected personnel need):

Region 1 - 28% ED physicians/80% ED nurses
31% ICU/CCU nurses
Region 2 - 32% ED physicians/44% ED nurses
43% ICU/CCU nurses
Region 3 - 11% ED physicians/84% ED nurses
67% ICU/CCU nurses
Region 4 - 5% ED physicians/19% ED nurses
16% ICU/CCU nurses
Region 5 - 22% ED physicians/37% ED nurses
40% ICU/CCU nurses

Citizens trained in CPR as percent of regional population:

Region 1 - 3.4%
Region 2 - 2.4%
Region 3 - 5.6%
Region 4 - 3.6%
Region 5 - 2.2%

Public Safety Officials trained in Crash/Injury Management and/or Advanced First Aid as percent of regional population:

Region 1 - 24%
Region 2 - 7%
Region 3 - 48%
Region 4 - 19%
Region 5 - 44%

Ambulance personnel trained as EMT's:

Region 1 - 54%
Region 2 - 51%
Region 3 - 66%
Region 4 - 53%
Region 5 - 45%

Total Basic EMT's trained at advanced level (MAST/EOA/Cardiac, Paramedic) as percent of total EMT's:

Region 1 - 23%
Region 2 - 7%
Region 3 - 21%
Region 4 - 2%
Region 5 - 0%

Ambulance runs staffed by EMT's as percent of total runs:

Region 1 - 75%
Region 2 - 85%
Region 3 - 97%
Region 4 - 65%
Region 5 - 88%

Total number of ambulance services/ambulance vehicles:

Region 1 - 70 services/99 vehicles
Region 2 - 21 services/43 vehicles
Region 3 - 24 services/31 vehicles
Region 4 - 38 services/57 vehicles
Region 5 - 10 services/26 vehicles

Ambulance services centrally dispatched as percent of total services (includes 911, fire/EMS, police/EMS, fire/police EMS):

Region 1 - 63%
Region 2 - 57%
Region 3 - 58%
Region 4 - 66%
Region 5 - 13%

Average response times of ambulance services in minutes for urban/rural areas:

Region 1 - 7 min. urban/27 min. rural
Region 2 - 7 min. urban/27 min. rural
Region 3 - 5 min. urban/15 min. rural
Region 4 - 10 min. urban/30 min. rural
Region 5 - 8 min. urban/14 min. rural

Availability of 911 as percent of regional population:

Region 1 - 2%
Region 2 - 6%
Region 3 - 43%
Region 4 - 2%
Region 5 - 0%

Utilization of Statewide run reports as percent of ambulance services representing percentage of regional runs:

Region 1 - 88% services/98% runs
Region 2 - 89% services/88% runs
Region 3 - 100% services/100% runs
Region 4 - 90% services/78% runs
Region 5 - 90% services/59% runs

Medical Care Development, Inc.
Emergency Medical Services Project

MZ:al

3/12/79

1976 ADMISSIONS, TRANSFER RATE, MORTALITY RATE

ICDA-8 Code	Trauma 800-803 850-854	Spinal 806	Burns 940-949	Poison 965.4 970.0-983.2	Behavioral 290-302 303, 304	Cardiac 410	Neonate Y21 777
Southern Admissions	679	14	125	39	1,833	994	236
Transfer Rate	2.5%	7.1%	4%	10.3%	9.0%	8.1%	16.5%
Mortality Rate	4.4%	0%	0.8%	0%	0.2%	19.0%	7.6%
Tri-County Admissions	325	5	66	9	928	429	131
Transfer Rate	2.8%	20.0%	1.5%	11.1%	9.4%	6.1%	18.3%
Mortality Rate	2.5%	0%	1.5%	11.1%	0.6%	20.7%	7.6%
Kennebec Valley Admissions	415	6	75	10	1,046	448	137
Transfer Rate	2.9%	16.7%	2.7%	0%	4.7%	4.0%	24.1%
Mortality Rate	1.9%	0%	1.3%	0%	0.3%	23.4%	5.8%
Northeast Admissions	523	10	83	21	1,463	722	162
Transfer Rate	3.1%	0%	2.4%	4.8%	4.5%	9.0%	22.2%
Mortality Rate	3.1%	0%	1.2%	0%	0.3%	21.1%	10.5%
Aroostook Admissions	219	3	46	3	674	280	55
Transfer Rate	4.1%	0%	4.3%	0%	6.7%	7.1%	23.6%
Mortality Rate	1.8%	0%	4.3%	0%	0.1%	18.2%	9.1%

EMS: AN ECONOMICAL APPROACH FOR MASS CASUALTIES

To insure national security and survival in case of local, national, or global disasters, emergency medical care should be available immediately in a system functioning nation-wide, even if certain geographic regions should be destroyed. Maintaining a system of dormant facilities in anticipation of this casualty influx is not economically reasonable. Only preparation of existing daily functioning health care facilities which could be mobilized either in part or completely as trauma burn units with multi-purpose facilities for critical care and with nation-wide coordination within the national EMS system could economically offer an immediately available nation-wide system of life and function-preserving critical care facilities. For this system, it is mandatory to upgrade continually all presently functioning private health care delivery units with regard to facilities, communication, transportation, and equipment. This would enable them to instantly transform into components of a national system of trauma/burn units within the national EMS system. This above all means maintaining in each of the nation's health care facilities a staff of dedicated physicians, nurses, and allied health personnel who commit themselves voluntarily to be instantaneously available if necessary and to continuously reacquire and maintain up-to-date knowledge and skill in multi-disciplinary care capabilities in life-preserving medical actions. At the same time, this system would facilitate continuous upgrading to the highest standards in the daily delivery of emergency medical care. A pilot program has been conducted for the last half-year and has proven so far successful in stimulating volunteer commitment of physicians in organizing this system.

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TESTIMONY OF

THE NATIONAL INDIAN HEALTH BOARD

AND

THE NATIONAL CONGRESS OF AMERICAN INDIANS

AND

THE AMERICAN INDIAN HEALTH CARE ASSOCIATION

AND

THE NATIONAL TRIBAL CHAIRMEN'S ASSOCIATION

BEFORE THE
UNITED STATES HOUSE OF REPRESENTATIVES APPROPRIATIONS
SUBCOMMITTEE ON THE INTERIOR,
HONORABLE SIDNEY YATES, CHAIRMAN

ON

THE INDIAN HEALTH SERVICE
PROPOSED FISCAL YEAR 1980
BUDGET REQUEST TO CONGRESS

PRESENTED TUESDAY, MARCH 6, 1979

This testimony is presented jointly by the four major national Indian organizations listed above. Together, we represent the vast majority of Indian and Alaskan Native people on reservations, urban and rural, Indian health consumers and providers, tribal leaders, and tribal health departments. We recommend certain systemic changes in the way Indian Health Service budgets and allocates monies for Indian health services in order to promote more rational decisions and to improve the level of health care for Indian people.

Area Indian Health Boards have been providing advisory and consultative services for the IHS Director, IHS Area Directors and Program Officers since 1969. These advisory bodies represent an indispensable source of knowledge and information for IHS. In this era of Indian Self-Determination, it becomes extremely important for Indian Health Service to maintain strong relationships with Area Indian Health Boards, particularly as the need for Indian involvement in the health programs serving them increases. However, more recently, Indian people who serve on these boards feel threatened by IHS. They feel that IHS will reduce or even restrict funding for the types of services they have been providing in the past. As an added means of protection against arbitrary cessation of funding, the Area Boards are requesting a separate line item in the budget for funding their operations. Given the increased responsibilities of Area Boards, we find this request to be justified and appropriate. We further request that language be adopted in the Committee report which supports the continuation of funding for Area Health Advisory Boards.

We would also like to recommend a basic change in the way IHS submits its budget request to this Committee; that IHS be mandated to adopt the guaranteed benefit package approach that is used in the funding of Medicaid and Medicare programs. During the past year, this Committe has taken steps to rationalize the appropriations process for new hospital construction by requiring IHS to establish a professional priority list. The guaranteed benefit package approach to funding would similarly rationalize the appropriations process for basic patient care.

Persons using Medicare or Medicaid are never told that they will not be able to receive a certain medical service or procedure because of the lack of funds. This is because those programs are funded on a guaranteed benefit package approach. The Department of Health, Education and Welfare projects the number of services and procedures that will be needed by Medicare and Medicaid beneficiaries, determines the cost of each of those services, and then multiplies the two figures in order to come up with its budget. On the other hand, Indians continually are being faced with the response that they cannot get services because there is insufficient money, or that they will have to accept second-rate services because of budget shortfalls. The reason for this goes back to the way IHS prepares its budget submission. The Committee knows how much IHS received

last year and how much it is requesting for next year. But it never is told how much IHS needs to provide the basic health services and procedures to the persons served by IHS. As a result, tribes must come into Washington from all over the country to appear before this Committee and seek small amounts of funding to correct some outrageous situation in the health care services on their reservations. While this Committee is able to put band-aides on these individual situations, it is never able to get a handle on the overall picture that would obviate the need for many of these tribes to come in and testify.

If, along with its official budget submission and its hospital construction priority list, IHS was required to come before this Committee with a budget developed along the guaranteed benefit package approach, the Committee would be able to get a handle on the overall situation. For example, it would be able to see that the greatest shortfall was in the area of outpatient services (or contract care, or whatever) and focus its additions to the IHS budget in that area. But under the present system, it is almost impossible to come before the Committee and seek additional funds for a particular area of services (e.g., add money for outpatient care generally) because it is impossible to know where the most serious problem lies. Instead, the Committee is relegated to making patchwork efforts to plug holes on almost a reservation-by-reservation basis. We do not expect that all the money needed to pay for a guarantee package would become available immediately, but like the hospital construction priority list, it will give a clear picture of need and permit the Committee and the Indian community to begin making more precise decisions about strengthening the Indian health system.

We also request that changes be made in the system for allocating position slots. Each year this Committee is asked to add additional staff slots to enable a new IHS facility to open or to allow a facility to use all of the new space or equipment the Federal government has just paid for. This is necessary because the Office of Management and Budget's single-minded focus on holding down positions will allow it to accept a situation where newly built health facilities go unused or underused, thereby wasting the money spent on the unused facility or equipment. To correct this, we ask that IHS be exempted from the position ceiling and be allowed to employ as many persons as its budget will allow. The budget constraint is more than sufficient to insure against IHS overstaffing, but it will allow IHS to make rational decisions on staffing and to insure that expensive facilities or equipment do not go wasting because of lack of staff.

On this same point, we ask that the Committee provide that IHS be exempted from any position freezes imposed by the Administration. Inability to fill a position in IHS does not mean that some papers will not get shuffled; it means that some basic health services will not be provided. For example, during the present position freeze,

a number of IHS nursing positions went unfilled, endangering the lives and health of hundreds of Indians. IHS, with the support of the Indian community, eventually gets these freezes lifted for IHS; but during the the three or six months it takes to do so, our basic health care services suffer drastically.

We also ask the Committee to provide $10,500,000 to upgrade Emergency Medical Services on reservations in fiscal year 1980. Tribal governments place a high priority on EMS response and transport service. In recognition of this priority and of the critical need, we ask this Committee to support tribes in sustaining this program. Unfortunately, recent proposals by the Carter Administration threaten to make EMS funding even harder to obtain. With the passage of the Emergency Medical Services Systems (EMSS) Act of 1973, Congress made a commitment to improve emergency health services nationwide. More than $146 million has already been disbursed through the HEW Division of Emergency Medical Services because of the law, and original plans call for more than $400 million to be spent by FY1985. However, the Carter Administration has proposed that the law be phased out by FY1982, an action that could diminish future federal support for Tribal EMS programs, and destroy essential services that mean the difference between life and death in so many Indian communities today.

Finally, we request full appropriation of authorized funds for the mental health component of Title II of P.L. 94-437. Mental health related programs will alleviate the human misery and despair of Indian and Alaskan Native people on reservations and in numerous villages in Alaska, the most virulent of all diseases, the despair which accounts for alcohol abuse, suicide, family disorganization, depression, child abuse, and violence in all forms. We also support the efforts of the IHS to secure adequate funding for the development of the Carter Adminsitration's proposed Community Mental Health Systems Act and ask that immediate steps be taken to insure that Indian mental health needs are met.

In conclusion, the representatives of these organizations would be willing to work with the staff of this Committee in further defining the approaches recommended in this testimony.

United States Senate

COMMITTEE ON
LABOR AND PUBLIC WELFARE
WASHINGTON, D.C. 20510

November 18, 1976

Honorable David Mathews
Secretary
Department of Health, Education,
and Welfare
Washington, D.C. 20201

Dear Mr. Secretary:
As the author of S. 2548, the Emergency Medical Services Amendments of 1976 (P.L. 94-573), I am writing with respect to the implementation of a number of its new provisions. As you know, this legislation makes changes in the application assurances and requirements for grant support for the development of emergency medical services (EMS) systems; specifies responsibilities for the EMS unit identified pursuant to section 1208; and calls for specific steps to be taken to assure greater coordination of HEW and Federal programs which relate to emergency medical services.

1. It is essential that these statutory changes be implemented without interrupting the EMS grant cycle. This has traditionally been carried out in June with applications submitted by April 1 of the pertinent year. If that application deadline date continues for this fiscal year, any changes in the regulations necessitated by the new law must be made available as soon as possible to potential applicants and other interested parties. In this regard, the statement in the Joint House/Senate Committee Explanatory Statement on the compromise agreement on S. 2548 and H.R. 12664 (Congressional Record, Daily ed., Oct. 1, 1976, Part III, page S17680) states in Item 1:

> The Committee agrees that existing grantees should be given ample notice of the new requirements that would apply to future grant applications and urge that the Secretary make such information available to them no later than January 1, 1977.

Accordingly, I would appreciate your advising me of your timetable for the publication of proposed regulations and promulgation of final regulations, and when proposed regulations can be made available to me.

2. Equally important, I feel, is early implementation of the provisions of P.L. 94-573 regarding the management of the EMS programs within HEW.

A. I would appreciate your advising me of the steps you plan to take and your timetable for implementing such steps, to implement the new provisions of section 1208 with regard to the responsibilities

of the identifiable administrative unit. I am particularly interested in steps that will be taken, and guidelines issued, to provide for the full participation of the EMS unit in the devlopment of regulations, guidelines, funding priorities, and application forms relating to activities carried out under sections 776, 1205, and 1221 of the Public Health Service Act, and to provide for that unit to be consulted in advance of the award of grants under those sections and research or training grants for EMS-related activities under any other PHS Act authority.

B. It has been reported to me, through a copy of a letter sent to the Assistant Secretary for Health from Dr. Alan Dimick, Associate Professor of Surgery at the University of Alabama in Birmingham Medical Center, that steps are being taken to reclassify regional staff with responsibilities for the EMS program. Given the new responsibilities of the EMS Division and its regional staff I believe any reclassification must be consistent with the new duties for providing direction and technical assistance to grantees required by the new provisions of P.L. 94-573. I would, therefore, appreciate your advising me of any changes contemplated with respect to staff positions and grades in the EMS Division and HEW regional offices.

3. As you know, P.L. 94-573 authorizes a new burn injury program. Given the likelihood that appropriations will be made available for this program in the supplemental appropriations legislation that will probably be considered next February, I would appreciate your advising me of your plans with respect to implementation of this program, including your timetable for implementation (assuming enactment of appropriations in February) and your plans for management of the program by the EMS Division.

4. A. With respect to the section 776 EMS training programs, I would appreciate your advising me of steps which are being taken to establish a uniform funding cycle with that for the grant programs under Part A of title XII, as required by the new law.

B. In addition, I would appreciate your keeping me advised of steps taken toward developing minimum requirements for all EMS residency programs seeking PHS Act support, a task made more pressing with the development of a uniform funding cycle for these programs.

I look forward to hearing from you at your earliest convenience.

With best wishes.

Sincerely,

Alan Cranston

Enclosure

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF THE ASSISTANT SECRETARY FOR HEALTH
WASHINGTON, D.C. 20201

MAR 3 1977

The Honorable Alan Cranston
United States Senate
Washington, D.C. 20510

Dear Senator Cranston:

Thank you for your letter requesting information regarding this Department's implementation of the provisions of the Emergency Medical Services Amendments of 1976 (P.L. 94-573).

Enclosed is a report detailing actions taken to date on the specific points raised in your letter. We will keep you advised of our activities and progress in implementation of the Emergency Medical Services Amendments of 1976.

Thank you for your continued interest in and support of the emergency medical services program.

Sincerely yours,

James F. Dickson III, M.D.
Acting Assistant Secretary
for Health

Enclosure

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
HEALTH SERVICES ADMINISTRATION
ROCKVILLE, MARYLAND 20852

OFFICE OF THE ADMINISTRATOR

IMPLEMENTATION OF
The Emergency Medical Services Amendments of 1976
(P.L. 94-573)

1. Timetable for the publication of proposed regulations and promulgation of final regulations.

   The Legislative Implementation Plan and Regulation Development Plan have been prepared by the Division of Emergency Medical Services (DEMS), Health Services Administration, and submitted for review and approval. Copies of the revised Emergency Medical Services Systems Act, together with a short explanatory statement of the statutory changes have been provided to each Regional Office for distribution to current and potential grantees. The proposed changes to regulations for the Emergency Medical Services program, exclusive of burn program portion, are scheduled for publication as a notice of proposed rulemaking in May 1977. Final regulations are expected in the Fall. The opinion of the General Counsel has been requested as to whether final regulations for the Emergency Medical Services program must be published prior to grant awards authorized by P.L. 94-573. A copy of the proposed regulations will be made available to Senator Cranston prior to publication in the Federal Register.

2. a. Implementation of new provisions of Section 1208 with regard to the responsibilities of the identifiable administrative unit.

   The Division of Emergency Medical Services, Health Services Administration, and the National Center for Health Services Research (NCHSR) and the Bureau of Health Manpower, Health Resources Administration, have conducted meetings regarding the implementation of the EMS system, training, and research programs. It has been agreed that the review and award of the EMS systems grants, and the EMS training grants will be coordinated and the award dates will be about June 30, 1977 for both type grants. The DEMS has initiated discussion with NCHSR for research grants. The emphasis of these discussions will be directed toward a strategy for EMS research, rather than the coordination of grant award dates. Preliminary discussions have been undertaken for the burn program between DEMS and

the National Institute of General Medical Sciences, Social and Rehabilitation Service, National Center for Health Statistics, National Center for Health Services Research, Fire Prevention and Control Administration, Department of Defense, and Consumer Product Safety Commission. These organizations will be included in a Burn Ad Hoc Task Force to advise, coordinate and make recommendations to the DEMS on Burn Injury Program activities. The identifiable administrative unit for EMS systems development is the Division of Emergency Medical Services.

2. b. Changes with regard to staff positions and grades in the Division of Emergency Medical Services and the DHEW Regional Offices.

The Division of Emergency Medical Services and the Regional Offices are not undergoing reorganization. Position and grade audits, however, are being conducted at the direction of CSC.

3. Implementation of the burn program under Section 1221 of the EMS Amendments.

The Legislative Implementation Plan requested a delegation of authority for the Burn Injury Program, Section 1221, to the Division of Emergency Medical Services, Health Services Administration. Under the Regulation Development Plan, requests for publication of the Notice of Intent and Delegation of Authority will be submitted by DEMS in February 1977, publication of the Notice of Proposed Regulations is scheduled for May 1977, with final regulations in September 1977 and awards the same month. Final regulations must be approved for the burn program prior to any grant award.

4. a. Steps that have been taken to establish a uniform funding cycle as part of the EMS activities under Title XII and Section 776.

Meetings are being held between representatives of the Division of Emergency Medical Services and the Bureau of Health Manpower, Health Resources Administration, to resolve the coordination problems which will need to be overcome in establishing a uniform funding cycle.

4. b. Steps that have been taken to develop minimum requirements for all EMS residency programs?

Draft materials for general and specific application requirements for the EMS training program (including residences) have been developed by the Bureau of Health Manpower in coordination with the DEMS, American College of Emergency Physicians, University Association of EMS, Emergency Department Nurses Association, National Registry of Emergency Medical Technicians, and the National Association of Emergency Medical Technicians. A draft copy of the training specifications is included for your review. This draft is currently being reviewed by General Counsel.

John H. Kelso
Deputy Administrator

Enclosure

#807

Exec. Comm.

THE SECRETARY OF HEALTH, EDUCATION, AND WELFARE
WASHINGTON, D.C. 20201

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COMMITTEE ON HUMAN RESOURCES

The Honorable Harrison A. Williams, Jr.
Chairman
Committee on Human Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

The 1976 Emergency Medical Services Amendments in Public Law 94-573, Section 16, Uniform Patient Reporting System, requires the Secretary of Health, Education, and Welfare (HEW) to provide a report to the appropriate Committees of Congress which identifies categories of critical care patients that should be included in a uniform reporting system. The identification of such categories is to be used to evaluate the effectiveness of emergency medical services systems and burn injury programs, (supported under Title XII of the Public Health Service Act), in reducing death and disability. The report is also to include the Secretary's recommendations for legislation relating to such a uniform reporting system.

The Division of Emergency Medical Services, of the Health Services Administration has completed its report. This report was due on April 15. The report was delayed, however, because Departmental discussions about disease terminology and other issues took longer than expected. The cost of preparing this report is estimated at $3,200.

After reviewing the causes of death in 1972 and 1976, the report recommends seven categories of critical care patients which should be used for uniform reporting systems. They are coronary disease, motor vehicle trauma, spinal cord injury, burns, poisoning, certain diseases of infancy, and suicide. The report identifies each of these seven major categories together with specific tracer populations that should be used for assessing the effectiveness of emergency medical services systems. These patient groups can be tracked through the system and lend themselves to a variety of assessments.

The report recommends that no additional legislation be enacted to effect this type of a uniform reporting system.

Sincerely,

Joseph A. Califano, Jr.

Enclosure

48-284 O - 79 - 25

Executive Summary

There are certain priorities concerning treatment of emergency medical services patients.

1. Diseases of the Heart
2. Accidents
    (a) Motor vehicular trauma
    (b) Falls and acts of violence
    (c) Burns
    (d) Poisonings
3. Certain causes of mortality in early infancy
4. Suicides

Prior to the development of "reportable conditions for EMS" an in-depth knowledge of the demography, epidemiology and clinical requirements associated with these critical care categories is mandatory. Specific planning for regional emergency medical services' response to these particular critical care groups will mean that all critical medical emergencies will receive better care. Responsible systems' operation in these critical areas will likewise provide an opportunity to evaluate, and structure achievable goals in, the area of prevention.

These emergency patient groups were selected for this report because:

- They represent real and significant emergency medical problems;
- They are easily identified and can be utilized for planning, operations, and evaluation models;
- The most critical of these groups will benefit to the greatest extent from a "systems approach" specifically developed for their needs;
- These patient care categories are in effect "models" which may be utilized for similar patient types. Thus, these categories may have a natural ripple effect to emergency patients with less well identified acute illnesses.

These patient groups can be tracked through the system and lend themselves to a variety of evaluation potentials. This is in keeping with the intent of Congress to decrease death and disability of emergency patients.

Report to the Congress on the Uniform Patient Reporting System

Public Law 94-573, Section 16 (42 USC 300d-9), requires that,

> "The Secretary of Health, Education, and Welfare shall conduct studies to identify the categories of patients which should be included in a uniform reporting system to be used to evaluate the effectiveness of emergency medical services systems and burn injury programs supported under title XII of the Public Health Service Act in reducing death and disability. Not later than 18 months after the date of enactment of this Act, the Secretary shall report to the Congress the results of such studies. Such report shall include such recommendations for legislation relating to such a uniform reporting system as the Secretary determines are appropriate."

The Public Health Service has reviewed the leading causes of death in the United States since 1972, when the formal emergency medical services program began in the Department, and for 1975/1976.

The emphasis of this report is on identifying those categories of patients who present emergent conditions within the health delivery system and those patients representing a condition which is identifiable and is relevant to the success or failure of the developing emergency medical services systems.

For the purposes of this report, critical care patient categories are defined as those types of patients whose injury or illness is manifested in a sudden episode, the outcome of which may be fatal. In such cases, the availability of appropriate medical care can reduce the probabilty of death and in some cases disability and/or prolonged morbidity.

The National Center for Health Statistics, HEW, publishes annual data on the 15 leading causes of death in the United States (Chart 1). These data show that there has been a 5.5 percent reduction of death from all causes during the years 1972 to 1976. The chart also shows that generally the same leading causes of death hold true for 1972 and 1976.

Chart 1. Mortality from 15 Leading Causes of Death in the United States 1972 and 1976 (1)

Cause of death	1972 Rate per 100,000 population	1972 Percent of total deaths	1976 Rate per 100,000 population	1976 Percent of total deaths
Diseases of heart	363.0	38.5	338.6	38.0
Malignant neoplasms	166.0	17.6	174.6	19.6
Cerebrovascular diseases	102.5	10.9	88.1	9.9
Accidents	55.4	5.9	46.8	5.3
Influenza & pneumonia	30.1	3.2	29.3	3.3
Diabetes mellitus	18.6	2.0	16.3	1.8
Certain causes of mortality in early infancy	16.2	1.7	11.6	1.3
Cirrhosis of liver	15.6	1.7	14.5	1.6
Arteriosclerosis	15.6	1.7	13.4	1.5
Bronchitis, Emphysema and asthma	14.8	1.6	11.1	1.2
Suicide	12.0	1.3	11.7	1.3
Homicide	9.4	1.0	8.8	1.0
Congenital anomalies	7.1	0.8	6.4	0.7
Nephritis & nephrosis	4.1	0.4	4.1	0.5
Peptic ulcer	3.8	0.4	-	-
Septicemia	-	-	3.0	0.3
All other causes	109.0	11.6	112.4	12.6
All causes	943.2	100.0	890.8	100.0

(1) Source: National Center for Health Statistics, HEW

There have been some notable changes, however, since 1972:

(1) The death rate for diseases of the heart has decreased from 363.0 to 338.6 per 100,000 population.

(2) The death rate from accidents has decreased from 55.4 to 46.8 per 100,000 population.

(3) The death rate for certain causes of mortality in early infancy has decreased from 16.2 to 11.6 per 100,000 population and has moved from the 7th to the 10th leading cause of death.

From this background information, it is appropriate to focus on those causes of death, for which an emergency medical services system might be able to intervene to make a difference between life and death. The remainder of this report will be concerned with the identification of critical care patient categories appropriate to emergency medical care, and the identification of tracer groups for which the recordkeeping system could be established.

1. Disease of the Heart

In 1976, diseases of the heart accounted for 38 percent of deaths from all causes. Heart attack is the nation's number one killer. An estimated 4,120,000 Americans have a history of heart attack and/or angina pectoris.

All cardiac deaths in the community are included in the critical care patient category. The tracer population for assessment and evaluation should be those patients identified as having an acute myocardial infarction or ventricular fibrillation or flutter. From these patients, several measures of patient outcome and system effectiveness can be determined.

2. Accidents

For 1976 the National Center for Health Statistics, HEW reported 100,000 accidents as the fourth leading cause of death. This total included 46,700 from motor vehicles in motion; 14,300 from falls; 7,200 from drowning; 6,200 from fires, burns and injuries in conflagrations; 4,400 from poisoning by solids and liquids, and 21,200 from all other causes. Accidents resulting in deaths or disabling injuries, together with noninjury motor vehicle accidents and fires cost the nation in 1976, at least $52,800,000,000 (Source: National Safety Council).

Major Trauma - Within the category of accidental deaths, there are several critical patient categories of concern to emergency medical services. For motor vehicular accidents, major trauma deaths reached a high in 1972 with 56,278. Deaths decreased in 1973, 1974, and 1975, but increased in 1976 to a total of 46,700.

The tracer population for assessment and evaluation should be those head injury patients involved in motor vehicle accidents. All vehicular trauma is classified by States and distribution of auto accident victims is recorded. Sources of data exist to quantify patient outcome in terms of injury severity, various anatomical, physiological, surgical and pathological factors.

Spinal Cord Injury - Using results of a 1974 California study, the National Institutes of Health estimated that 56 percent of all acute spinal cord injuries are attributable to motor vehicular accidents. In addition, falls and swimming and diving accidents are significant contributing causes of spinal cord injuries. The National Paraplegia Foundation estimated 3,190 new spinal cord injury cases in 1974. (Source: GAO/Report on Cost of Spinal Cord Injuries in the United States and Progress in Spinal Cord Regeneration, October 14, 1977.) Survey data have shown an incidence of 34.5 spinal cord injuries per million population.

The tracer population for assessment and evaluation should be those patients entering general hospitals and spinal cord treatment centers for fracture and fracture dislocation of the vertebrae column with spinal cord lesion. This category would include the etiologies of falls, swimming and diving injuries and gunshot wounds.

Burns - Thermal injury is one of the most severe injuries a person can incur. The 1976 data have shown about 8,000 deaths from fire, heat, cold, explosion, and electrical sources. It has also been estimated that about two million people are injured each year from thermal sources. This injury is characterized as low mortality and high morbidity.

The tracer population for assessment and evaluation should be patients admitted by general hospitals and specialized burn treatment facilities for all second-degree burns covering 30 percent or more of the body surface area and all third-degree burns, all burn injuries of high risk patients as defined by the American Burn Association, and all deaths from thermal sources.

Poisoning - The 1976 summary data show 4,400 deaths from poisoning by solids and liquids. This is a six percent decrease from 1975. In 1975

there were 4,694 poisoning deaths from drugs and other substances. For the past five years there has been a steady decrease of poisoning deaths in children under five years of age, but an offsetting increase in poisoning deaths in persons over five years of age. The number of deaths for the five-year group has decreased 60 percent from 1968, while the over five-year group has increased 82 percent for the same period.

The tracer population for assessment and evaluation of poisoning should include poisonings that are handled by local poison information centers, general hospital and critical care admissions. Special emphasis should be given to monitoring the declining incidence in children under five years of age, and separate emphasis to the group over five years of age.

3. Certain Causes of Mortality in Early Infancy

Infancy deaths per 100,000 have decreased from 16.2 in 1972 to 11.6 percent of total deaths in 1976. Infant mortality (less than 1 year of age) per 1,000 live births decreased from 18.5 in 1972 to 15.1 in 1976. The decreasing rate of deaths from this cause can be attributed in great part to increasing medical emphasis on factors relating to infant mortality. In particular, the development of organized transportation systems, physician and nursing specialists, and equipment and procedures for the neonate (birth 28 days) have been major factors in this result. The death rate for neonates has decreased from 13.6 per 1,000 live births in 1972 to 10.7 per 1,000 live births for 1976. More recent data continues to show a decline in infant mortality. The decline in infant mortality (from 15.5 deaths per 1,000 live births for the 12 months ending with August 1976 to 14.4 for the 12 months ending with August 1977) reflects an 8.2 percent decrease in the rate for infants at ages under 28 days. Their rate declined from 11.0 to 10.1 per 1,000 live births.

The tracer population for assessment and evaluation should be the high risk infants during the first 28 days of life as well as those between 28 days and 11 months of age. The former group should specifically identify those infants with respiratory distress syndrome, severe congenital anomalies amenable to treatment or correction, prematurity (28 to 32 weeks gestation), low birth weight (1,000-1,500 grams) and infants born to high risk mothers (less than 15 years or greater than 35 years of age, Diabetics, Toxemia, Drug or Alcohol Addiction). The latter group (28 days to 11 months) should include those infants at risk for gastrointestinal disease, congenital malformations, prematurity and low birth weight, and asphyxia of the newborn.

4. Suicide

Within the field of mental health, depressive disorders, schizophrenia, and alcohol disorders were the predominant diagnostic categories of the estimated 516,000 discharges from non-Federal general hospital psychiatric inpatient units in 1975. There were approximately 27,000 suicide deaths in 1975 with a rate of 12.7 per 100,000 population.

The unsuccessful suicide patient is of considerable interest and concern to emergency medical services. The tracer population for assessment and evaluation should include suicide attempts reported by hospitals and/or mental health crises centers.

Summary

While there are numerous and various emergent medical conditions, it has been established that there are certain critical patients of concern:

1. Diseases of the heart
2. Accidents
    (a) Motor vehicular trauma
    (b) Falls and acts of violence
    (c) Burns
    (d) Poisonings
3. Certain causes of mortality in early infancy
4. Suicides

Prior to the development of "reportable conditions for EMS" an in-depth knowledge of the demography, epidemiology and clinical requirements associated with these critical care categories is mandatory so that they can be addressed in relation to emergency medical services' regional planning and operations.

The emergency patient groups that have been selected for this report are realistic for regional emergency medical services systems' development because:

- o They represent real and significant emergency medical problems;
- o They are easily identified and can be utilized for planning, operations, and evaluation models;
- o The most critical of these groups will benefit to the greatest extent from a "systems approach" specifically developed for their needs;
- o These patient care categories are in effect "models" which may be utilized for similar patient types with like needs for impact study and reporting. They may have a natural ripple effect to emergency patients of less severity or with less well identified acute illnesses.

These patient groups can be tracked through the system and lend themselves to a variety of evaluation potentials, while carrying forward the intent of Congress to decrease death and disability of emergency patients.

Recommendation

No new legislation is recommended.

II. ADDITIONAL LETTERS SUBMITTED FOR THE RECORD

United States Senate
COMMITTEE ON HUMAN RESOURCES
WASHINGTON, D.C. 20510

February 6, 1979

Honorable Elmer B. Staats
Comptroller General of the United States
General Accounting Office
441 G Street
Washington, D.C. 20548

Dear Elmer,

You will recall that, in 1976 when Congress extended the authorities of title XII of the Public Health Service Act -- Emergency Medical Services Systems -- in Public Law 94-573, many of the changes made in title XII, as proposed by the Senate, were based on the findings of the General Accounting Office (GAO), summarized in the GAO report of July 13, 1976, "Progress, but Problems in Developing Emergency Medical Services Systems".

As you know, the philosophy underlying the enactment of the EMS legislation in 1973 was that under the Federal program -- intended to help communities plan, establish, and expand comprehensive emergency medical services systems -- there would be a maximum of five Federal grants at the conclusion of which the Federally-supported EMS systems would be expected to be maintained by a combination of public and private local community resources.

Thus, we were quite concerned by a major finding of the 1976 GAO study that, although communities throughout the country had been able to upgrade their EMS resources as a result of the Federal program, there was considerable inconsistency in the degree and duration of support provided the EMS system by the participating local governments.

On the basis of the GAO report, Congress amended the law in 1976 to require each applicant for a section 1203 grant (initial operation and establishment) to submit, with its application, assurances of local governmental support of and cooperation with the EMS system, including assurances of financial support to maintain the system in the year after the conclusion of Federal support.

In addition, the law was amended to require each applicant for a section 1204 grant (expansion and improvement) to submit, with its application, assurances of local governmental support and endorsement of a specific financial plan providing for the maintenance of the system at the level of expanded or improved activity achieved with Federal support. In the second year of section 1204 support, the law requires the applicant to show progress in achieving implementation of that financial plan.

The Subcommittee on Health and Scientific Research will be considering legislation to extend the provisions of the Emergency Medical Services Systems law early this Session. In connection with this activity, it would be extremely useful to the Subcommittee if the GAO could undertake a review of H.E.W.'s implementation of these requirements and assess the extent to which the requirements have been instrumental in obtaining community financial support for the continued maintenance of emergency medical services systems.

Specifically, we request your Office to

-- ask each H.E.W. Regional Office to furnish you with copies of the financial assurances (initial and supplemental) submitted by grantees in support of their applications so that you may review those assurances to determine the extent to which they fulfill the requirements of the law;
-- review the applicable H.E.W. regulations and guidelines to determine the extent to which they carry out the legislative intent and, based on that review, recommend any changes desirable to help achieve that intent;
-- respond informally to the Subcommittee by February 23 on your findings and your recommendations for improvements in the program.

We would then hope that, subsequent to that informal report, a formal report would be submitted to the Subcommittee for its consideration in marking up the legislation preparatory to reporting it from Committee.

With every good wish,

Cordially,

Edward M. Kennedy
Chairman
Subcommittee on Health
and Scientific Research

Alan Cranston

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-164031(5) April 12, 1979

The Honorable Edward M. Kennedy
Chairman, Subcommittee on Health
and Scientific Research
Committee on Labor and Human Resources
United States Senate

Dear Mr. Chairman:

This report summarizes the information we provided to your office for hearings on February 28, 1979, on the emergency medical services (EMS) systems program.

As requested by you and Senator Cranston, we reviewed the Department of Health, Education, and Welfare's (HEW's) implementation of the Emergency Medical Services Amendments of 1976; specifically, we reviewed the extent that the amendments have helped obtain community financial support to continue operating EMS systems.

EMS regional management organizations are not adequately planning for their financial self-sufficiency, nor are they obtaining firm financial commitments from local governments to continue regional systems at the conclusion of Federal funding, although plans for financial self-sufficiency and local government endorsement of these plans are required by the 1976 amendments.

HEW regulations conform to legislative intent both with respect to grantee financial planning and with obtaining local financial support when Federal funding stops. However, HEW issued these regulations 2 years after the amendments were passed. We could not assess their effect on grantee compliance with legislative intent because HEW has awarded no grants since publishing them. HEW has also not yet published corresponding program guidelines.

The effect of the 1976 amendments can be better assessed after HEW requires that grantees comply with these regulations and guidelines.

HRD-79-69
(102043)

SCOPE OF REVIEW

Our review included an examination of (1) the Emergency Medical Services Amendments of 1976 and their legislative history, (2) HEW's implementing regulations, (3) approximately 75 percent of the funded EMS system expansion and improvement grant applications for fiscal year 1978, and (4) supplemental information submitted to HEW regional offices by grantees to support their applications. We also interviewed various HEW program officials.

BACKGROUND

As part of the Public Health Services Act, the Congress enacted the Emergency Medical Services Systems Act of 1973 (42 U.S.C. 300d) to promote the development of comprehensive regional EMS systems. In October 1976 the Congress enacted the Emergency Medical Services Amendments of 1976, which extended the act and made several changes based largely on findings discussed in our 1976 report: "Progress in Developing Emergency Medical Services Systems" (HRD-76-150, July 13, 1976).

We pointed out in that report that, while services had improved, overall development of regional EMS systems had been slow. Self-sustaining regional systems, which retain areawide control of resources and facilities, had not been completed, as intended by the 1973 legislation. Regional management organizations--the grant recipients--lacked assurance of permanent financing for administrative and operating costs that were initially paid for by Federal grant funds. The regional management organizations also had little control over the financial support made available for EMS systems by local governments and other providers. Consequently, when Federal funding stopped, the organizations could not assure continued services at the level established with Federal support.

The 1976 amendments required grantees to assure that local government units in the systems' service area supported and cooperated with the regional EMS systems. Local governments were also to endorse plans to continue financial support of the system after Federal funding ended.

HEW HAS IMPLEMENTED THE AMENDMENTS SLOWLY

Although the Congress enacted the 1976 amendments on October 21, 1976, HEW did not publish implementing regula-

tions until November 3, 1978; therefore, no EMS grants have been awarded under those regulations.

The Deputy Director of HEW's Division of Emergency Medical Services said the delay occurred primarily during the review process after the Division had drafted the regulations. He gave the following chronology of events:

--October 1976: EMS amendments were enacted.

--February 1977: draft specifications for regulations were submitted by the Division of Emergency Medical Services to the Public Health Service, Office of General Counsel.

--April 1977: the Under Secretary of HEW approved the development of final regulations (it was decided that it was not necessary to publish proposed regulations in the Federal Register for comment by interested parties).

--June 1977: draft final regulations were submitted by the Division of Emergency Medical Services to the Public Health Service, Office of General Counsel.

--January 1978: draft final regulations were forwarded by the Public Health Service, Office of General Counsel, to the Public Health Service and the Office of the Secretary of HEW.

--June 1978: the Public Health Service forwarded comments to the Office of the Secretary of HEW; the Office of the Secretary of HEW forwarded regulations and comments to its Office of General Counsel.

--July 1978: the HEW Secretary's Office of General Counsel returned regulations with comments to the Division of Emergency Medical Services.

--August 1978: the HEW Secretary's Office of General Counsel requested "common sense" 1/ changes to regulations.

1/"Common sense" is the name given to an HEW initiative to simplify regulations to make them readable at the 10th grade level.

--October 1978: "common sense" changes completed.

--November 1978: final regulations were published in the Federal Register.

HEW's Division of Emergency Medical Services had attempted to implement the 1976 amendments informally by notifying the 10 regional EMS program coordinators that grantees were responsible for adhering to the statutes. However, without HEW-approved regulations the Division was not in a position to provide detailed, consistent interpretations of the 1976 amendments.

All HEW regions told grantees of the new requirements; however, regional interpretation of statutory language varied and regional enforcement of requirements during fiscal year 1978 was generally lax. Regional EMS program officials had difficulty providing guidance and enforcing the requirements without regulations and program guidelines. Although the 1978 expansion and improvement grant applications contained some financial data, these data were not as detailed as now specified in HEW's regulations.

EMS REGIONAL SYSTEMS ARE SHOWING LITTLE PROGRESS TOWARD PLANNING FOR SELF-SUFFICIENCY

We examined 25 of the 34 applications for first- and second-year expansion and improvement grant funds (section 1204 grants) which were funded in fiscal year 1978. We found that regional EMS systems have done little to plan for financial self-sufficiency after Federal funding stops.

The amendments require that the applications contain specific financial plans for funding after the Federal grant period terminates and that these plans be endorsed by government bodies in the system. Using the application requirements set forth in HEW's November 1978 regulations, we found that only 1 of the 25 applications met these requirements; this application was from a one-county system--the grantee and the primary government body were the same unit.

B-164031(5)

Results of our analysis of grant applications are:

Regional EMS Systems Receiving
First- or Second-Year
Expansion and Improvement Grants

	First year	Second year	Total
Total systems funded	20	14	34
Total applications reviewed by our office	14	11	25
Number obtaining general endorsements	14	11	25
Number developing financial plan	4	2	6
Number developing endorsements of plan	1	-	1
Number preparing progress report	(a)	-	-

a/Progress reports are not applicable to first-year expansion and improvement grants.

All the applications reviewed contained community endorsements of the regional EMS system concept, and most contained commitments from local governments to maintain some emergency medical services within their jurisdiction after their Federal grant terminates. However, only 6 of the 25 grant applications reviewed had developed specific financial plans, and only 1 of the 6 was properly endorsed. Two unendorsed financial plans called for substantial funding reductions for the regional management organization without showing that the level of services established by Federal funds would be maintained.

Many regional entities are looking to their State government for support for regional management operations--of 25 grant applications reviewed, 12 were planning for State funds to support regional operations.

CONCLUSIONS AND RECOMMENDATIONS
TO THE SECRETARY OF HEW

We cannot determine what effect the 1976 EMS amendments might have on EMS systems' financial planning. We believe that the recently published HEW regulations are consistent with legislative intent; implementing them should improve

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B-164031(5)

grantee financial planning for self-sufficiency. The extent to which the 1976 amendments foster the development of community support for regional EMS systems after Federal funding stops can only be evaluated after HEW requires that grantees comply with the implementing regulations.

We also believe that State legislation offering support for the regional system concept and funding for regional management organizations shows promise for continuing EMS regional services after Federal funding stops.

We recommend that the HEW Secretary require the Administrator of the Health Services Administration to

--implement the new EMS regulations and promptly develop and issue program guidelines,

--provide technical assistance to (1) grantees in developing plans for self-sufficient EMS systems and (2) States that are developing legislation providing continuing support for regional EMS systems, and

--place greater importance on the requirement for financial plans and commitments in the grant application review and ranking process.

We discussed the matters covered in this report with the Deputy Director of HEW's Division of Emergency Medical Services. His comments are incorporated, where appropriate.

This report is also being sent today to Senator Kennedy. As arranged with your office, we will send a copy of this report to the Secretary of HEW in 5 days and will then make copies available to others upon request.

Sincerely yours,

Comptroller General
of the United States

II. Additional Letters Submitted for the Record

American Trauma Society

875 North Michigan Avenue, Chicago, Illinois 60611 / (312) 649-1810

March 10, 1979

The Honorable Alan Cranston
U.S. Senate
Washington, D.C. 20015

Dear Senator Cranston:

I am most pleased to respond to your request for an opinion on the proposed amendments to the Emergency Medical Systems Act. As part of the Emergency Medical Service Community, I feel very much in your debt; and I appreciate your support. We were particularly pleased to receive your telegram in our Sacramento meeting this week.

I speak as a Professor of Surgery, experienced in trauma, having served in war and in the battles of several inner cities. I have worked in excellent emergency systems and poor ones, and I have developed some sense of the importance of organization in dealing with emergency medical problems, especially those emerging from trauma. As the President of the California Division of the American Trauma Society, and Vice President of the National Organization, I feel special responsibility to provide a thoughtful opinion.

Efforts to organize Emergency Medical Service Systems in this country date back to the Civil War. Since that time, advancements have occurred largely through military medicine during combat. In the civilian community, advancements of medical techniques and ambulance systems have provided lessor advances. Unfortunately, the random civilian approach has left a number of weak spots in the care system - in which, for example, road accident victims are victims of "random crime," and are often left poorly attended. There are areas in this country, some in California, in which seriously injured victims of road accidents seldom leave the site of the accident alive, whereas a few hundred miles away they would routinely survive.

I have seen massive conceptual advances arise in war and lie unused in peace. Although advances have been made in civilian life, at no time have I seen the rate of progress nearly so rapid as it has been since the first Emergency Medical Services Act of 1973. We are all in your debt. However, the job is not yet done, nor has momentum quite increased at the point that we can trust the improvement to continue should the Federal Government diminish its efforts now. I believe, however, that soon Federal support may rightfully diminish in a major way, leaving functioning systems in the states and communities.

The current tragedy is, that though we have the medical and surgical skills to accomplish cures and full rehabilitation of injuries that once were lethal or severely disabling, we find them difficult to apply because the systems by which victims are found and transported are so often inadequate. Response time for emergency vehicles is slow and unpredictable. First responders (police, bystanders, etc,) are untrained and reluctant to act. Even when ambulances with trained personnel arrive, the best destinations for the victims are undefined and often tragically random in many areas of the country. No systematic review of the quality of trauma has been designed or undertaken. As a result, the American citizen knows infrequently the standard of the emergency care he may expect to receive.

The efficacy of the approach of the Emergency Medical Services Act has been demonstrated by improvements in burn care and the care of the cardiac problems. The systems are not yet perfect, but immense strides have been made.

Unfortunately, trauma care has not fared as well. There are good reasons for this; the complexity of the problem being the major one. Nevertheless, trauma has emerged as our fourth greatest killer. If the strides made in public education in heart disease, for instance, continue to hold, trauma will soon become the third greatest killer. The increase in the technology of modern society will ensure that the opportunities for trauma will increase in the foreseeable future. Trauma kills and disables the young, and our experience in war clearly demonstrates that this toll can be reduced by adequate organization. I should emphasize that scientific advances, though desirable, are <u>not</u> necessary to ensure improvements in trauma care. Improved organization for delivery of care will improve the problem immensely.

In order to improve the delivery system, we feel that major decisions must be made. Trauma centers of excellence have proved their worth; and now, their size, location, their division of labor (spinal cord centers, burn centers, etc.) must be determined. More surgeons willing to dedicate their lives to trauma care must be recruited and trained. As with heart disease and cancer, the public must be made aware through information derived through these centers of the hazards of trauma and the means of trauma prevention. The vast majority of trauma is preventable, and by knowing more about where and how it occurs, we should be able to prevent it!

We need a few major Trauma Centers of Excellence - primary receiving areas - where the incidence, the location, the type and cause of trauma can be determined and recorded, so that response systems and preventive efforts can be designed to meet demonstrated, specific need. We need to know specifically why trauma patients die, and how they become disabled, so that priorities for biomedical research can be more clearly constructed than they have in the past. We need to know the standard of care and the outcomes that can be expected after specific injuries cared for in centers of excellence. In that regard, we specifically do not believe that saving lives in trauma will increase the number of disabled citizens. This has not been our experience. In trauma, we are dealing with a young resilient population which recovers from injuries and finds ways to adjust to them. The young are the rightful target for protective efforts.

The centers which I propose should be charged with designing the manpower and equipment, "the minimal trauma team" - the module for emergency medical care, and should investigate the potential numbers and locations of future such units. They should develop standards for training trauma surgeons, perhaps along the lines which have so long existed in Europe.

Through this, and the existing EMS system, the public should receive information which will allow it to design their own community health services. Whereas some communities lack any emergency services, others have costly and redundant facilities. The information from pilot centers located to allow for geographical differences, should aid the public to make those hard decisions which they must make of where to build and where to take away.

The centers we propose are distinctly different from the "trauma centers" of the National Institute of General Medical Sciences which are vitally important in biomedical research. We want by no means to endanger them.

I want to emphasize again, that immense medical and surgical skills are already available. We now need the system to bring them to efficient use. We need regionalization and working cooperative agreements. We hope the public will eventually have the privilege to return these facilities to the general medical care system. I do not think that this exercise in leadership by the Federal Government will entail massive expense, since the major need is organization and definition of the problem.

These are my personal and professional opinions. I understand that the American Trauma Society is preparing a more thorough statement of the need for and continuation of the EMSS act and the development of centers of excellence, with particular reference to trauma centers. I hope these opinions will be of use to you and the Congress. I am pleased to be asked to participate.

Sincerely yours,

Thomas K. Hunt, M.D.

TKH/sb

American Burn Association

March 19, 1979

Senator Alan Cranston
United States Senate
Washington, D.C. 20510

Dear Senator Cranston:

The American Burn Association is the professional organization dedicated to improved care for burn patients. Our 2,000 members include physicians, nurses, therapists, researchers, and others interested in better burn care for our citizens.

In the coming weeks, the Congress will consider proposed legislation to extend the Emergency Medical Services (EMS) Program (Title XII) of the Public Health Services Act. Consideration will also be given to extension of Section 1221 of the Burn Injury Program. Both Programs are administered by the Division of Emergency Medical Services. The American Burn Association and its Board of Trustees strongly support continuation of the EMS Program and the Burn Injury Program for a three-year period.

The EMS Program, since its inception in 1973, has provided the leadership and financial support to improve the availability of EMS and contributes to the reduction of death and disability resulting from trauma and burns. The Burn Injury Program is entering the final year of a three-year demonstration effort to describe and quantify the current national burn care capability and the costs of that care.

The A.B.A. has been increasingly involved in the EMS Program and has received reports on the progress of the Burn Demonstration Program. At the Eleventh Annual Meeting held in New Orleans on March 14, 1979, the Board of Trustees has formally requested that I convey our recommendations to (1) extend the current EMS Program for an additional three years, and (2) strongly recommend extension of the Burn Injury Program for three years. During

Senator Alan Cranston
Washington, D.C.

March 19, 1979 2.

this extension, support should be provided for training and continued education of burn care personnel, research for specific problems in burn care, and demonstration of improved systems of care for trauma patients.

It is imperative that this legislation not interfere with any action on burn care development indicated by the results of the Burn Demonstration Projects.

We support your efforts to provide Congressional leadership to improve the availability and quality of care to the critically ill and injured. We earnestly request your support of these two outstanding programs which are overwhelmingly accepted by the health professions and the citizens of this country.

Very truly yours,

Arthur D. Mason, Jr., M.D.

Arthur D. Mason, Jr., M.D.
President
The American Burn Association

ADM/mj

American College of Cardiology

HEART HOUSE 9111 OLD GEORGETOWN ROAD BETHESDA, MARYLAND 20014 (301) 897-5400

May 17, 1979

Senator Alan Cranston
Senate office Building, Room 229
Washington, D. C. 20510

Dear Senator Cranston:

Thank you for your letter of March 15 and your invitation to my Committee to comment on the proposed extension of Title XII of the Public Health Service Act as it relates to Section 789, Emergency Medical Systems.

As you are well aware, I have long been interested in emergency medical care and emergency services and have worked diligently to strengthen the ability of the medical community to deliver the best possible care under what can often be the most adverse of conditions. In evaluating the system which has been created, it appears that it is a system which has given attention primarily to the development of an organizational structure through which care can be delivered. While this development of a structural framework has been of substantial benefit to emergency medical care, it has lacked and continues to lack measures of its efficacy with regard to the type and quality of care which in fact is being delivered within that system.

The American College of Cardiology in its assessment of present emergency medical services has identified the need for the development of objective measures which can be utilized to evaluate the care actually being provided as a result of our efforts within the emergency medical care area. Of particular importance, we believe, are measures of the success of the initial management of patients in the field and the ultimate management of those patients within the system along with the way in which the hospital care which follows is provided.

While we recognize that emergency medical services have become very strong operationally, there has not yet been a parallel improvement in the clinical management of patients within that system. We have yet to assess the effects of medical and surgical intervention outside the hospital, within the emergency room and during a hospital stay resulting from an emergency condition. None of these effects are well delineated at present. Were each to be analyzed, it is our opinion that undertreatment as well as overtreatment of patients would be found in many instances. The concommittant impact upon both the cost of health care as well as patient welfare surely has far-reaching implications. Many such problems have resulted from the liberalization of privileges for paramedical and emergency department personnel. Closely related is the questionable impact of medical controls in base stations and the debate over whether remote guidance by the physician or nurse is in fact beneficial to the welfare of the patient.

It is therefore imperative that we now address the medical components which comprise the delivery of patient care within the emergency medical care system. Of particular importance is the need to deal especially with those components which focus upon the medical specialties. Such considerations should include: cardiac emergencies; trauma victims and patients with respiratory failure.

It is for these reasons that we would look for explicit provision for augmenting clinical (medical, surgical) expertise and clinical research in support of improved direct patient care as part of section 497. In addition, we would recommend that the legislation provide for a medical advisory panel for the purposes outlined above.

Thank you very much for inviting our opinion. We look forward to continued opportunities to work with you on behalf of emergency medical care.

Sincerely,

Max Harry Weil, M.D., F.A.C.C., Chairman
Committee on Emergency Room and Pre-Hospital Care

MHW:slm

American Academy of Pediatrics

Division of Government Liaison
American Academy of Pediatrics
1800 North Kent Street
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(703) 525-9560

Elizabeth J. Noyes
Director

April 12, 1979

Honorable Alan Cranston
Room 229 Russell Senate Office Building
United States Senate
Washington, D.C. 20510

Dear Senator Cranston:

On behalf of the Committee on Hospital Care of the American Academy of Pediatrics, we would like to submit the following comments for inclusion in the hearing record on S. 497, the "Emergency Medical Services Systems Amendments of 1979." It is our belief that the needs and concerns of pediatric patients who come into contact with emergency medical services systems are of extreme importance, and hope that these comments will be of assistance to you and your colleagues as S. 497 proceeds through the legislative process.

Of all patients receiving care in the nation's hospital emergency departments, 20% to 35% are children or adolescents. [1,2,3,4] On weekends and at night, children may comprise over 40% of all visits. Over 18 million children receive emergency services annually and of these, four million were in the emergency departments of small and rural hospitals of less than 100 beds. American Hospital Association statistics indicate that 100,000 children are permanently crippled by trauma annually, and up to 55% of all deaths up to age 15 are due to injuries. However, pediatric emergencies are largely medical rather than surgical and include poisoning, infectious disease, respiratory difficulty, and dehydration, all potentially life-threatening.

Children are not miniature adults. Their needs differ from adults, physically, metabolically, and emotionally. Planning and programming for emergency services therefore should recognize the unique needs of pediatric patients:

> Special pediatric expertise is required to examine children brought for urgent evaluation in order to recognize subtle signs and symptoms which may indicate serious underlying disease or major injury. There is no substitute for a well-trained eye or ear. Special interviewing techniques are needed to recognize the effect of the emergency on the child's emotions, behavior, growth and development. Certain physical findings are pecular to children. Special pediatric expertise is required to secure and especially to interpret X-rays and laboratory tests which have standards different from adults. The special metabolic problems of infants require specific knowledge of fluid and electrolyte administration to correct the shock of dehydration or salt and

potassium imbalance. Social situations which appear under the guise of physical illness include child abuse and neglect, severely disturbed parent-child relationships, and social deprivation. Experience in pediatrics is required to detect the real underlying problem and avoid a non-profitable crisis-oriented encounter with the emergency care system. Catastrophic child emergencies require teams of child-oriented and trained nurses, pediatric surgeons, pediatricians, child psychiatrists and social workers to prevent permanent emotional as well as physical crippling following such trauma as home fires, shootings, auto accidents, and explosions. Without a pediatric perspective, these emergencies are not handled well in an adult-oriented emergency department.

Because of their size, children require special instruments both for examination and treatment. Drug dosage is based on weight as is fluid administration.

Special back-up services for the emergency department are required for this age group. For example, 2-way communication from ambulance to a knowledgeable pediatric resource is essential. A pediatric intensive care unit should be available either in hospital or by transfer after stabilization. Transport of newborns and premature by helicopter requires special equipment and trained personnel.

Finally, children require separation from adults in the hospital emergency area. Exposure to the unpleasant sights and sounds inherent in adult emergencies affects the mind of the child adversely.

The American Academy of Pediatrics is concerned that emergency medical services are primarily adult-oriented in spite of the proportion of emergencies which is pediatric. The nature of pediatric emergencies merits adequate pediatric training of the physicians and nurses who staff emergency departments in order to identify the critically ill or injured child and to develop the technical skill to stabilize the young patient. The Academy requests the opportunity to review the emergency services funded by the bill and to contribute advice and assistance in planning such services from the pediatric standpoint.

There is no substitute for pediatric skill when a child's life is at stake.

Sincerely yours,

Arno R. Hohn, M.D.
Chairman
Committee on Hospital Care

Willis A. Wingert, M.D.
Chairman
Subcommittee on Emergency and Ambulatory Medicine

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References:

1. American Journal of Public Health, 66:1189, 1976.

2. American Journal of Public Health, 56:1037, 1966.

3. Journal of the American Medical Association, 191:97, 1965.

4. Hospital Statistics, American Hospital Association, Catalog 2447-2448.

Children's Hospital of Michigan
Department of Pediatrics
Wayne State University School of Medicine

February 5, 1979

Senator Allan Cranston
229 Russell Bldg.
Washington, D.C. 20510

Dear Senator Cranston:

I hope to have the opportunity briefly to discuss with you or an appropriate member of your staff the matters summarized in the enclosed, and by the time you receive this will likely have made such arrangements already.

The enclosed is a recent article which summarizes my position with regard to the pressing issue of the need for the development of a regional poison control center program, a need which likely will and certainly should be addressed soon by the U.S. Congress. It is closely related to the Federal Emergency Medical Services program which also will be under consideration, and I should appreciate the opportunity briefly to discuss this issue as well.

I might mention for your interest that the National Symposium on "Progress, Perspectives and Prospectives of Emergency Medical Services in USA - 1979" is being held February 20-23 there at the Sheraton Park Hotel, and I have been commissioned to summarize the poison center issue position in terms of "Recommendations to Legislative Bodies" at the close of the February 21 session.

Sincerely yours,

Alan K. Done, M.D.
Professor of Pediatrics
and Pharmacology
Director, Division of Clinical
Pharmacology and Toxicology

AKD/sb

Enclosure

By Alan K. Done, M.D.

THE TOXIC EMERGENCY

THE CASE FOR REGIONALIZING POISON CENTERS

IN MY JANUARY column, I presented a listing of the various poison centers that have been designated to the National Clearinghouse for Poison Control Centers by state health departments, along with a very brief discussion of what a poison center is. I touched very lightly on the question of whether a particular hospital or similar facility should or should not get on the poison center bandwagon. I'd like to expand this latter question and relate it to what should be the key issue—regionalization of centers.

Proliferation of, and publicity about, poison centers puts at least some implicit pressure on hospitals to take on such a designation. It's quite likely, in fact, that our listing of the existing centers—even with some perhaps inadequate qualifying remarks—may have such an effect. If so, I would certainly like to counteract it. There is a new and growing tendency to abandon the proliferation of new centers in favor of more centralized programs and I strongly believe this tendency should be encouraged. Far too few hospitals have seriously considered—much less reconsidered—what their role should be in the system and those that have attempted to do so have often missed some points that may be crucial to such a decision. Furthermore, as some of us have attempted to push for a more centralized system we have found it necessary to develop our arguments on the spot before legislators, administrators, etc., since very little background information has been published in the general medical literature. To some degree, therefore, I hope that this column will serve as a sort of "position paper" for those who may be fighting this battle in the future. Space doesn't allow me to cover such aspects as the activities and attributes of each type of center—this has already been done admirably by Tony Temple in *Annual Review of Pharmacology and Toxicology* (Vol. 17, p. 215) and Fred Lovejoy and Joel Alpert in *Pediatric Clinics of North America* (Vol. 17, p. 747) and I listed other references and discussed such details earlier (see EM, November 1973)—but I would like to present some perspectives that are either basic to the question or often neglected when the subject is being discussed.

What's the attraction?

I have already observed that there are more than 600 poison centers in this country, with over 100 in one state (Illinois) and one or none in some other states; some cities may have several facilities that list themselves as poison centers. For reasons we'll go into later, there's no way that all of these outfits can provide the kind of service they should, so it's logical to ask why they try: What is the incentive for becoming involved? I think this is an important question to consider as a preface to any efforts to change the status quo.

The poison center movement in this country started nearly a quarter of a century ago as a reaction to the fact that the growing availability of potentially toxic materials and the accompanying increase in the incidence of poisoning was not matched by any significant improvements in the identification of potentially dangerous constituents of products, for which only brand names were often available, or in the availability of information about effective treatment—a subject that was then, and still is, badly neglected in medical training. So a number of centers began to accumulate as much information as they could from manufacturers about what was in their products and from the literature about the toxicity of these constituents and the known methods of treatment. They also began to equip themselves to treat poisoning cases when they arose. There were more than 100 such facilities by the time we met in Chicago in late 1957 to form what is now the American Association of Poison Control Centers. In the meantime, the Public Health Service established the National Clearinghouse for Poison Control Centers, which is now a part of the FDA, to receive reports from the various centers and develop a cumulative experience from them.

All of the reasons why proliferation of poison centers continued beyond what was probably optimum are not clear but some relevant observations can be made.

In the first place, many physicians and administrators decided that being prepared to treat the poisoning cases already coming to the hospital entailed as much effort as the development of a "poison center," so why not become one; and some hospitals, perhaps, hoped to attract some patients

continued

who might otherwise go elsewhere. That there is a difference is suggested by the fact that while the vast majority of poison centers are located in hospitals, a great many of them provide information only and no treatment at all. And many of those that do treat consist of the same emergency room that existed all along, now provided with perhaps a little additional information and a new title. The number of poison centers that arose as a result of a real change in activity or a new endeavor was, and still is, relatively small.

Another problem is the attractiveness of "poison control" work as a cause. There was at the time the poison center movement began—and still is to a somewhat lesser extent—a tendency for physicians to panic and deem themselves more ill equipped to handle poisoning than almost any other problem. In part, this was probably related to the fact that there are more poisons than diseases that may afflict humans and yet almost all medical training is focused on the diseases. At the same time, nothing has better public relations value than poisoning and poison control because (1) more than three-fourths of the episodes involve children, though adult suicides account for roughly 90% of the deaths; (2) these emergencies conjure up an aura of drama that has always surrounded poisoning; and (3) they have generally been handled so poorly in the past.

Hospitals found very early that nothing would get them public support more quickly than the stories and statistics that can be gleaned from a poison center and there are still very few problems from which you can get as much PR mileage. This, incidentally, is a practical point to emphasize with legislators when you're seeking their support for the improvement through centralization of the poison center functions. For the hospitals there was also the element of fear that because nearly everyone seemed to be getting into the act they were somehow not providing full services if they did not make themselves into poison centers.

The mystique about poisoning, while it frightened some physicians, had an attraction for many others because of the challenge of operating with little guidance in an unusually emergent and dramatic situation. It was a situation in which the lack of information and expertise was at once a drawback to all and a boon to some because it was relatively easy to be an expert in a field where so little was widely known and there were no recognized criteria for expertise. In my opinion, this had a lot to do with what I perceived to be disproportionately little real advancement—based on excellent research—in clinical toxicology until recent years when it finally began to be recognized as an endeavor worthy of the attention of good scientists. There is now an accreditation in medical toxicology, though it's not yet an "officially" recognized specialty partly because of the lack of an adequate training program for it.

Pitfalls for a poison center

The institution that provides poison center services at less than an optimal level—even allowing for *intentional* differences in the services offered—is contributing to a national problem. But more than that, and closer to home, it may do great harm to the patients and the public it serves—and to itself as well. While there still is a place for other than "master" poison centers, as dictated by geographic or other logistic considerations, there is no longer a place for the amateur or "fly-by-night" poison center. These institutions must recognize the potential medicolegal hazard, even though it can only be surmised at this point because it has not actually received the acid test in court. Now that clinical toxicology and poison center functions have become better defined and recognized, there is every reason to expect that institutions choosing to designate themselves as poison centers will be held to a standard of care beyond that to be expected of a similar hospital not so designated. I have no doubt that this issue will soon be tested in the courts and even less doubt about the outcome. I know of one case, still in litigation, in which a hospital was listed as a poison center by its state health department and the National Clearinghouse though the physician listed as director of the center denied any knowledge of the designation.

And quite apart from the threat of litigation and the underlying moral or ethical implications, the inconvenience of providing service that even *might* be marginal or unacceptable far outweighs any advantages. There are practically no poison centers that have any sources of support other than their own hospitals, much less serving to attract funding to the parent institution. And since they've lost much of their novelty, they usually don't even pay off anymore in PR when you really look at the costs and the efforts involved, unless the service that is being provided is truly adequate. There is nothing more burdensome than having to handle the informational calls or the extra patients—most with inconsequential ingestions—when there are no personnel specifically assigned to these tasks so that the ER intern or a busy nurse or pharmacist must take them on to the detriment of their major duties. Any notion that this may add to a training program or enhance the experience of the attending practitioners is nonsense if the cases are being handled by someone not really capable of teaching the subject, much less caring for the patients adequately.

Most important of all, of course, is the welfare of the patients. There is

continued on page 137

nothing more pathetic than the scene, so often observed in my travels, of someone handling an informational call who knows little more than the caller and passing out advice that either dangerously misleads when the problem is really serious or unnecessarily alarms when it's inconsequential. As just one example, a recent survey in Michigan indicated that fully half of the poison centers in the state advocated the use of the so-called universal antidote though it's well known to be entirely worthless.

The need for centralization

As I have said before, there can be different types of poison centers serving different functions and nothing I am about to say is intended to alter that. It is important, however, that at least the prescribed functions be carried out adequately. It is my view, shared by most of the leaders in the field, that the existence of a great number of centers not only makes it improbable that all of them should do an adequate job but also inhibits optimal operation of those centers that do have the capability.

Clearly what is needed is the development of a relatively small number of regional or master centers and a number, again relatively limited, of satellite, subregional, or secondary centers that can relate to and be served by the major centers. But this is not possible in the present climate where the meager available support goes mainly to individual hospitals that have neither the inclination nor the responsibility for servicing other than their own clientele. The major centers and at least the satellite ones must be funded from sources that will promote regional distribution of services. In a highly populated state, one or more major centers or satellite centers might be needed just to service its residents and then the funding would appropriately come from the state or, in some cases, even a populous county. Interstate centers should be federally funded.

The haphazard development of poison centers has numerous problems but I will discuss only a few that seem to be of special importance, particularly to the individual trying to effect change. In the first place, there's the axiom that output—the services provided by the center—can be no better than the input. Perhaps the most important input is collective experience and without it no real expertise can ever develop. By collective experience I mean accumulation of cases that present such an array of possible responses and problems that those treating the patients or handling the inquiries develop not only greater knowledge but also such intangibles as anticipatory skills and a "feel" for the various problems.

Collective experience is important even for relatively common toxicities because any one professional is otherwise likely to see only a handful of any particular kind of poisoning case in his or her entire career. But someone with experience in a good poison center can, for example, "smell" a bad or poorly responding aspirin overdose. For less common toxic episodes, experience is even more crucial and this applies not just to the real rarities. Phencyclidine poisoning, for example, is an important current problem not likely to be seen by the average practitioner—or certainly not more than once—while we've seen dozens of cases in the past few months. When it's an even rarer problem, such as the very serious paraquat poisoning, even a poison center is not likely to see enough cases to develop expertise unless it happens to be among the larger—or more rural, since this is a herbicide—centers. It's difficult enough for a center that fields dozens of calls a day to stay on top of everything likely to present itself; it's impossible for a center that receives only an occasional call—and some receive as few as one or two calls a week.

Adequate input also comes from taking optimal advantage of the opportunity to study the various types of poisoning that are presented. This requires not only accumulation of adequate numbers to make the findings of such a study significant but also an investigational expertise not possessed by the personnel of many centers—even if they had the time, equipment, and money to pursue these opportunities. This is not to say that extensive research is an integral part of the operation of *every* center but rather that an important aspect of centralization is that it provides enough cases for such studies to those centers equipped to carry them out. This means not only collecting additional information about well-known toxic problems but obtaining the earliest possible characterization of the problems and treatments of substances new to clinical toxicology so that information necessary for adequate treatment can be made available to all centers and to the medical profession at large as quickly as possible.

There is also the related issue of laboratory diagnosis, which I discussed last year (see EM, February 1977); it has more relevance to the adequacy of services than to input per se but I bring it up here because our ability to learn much about poisonings is inevitably limited unless we can quantify the severity of an overdose objectively —with blood or urine levels of the drug, for example.

Not every poison center needs a full-fledged clinical toxicologist and that's fortunate because the number of such experts is still small. A center can function adequately if it at least has ready access to a toxicologist – but there is a vicious cycle or two that must be interrupted before even simple access will be readily available to these centers.

First of all, a top-notch clinical

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toxicologist would be attracted only by a center that could provide sufficient clinical material and resources and, of course, only a major poison center could justify or afford him. But here we get into the chicken-or-the-egg problem: you can't get the personnel without the center and you can't develop such a center without the personnel.

Furthermore, the scarcity of trained toxicologists is perpetuated by the limited availability of centers in which adequate training can be offered. There are only a handful of training fellowships in clinical toxicology available throughout the entire country. But here again we have a cycle in that the programs cannot be developed without money and the money will not be appropriated unless the programs are available. We recently applied for a training grant for our new program here at Wayne State University, for example, and were told that we would have to prove the capability of this particular unit to provide adequate training before the funds could be given that would make such training possible!

In addition to clinical toxicology experts to run the major poison centers, we must have personnel with some expertise in fielding poisoning inquiries—and the time to devote to it—to staff the satellite centers. While not every type of center will need a full-time staff, the fact is that there are pitifully few centers now that have *any* personnel primarily concerned with poisoning, however badly they may be needed and can be justified by the volume of cases. Certainly, consultants can provide backup but the issue is who's to decide when they're needed—if they're called on nearly every case, they might as well answer the calls directly—and how is harm to be prevented when they are not called. The most important person actually is the one who answers the telephone; he or she should be able to devote full time to this task, someone who does not have to be sought when a frantic call comes in, who does not have duties more pressing than these potentially urgent emergencies, and who is trained enough to give adequate advice. Again it does little good to have a poison information service if the solution to all or most problems is referral of the caller to a physician or a hospital.

The sources of information now available to poison centers constitute one area of great improvement but utilization of many of these sources cannot be justified by centers that do not have a great enough volume of business and funding. There are various microfilm-microfiche systems, a number of texts on poisoning (see EM, November 1973, p. 287), manufacturers' data, medical journals, reprint files, card files available from the National Clearinghouse or set up by the centers themselves or other sources, and even on-line computer and communications capabilities among the various informational resources. Not every center needs all of these but the notion that a single system—even microfilm-microfiche—is the ultimate and needs no supplementation is also erroneous. While such a system may handle the bulk of the problems faced by those centers that can afford them, there is still a need for backup by master centers with more extensive informational resources and specialists with extensive expertise and experience in the field.

A poison center also needs coverage of specialties that are particularly relevant to poisoning problems, such as anesthesiology, endoscopy, and nephrology; such specialized techniques as hemodialysis and hemoperfusion are also particularly relevant, as are advanced life-support systems. And even a major medical center may not provide adequate backup if the special services and the individual specialists are not coordinated or do not have special experience in the treatment of poisonings.

There must also be adequate provisions for transporting patients, both from home to hospital and from hospital to major center. The development of emergency medical services programs has brought this need to the fore. Some such system should be an integral part of any poison center program but this can only follow a coordinated effort that includes some degree of centralization.

A very important aspect, particularly worthy of the attention of legislators and others who might be instrumental in obtaining necessary funding for regionalization programs, is the issue of containing the rising costs of medical care. There probably is no place where more health care costs could be eliminated than in the field of poison control. The number of cases that occur each year is not precisely known but it's certainly near a million at least and is estimated by some to run as high as 5 million or more. This is not to say that there are that many actual poisonings but rather that the question of exposure arises that often. The bulk of poisoning cases, in fact, are not of great consequence and do not require more than home treatment, if that. But this is a judgment that often can be made only by an expert and the more expert he is, the more secure he can be in deciding that no further measures or medical care is required. In my experience, poison centers that are really well manned can handle over 85% of their cases by advising on home measures alone—my own figure is over 90%—and only a small number of callers need to appear at a hospital or doctor's office. On the other hand, I would estimate that an inferior center probably refers closer to about 80% of its inquiries either to an emergency room or to a private physician. The costs of a visit to an emergency room have been estimated to be as high as

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$150 per visit but whatever estimate you wish to use for that or for a visit to a doctor's office—costs that often are not adequately covered by third-party carriers—it doesn't take much fancy arithmetic to determine what this represents in terms of potential cost-containment. Even after a patient is seen at a medical facility, the question of hospitalization often hinges on either the expertise of the available physicians or the adequacy of the laboratory diagnosis or both. Again, the experts admit far fewer patients, while the solution for the physician whose knowledge of poisoning is relatively limited and who cannot obtain adequate laboratory data is often to admit the patient for what turns out to be an unnecessary period of observation. Again, a sizable but unknown quantity of money could be saved here. Thus, a legislator can be told in all honesty that a well-conceived program of poison center regionalization could effect a medical cost-containment far exceeding the expense of the system. I can think of nothing more salable than a plan that will greatly improve medical care, reduce morbidity and mortality, and actually save money at the same time!

And finally, there's the important subject of prevention, which again can be implemented most effectively in a centralized poison control system. We need good public information and prevention programs, but these can be launched and adequately developed only by centers that have the necessary expertise and funding and serve a large enough public to make the effort worthwile. Cost-containment enters this picture in two ways: there is money to be saved by preventing poisonings in the first place, of course, and also by making prevention programs themselves more cost-effective. In part this latter goal can be achieved by better communication among the regional programs and some sharing of ideas and materials as well as personnel.

Although it is not the same as prevention efforts, follow-up of cases can make an important contribution if it includes efforts at preventing a repetition of the episode either in the same child or in other members of the family. I mention it here because these efforts can usually be carried out by the same people who do the public information and preventive education work. Needless to say, adequate follow-up is most important also in terms of gaining further knowledge of the problem. Another important function that will certainly be enhanced by both centralization and adequate follow-up is the gathering of statistics so that problems can be identified and any indicated public health measures taken.

There are probably other considerations that I could and perhaps should have brought up but these are the points that I feel need emphasis and have not always received as much as they should. □

The Senate
The Tenth Legislature
of the
State of Hawaii

HONOLULU, HAWAII

March 30, 1979

The Honorable Alan Cranston
United States Senate
Washington, D. C., 20510

Dear Senator Cranston:

Subject: S.497; Emergency Medical Services Systems

I wish to submit my comments in relation to and most supportive of the federal incentive in continuing Emergency Medical Services (EMS) systems development and implementation.

Over the past several years, Hawaii has been fortunate to have been the recipient of funding from diverse federal sources for EMS.

82% of Hawaii's population resides on Oahu. It has been significantly due to the availability and acquisition of federal funding that Oahu now has an excellent system of emergency patient care. The City and County of Honolulu (which comprises the major portion of Oahu) received funding under Title XII of the Public Health Services Act for four years. Upon the ineligibility of Honolulu for further funds from Title XII, the Hawaii State Legislature acted affirmatively to ensure the continuation of Oahu's EMS system.

The professional and technical experts of the Hawaii Medical Association (HMA) - Emergency Medical Services (EMS) Program have been the leading force in assisting in the implementation of Oahu's EMS system. The Legislature also acted to continue and to preserve the integrity of this meritorious program. The outcome of the Legislature's deliberations on emergency patient care was Act 148, Session Laws of Hawaii 1978. The Governor supported this incentive of the Legislature and in public ceremony signed it into law on June 1, 1978. (A copy of Act 148 as well as related material is attached to this letter for your information.)

Hawaii's Act 148 emulates Title XII as the systems concept is elaborated upon and the 15 EMS components are retained. Additionally, specific provisions are constructed within the Act to ensure the much needed involvement of the HMA - EMS Program. (It was this program that expended the major portion of Title XII federal funding granted to the City and County of Honolulu.)

The Hawaii State Legislature chose the system's approach, relying greatly on federal EMS legislation, as it was found that there was compelling reason to protect and preserve the health of the people of Hawaii through a fully integrated, cohesive network of interactive, related components. Furthermore, Act 148 established a single State Comprehensive EMS system.

Should further federal funding remain available, the expressed executive and legislative posture is that this much-needed federal funding be sought for the yet unfunded localities in the remainder of the State of Hawaii. Accordingly, I support your attempts to ensure the continued federal incentive in regard to EMS systems, as I understand is the intent of S. 497.

I wish also to share with you the following areas of concern and perceived need upon which the Hawaii State Legislature deliberated in its last session and which might be helpful in your deliberations:

1. The Hawaii State Legislature chose a medical model. By testimony and other sources of evidence, the Legislature ascertained thatthe emergency health care needs of Hawaii's citizens would be best served through an EMS system based upon a medical model. Although lead agency status was fixed in the Hawaii State Departmet of Health, Act 148 provides for a technical advisory committee. This committee is composed of medical and allied health professionals, consumers, and State officials. Our statute requires of the committee, either of its own initiative or at the Health Department request, that it performs certain technical advisory functions in relation to virtually every aspect of the State EMS system. The certification and regulation of

direct providers of pre-hospital emergency medical care is placed under the purview of the Hawaii State Board of Medical Examiners. (The enabling statute permitting certain advanced life support personnel - ambulance paramedics - to engage in acts which constitute the practice of medicine is within the same statute that authorizes the functions of the board. Liability for the medical acts of the ambulance paramedics is fixed with their directing and supervising physicians. Thus, ambulance technician's standards of training, their regulation and certification is housed within the purview and discretion of physicians.)

Also, the Hawaii Medical Association, the State's medical society has a most tangible and significant role in the State's EMS system's further development and implementation.

Basically, areas of EMS system's operations, technical assistance, consultation, manpower training and education, policy, and, to a certain extent, financing are deeply affected by the level of understanding, support, and commitment which the professional medical community has of the system. Accordingly, I would recommend that federal legislation might address how the medical communities in the several states should play a role in EMS systems' development for their respective localities.

2. State accountability and federal accountability for the EMS system.

I understand that there is a current administration incentive to discontinue or phase out EMS systems funding from the federal level.

Other than moral and statutory support, the most tangible area of the commitment of a state to its EMS system is in the allocation of public funds for the support of the various aspects of the system. Currently, the Hawaii State Legislature is considering the general fund allotment to be made with respect to Hawaii's EMS. Hawaii abided with that certain provision in Title XII which indicated system's continuation following the expiration of federal funds. This session we will be appropriating general funds to the point that the per capita tax "burden" will approximate $6.00 to $8.00. However, as you are aware there are constraints affecting the several states, as much as, if not more than the federal government with respect to budgetary allocations.

Accordingly, the continued availability of EMS system federal funds will certainly enable further systems development in several states. Getting closer to home, Hawaii hopes to submit for a grant even though we have appropriated and will probably continue to appropriate local public monies for system continuation and development in Hawaii.

The apparent massiveness of the endeavor, the implementation of an EMS system, involves a good deal of capital investment but the returns in terms of the prevention of needless death and patient suffering are worth the capital outlays.

3. Federal technical assistance and consultation. Act 148 probably would not have been constructed without the valued input of federal administration officials. It would be appreciated if you would give some type of consideration to providing for means of on-going liaison between the Department of Health, Education, and Welfare officials and the several states. I am principally concerned that certain areas of consultation and technical assistance be made available to the several states whereby a sharing of concepts, techniques, procedures, for the improvement of policy and operational aspects of EMS systems and subsystems be available. We, in Hawaii at least, are not concerned with "re-inventing the wheel." The past sharing of information with HEW officials and their facilitation of our communication with other locales was helpful in giving us a much-needed perspective.

4. MEDICAID/MEDICARE reimbursement. An area that possibly needs evaluation is the current scheme of reimbursement for ambulance services for medically indigent persons under MEDICAID/MEDICARE.

In Hawaii, since 1949, a certain statutory provision has been in operation that emergency ambulances services be provided without charge. This statute was repealed last session. Now Hawaii is confronted with charging for services (charges for services will be placed within the general fund) in the hope that, eventually, redirected revenues from charges will offset a great deal of cost associated with the EMS system.

The estimated local cost for each advanced life support ambulance call is about $200. Where there is certain local input with respect to determination of reimbursement levels, federal oversight would also seem to be highly important in this regard.

One significant aspect where federal oversight would seem imperative would be in the assurance that reasonable reimbursement shall be provided for services rendered in the delivery of ambulance services to the medically indigent. A certain degree of federal control of the quality and type of services delivered by ambulance could also be exercised.

Thank you for your consideration of my concerns about emergency patient care.

Sincerely yours,

Patricia Saiki

Patricia Saiki
State Senator

Attachments - 5
1. An Emergency Medical Services System for the the State of Hawaii
2. Act 148
3. Act 153
4. SR No. 170
5. SR No. 194

Please note: Additional material submitted by State Senator Patricia Saiki is retained in the files of the Subcommittee.

AN EMERGENCY MEDICAL SERVICES SYSTEM FOR THE STATE OF HAWAII

The health and well-being of the people is a matter of compelling interest to the State of Hawaii, to preserve and protect the health of the people. A system designed to reduce medical emergency deaths, injuries, and permanent long-term disability through the implementation of a fully integrated, cohesive network of components is the most efficacious modality of assuring the provision of emergency medical services consistent with the needs of the people.

The national prominence earned by the Emergency Medical Services project undertaken in conjunction with the Hawaii Medical Association has contributed significantly to the augmentation of the health resources of the State, and was secured primarily through the utilization of federal funding available for the development and implementation of advanced emergency medical services systems. The project, however, did not extend to the entire State of Hawaii, so that the advanced techniques, special resources, and particular expertise which have resulted from the project are not uniformly available to all of Hawaii's people. Moreover, the project is no longer eligible for continued funding under the Department of Health, Education, and Welfare, and must seek continuation within the State of Hawaii through other resources and means.

Accordingly, to ensure the health and well-being of the people of the State of Hawaii, it is necessary and desirable to establish a statewide emergency medical services system, which would not only continue and build on the significant strides achieved by the Hawaii Medical Association/Emergency Medical Services project, but which would also expand the scope of such advanced emergency medical services throughout the State. In this manner, through appropriate legislation, the emergency medical services needs of the people can be met not merely minimally, but at a level consistent with the best emergency medical services programs available.

Hawaii's pioneering approach to prepaid health care for the people plays a significant part in enabling the State of Hawaii to meet the emergency health needs of the people, for due to the mandated prepaid health care coverage, 95 per cent of the people of the State will not have to look to or use additional resources not already available to them to meet the needs of the advanced emergency medical services envisioned for the State. This fact not only facilitates, but in fact demands that the best emergency medical services be made available to the people, as a further positive reflection of the serious and vigilant position taken by the State in the interest of the health of the people.

Accordingly, a package of measures for legislative consideration has been introduced, to establish an emergency medical services system for the State of Hawaii to assure the existence and the continued advancement of the most appropriate and efficacious modalities of emergency medical services to serve the needs of the people.

The establishment of an emergency medical services system for the State of Hawaii necessitates various types of legislative actions:

To establish the framework and parameters of emergency medical services, a state system is proposed. The system administered by the Department of Health, would provide for optional assumption by the counties of the day-to-day and other operational facets of emergency medical services, but such services would be determined in a manner to assure continuity of resources, appropriateness of service levels, and the availability of specialized technical consultation and assistance to meet specific county needs, while implementing levels of service consistent with advanced emergency medical services techniques and resources. Counties therefore may operate emergency medical services, and in doing so, will be responsible for the training of their first responders--the police, firefighters and allied personnel who frequently are the first to be in contact with an emergency patient.

The state system proposed provides for mandatory utilization of the special technical and professional expertise which have developed in the State as a result of the Hawaii Medical Association/ Emergency Medical Services project, through an advisory committee with specific duties to ensure that the state system will not only be premised on the existence of such valuable expertise, but which will in fact utilize, at a pragmatic level, that particular expertise in the development and maintenance of the state system. The advisory committee is required to include persons from all counties, thus enabling and assuring neighbor islands input. Thus, all emergency medical services of the State and the counties will be guided by highly specialized and knowledgeable individuals, to ensure that the levels and types of service required by the state system constitute an appropriate approach to meeting the emergency medical services needs of the people. The needs and input of the people are also assured.

Basic components of the state system proposed recognize the varied efforts which will be required to provide a strong system of emergency medical services.

Specific duties are prescribed in relation to the regulation of ambulances, training of personnel, collection and evaluation of data in relation to the state system, independent evaluation of the system, disaster/emergency coordination, communications, and public information and education. The state system

proposed also would require that services, in relation to the preparation of grant applications, and grant administration and management to assist in the development and expansion of emergency medical services in Hawaii, particularly in the near future for the neighbor islands, will be available.

The most profound impact of the state system in terms of the quality of emergency medical services in the State will be felt by the neighbor islands, where the levels of emergency medical sercies will be mandated at significantly higher levels than currently exist.

The state system would, therefore, assure continuity for the present emergency medical service resources in the State, and provides an affirmative framework for the development of advanced services on a statewide basis.

The establishment of the proposed system would necessitate the location of the emergency medical services functions at the state level, so that all emergency medical services undertaken by the State or the counties will be implemented through the proposed system to assure uniformity of purpose and resources. The cost factors of emergency ambulance services, moreover, must similarly be placed within the purview of the state system, to ensure the maximum utilization of all available existing health resources of the people. A measure is proposed to eliminate the disparate requirement of emergency medical services by the counties, and, in addition, to eliminate the emergency ambulance cost law, so that the state system can function as envisioned.

To ensure the availability and utilization of emergency ambulance personnel who are appropriately trained, and who are competent in their specialized functions, vital components of any emergency medical services system, the certification of such personnel is proposed. The certification function is placed with the Board of Medical Examiners because of the medical services functions which such personnel are required to perform. The certification of the personnel is proposed to be premised upon training and related qualifications, and the continued certification of such personnel is proposed to be subject to continuing education to maintain desirable levels of overall competence and to update knowledge and skills. Certification will ensure an overall high level of emergency medical services and will work to preserve the health and well-being of the people served by emergency ambulance services.

A necessary step in the development of advanced emergency medical services on a statewide basis is the augmentation of the communications system, particularly in terms of the public's access to emergency resources, as well as within the system itself. The nationally recognized "911" emergency resource number should be expanded to parts of the State currently without such an emergency resource. As time is a primary consideration in the amelioration of emergencies, the "911" system is a vital segment of an emergency medical services system for the State of Hawaii. The Medicom system is an additional invaluable aid to emergency medical services, for it is the communications system utilized between a physician stationed at a central point and the emergency medical services paramedic who provides direct care to a patient at the site of the emergency, and during transport of the patient to a medical facility pursuant to continuing directions from the physician. The utilization of paramedics who possess specific medical services skills requires that a reliable communications system be available so that patients can get certain types and levels of care prior to arriving at a facility and being treated by a physician, increasing the benefit of emergency medical services to the patient. The critical nature of the time element involved in getting a patient to a physician is therefore minimized by the application of medical treatment by the paramedic as determined appropriate by a physician receiving and monitoring information of the patient's condition. The appropriation of funds for the completion and maintenance of the Medicom system, and for the implementation of the "911" system on Maui and Kauai, are accordingly proposed.

An additional but necessary phase of implementing advanced emergency medical services throughout the State requires the continuation of ongoing training of paramedic personnel for the neighbor islands. Such training is not available on the neighbor islands, yet to assure the expedient realization of the state system proposed, training for neighbor island personnel should be continued. There currently are no funds available for the transportation and maintenance of such personnel to participate in Oahu-based training, so funds for this purpose are proposed.

The state system proposed to be established for emergency medical services is designed to have an effective date of July 1, 1979, to provide for sufficient time to plan its implementation. The exigencies of the emergency health needs of the people demand,

however, that the ongoing activities of the Hawaii Medical Association/Emergency Medical Services program, and the momentum of the efforts to augment the emergency medical services resources and expertise within the State of Hawaii must not be allowed to cease. Continued funding for those activities is proposed, to cover the period between the cessation of federal funding, and the effectuation of the proposed state system, which will provide for such activities thereafter.

Adjunct to the establishment of a state system of emergency medical services for the people of the State of Hawaii, it is necessary to realize that it is not only the development of formal emergency medical care systems that will contribute to assuring the health and well-being of the people, but that there are various additional factors which can significantly and positively affect the implications of health emergencies. One such approach is the training of the general public in cardiopulmonary resuscitation, a simple and inexpensive technique which has been statistically shown to be 90 per cent successful if initiated within the first minute of a person's collapse. The striking success rate provides profound evidence of the importance of the training of the general public in meeting health emergencies, to act prior to the arrival of emergency medical resources. It is therefore proposed that the State and the counties be requested to encourage the people of the State, and in particular, government employees involved in the safety of the public, to be trained in cardiopulmonary resuscitation.

A final proposal is the identification and collection of Hawaii statutes relating to emergency health care, for further review and study to determine any conflicting provisions, to ensure uniformity of statutory approach, and to facilitate the state system and the various component parts proposed therefor. It is recommended, thus, that the Revisor of Statutes be requested to identify and collect Hawaii laws relating to emergency health care, and to report to the legislature on amendments and additions which may be desirable to clarify and improve existing laws.

The package of measures prescribed above is designed to provide a reorientation to emergency medical services in the State, to optimize the value of unique expertise and experience in such services, and to provide for the further maintenance of the health of the people of the State of Hawaii. The measures collectively propose an emergency medical services system for the State of Hawaii.

WILLIAM S. COHEN
MAINE

United States Senate
WASHINGTON, D.C. 20510

March 16, 1979

Senator Alan Cranston
229 Russell Senate Office Building
Washington, D.C. 20510

Dear Alan:

Enclosed please find correspondence from Dr. H. Alan Hume in support of the Emergency Mecical Services program. I hope it will be helpful to you during Subcommittee consideration of legislation to extend the program.

With best wishes, I am,

Sincerely,

William S. Cohen
United States Senator

WSC/cfh
Enclosure

MEDICAL CARE DEVELOPMENT, INC.

295 WATER STREET AUGUSTA, MAINE 04330 207/622-7566

March 7, 1979

The Honorable William S. Cohen
1251 Dirksen Senate Office Building
Washington, D. C. 20510

Dear Senator Cohen:

The EMS Act of 1973 as amended in 1976 is scheduled for renewal during 1979. This Act mandates a systems approach to the progressive development of emergency medical services in 300 EMS regions nationwide and provides Federal dollars to upgrade training, vehicles, equipment, and other EMS resources, including information feedback mechanisms, for the purpose of improving patient care.

The national program to date has funded 429 grants in the amount of $146.8 million to 281 active regions. In 1978, 96 regions were funded at the planning level, 118 at the basic life support level, and 57 at the advanced life support level. Seventeen regions have completed eligibility.

Maine, which has five EMS regions, has been fortunate to receive over 2.8 million Federal DHEW EMS dollars over the past three years. During this time, the Kennebec Valley Region (Kennebec and Somerset Counties) has completed the four year funding cycle and has implemented advanced life support services in 75% of the region. The Southern Maine Region (Greater Portland, Bath, Brunswick, and Rockland) is completing its second year of implementation of basic life support. The Tri-County and Northeast Maine Regions are completing their first year of initial implementation of basic life support services. It is hoped that during fiscal year 1980, an additional one million dollars will be awarded to the State for continued development of emergency medical services.

All Maine citizens are at risk to suffer preventable mortality and unnecessary morbidity caused by acute illness and injuries. Accidents are the fourth leading cause of death in the State of Maine. A major source of trauma Statewide is highway accidents. Although the injury rate from these accidents has remained fairly constant because of the increased number of licensed drivers each year, the total number of injuries has increased. In 1977, 13,298 persons were injured, 3,632

seriously enough to be classified by the State Police as the most serious (Type A). An initial study of this group indicates that approximately 13% of the transported victims were admitted to hospitals and 72% of these admissions involved a head injury. Thirty-two percent of the head injuries were admitted to facilities with a neurosurgical team available 24 hours a day. Eleven of the head injuries were transported to more appropriate facilities after initial stabilization in smaller institutions.

You or a loved one may be a victim of cardiac problems. The probability of a successful patient outcome increases significantly if CPR is administered within the first four minutes of symptom onset. The EMS Act has provided both the impetus and some of the funds to train 5% of Maine's population in CPR. An additional 5% or more will be trained annually if the EMS Act is extended. Eventually these 100,000 persons will serve as first responders supported by a tiered response of basic and advanced ambulance personnel to assure accessibility of advanced cardiac life support services in a timely manner.

Your support of the extension of this legislation is crucial to the success and the ultimate ability of health care providers in the State of Maine to provide appropriate emergency medical services to residents and nonresidents at all times as needed.

The emergency medical services legislation has a cost containment focus which provides for the categorization of facilities capability level to insure the appropriate transfer and treatment of patients according to consensus protocols in a timely manner. This approach eliminates the need for unnecessary capital expenditures for resources which are difficult to maintain because of minimal patient load and limited financial resources.

Enclosed is a fact sheet describing the current level of development of Maine's resources. An additional fact sheet has been provided which uses national data to demonstrate the effectiveness of the EMS program. We encourage you to circulate this information to Senator Edward Kennedy, the Chairman of the Subcommittee on Health, and Senator Alan Cranston who will conduct hearings on this legislation.

Please call me if you have any questions or wish additional information about this program.

Sincerely,

H Alan Hume MD

H. Alan Hume, M.D.
Director, Emergency Medical Services Project

HAH:al

Enclosure

STATEWIDE FACTS - 1978

Basic Life Support services (non invasive first aid)

- available to 95-100% of the population statewide

Advanced Life Support Services (MAST trousers or invasive first aid)

- available to 75% of Kennebec Valley residents
  37% of Southern Maine residents, 5% of Northeast Maine residents

- being developed in the other two regions

Citizens trained in CPR

- less than 5% Statewide

Public Safety Officials trained in crash injury management

- less than 30% Statewide

Ambulance personnel trained as EMT's

- 68% of personnel in Kennebec Valley and approximately 50%
  elsewhere in the state

EMT's trained to advanced levels (not paramedics)

- Approximately 30% in Kennebec Valley and Southern Maine

- Being trained in the other three regions

Ambulance runs staffed by EMT's

- Over 82% of the runs Statewide

Average response times

- 8 minutes in urban areas

- 23 minutes in rural areas

Utilization of Statewide run report

- 91% of services covering about 85% of runs Statewide

Availability of 911

- 43% of Kennebec Valley residents

- Less than 3% of rest of state

Physicians and Nurses certified in ACLS

- 20% of ED physicians

- 53% of ED nurses

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CRITICAL CARE FACTS

All residents are at risk. The demand population includes the following:

- 16,331 Maine residents were admitted for all trauma in 1976.
- 473* died from accidents, 227** of which were automobile accidents. (1976)
- 4,088* residents died of heart disease and 13,996 were admitted. 21% of this group suffered MI's (1976).
- 5,918 were admitted because of behavioral problems. (acute psychiatric, alcohol and drug abuse). This number may be understated because of the existence of multiple problems or the reluctance to record information likely to be a stigma to the patient (1976).
- 3,470 poisoning calls were made to the Poison Control Center (1977).
- 115* neonatal deaths and 2,113 admissions were for selected newborn conditions. (1976)

* Division of Research and Vital Records, 1978.

** Maine State Police, 1978.

SYNOPSIS OF EMS FACTS AND BENEFITS

1. Dollar value of citizen participation in EMT training
   Example: North Carolina (25,000 EMTs - 70%+ volunteer)
   Percentage of total population: One in every 200 citizens
   25,000 x 81 classroom and clinical training hours = 2,025,000
   2,025,000 hours x $3.00 per hour = $6,075,000.
   25 round trips per trainee x 14 mi per trip x 17¢ = $1,487,500.
   $6,075,000. + $1,487,500. = $7,562,500.

2. Dollar value of trainee participation in EMT training
   Example: USA (262,000 EMTs - est. 60% volunteer)
   Percentage of total population: One in 840 citizens
   262,000 x 81 classroom and clinical trg hrs = 21,222,000
   21,222,000 hrs x $3.00 per hour = $63,666,000.
   25 rd trips per trainee x 14 mi per trip x 17¢ =.$15,589,000.
   $63,666,000. + $15,589,000. = $79,255,000.

3. Dollar value of citizen participation in CPR training
   Example: USA (12 million + CPR-trained persons)
   12 million x 4 hrs average training time = 48 million hours
   48 million hours x $3.00 per hour = $144,000,000.
   One round trip per trainee x 14 mi x 17¢ = $28,560,000.
   $144,000,000. + $28,560,000. = $172,560,000.

4. Tax revenue benefits - ALS in suburban community
   Population base: 600,000
   Total saves per year per 10,000 population: 5
   Long-term survival rate: 30%
   Average age of survivors: 61 (anticipated working life: 4 yrs)
   Annual fed. inc. tax (based on $20,000 ann. tax. inc.): $3,484.
   5 x 60 x .30 x 4 x $3,484 = $1,254,240.

5. Tax revenue benefits - BLS in rural state
   Example: Wyoming (1977)
   Total saves from death due to highway trauma: 147
   Average age of survivors: 30 (estimated working life: 35 yrs)
   Estimated percent returning to productive life: 50% (73)
   Annual fed. inc. tax (based on $20,000 ann. tax inc.): $3,484.
   73 x 35 x $3,484 = $8,901,620.

6. Per-capita cost per life saved - CPR/BLS/ALS in suburban community
   Population base: 600,000
   Total saves per year (5 per 10,000 pop.) = 300
   Cost of system operation: $1,650,000 per year (est.)
   Cost per save: $1,650,000/300 = $5,500
   Per-capita cost per save: $5,500/600,000 = .009¢

7. Anticipated savings per spinal cord patient in regional system
   Example: New Jersey (30 cases per yr per million pop. = 210)
   Reference: Midwest Spinal Cord Injury Care System (Chicago)
   Demonstrated saving per patient: $6,600.
   Application to N.J.: 210 x $6,600 = $1,386,000 savings per yr.

PRINTED AS A PUBLIC SERVICE BY THE NATIONAL COUNCIL FOR EMERGENCY MEDICAL SERVICES.

"STAR OF LIFE"

Wyoming Ambulance And Emergency Medical Services Association

P. O. BOX 1510
ROCK SPRINGS, WYOMING 82901

March 28, 1979

Senator Edward Kennedy
c/o U.S. Senate Building
Washington, D.C. 20510

Dear Senator Kennedy:

The Wyoming Ambulance and Emergency Medical Services Association is in complete support of the S. 495 ammendment, for the extension of Emergency Medical Services, which would continue to authorize E.M.S. programs for three years at current appropriation levels and a two year phaze out program.

The State of Wyoming will not be fully completed with its E.M.S. program until 1985. Much as been accomplished in the area of prehospital care, but a great deal remains to be done, particularly for the full completion of an already started E.M.S. System. With the rapid advances in E.M.S. today, specific attention must be paid to this extremely vital area.

Your continued support and recognition of Emergency Medical Services is greatly appreciated.

Sincerely,

David L. Jelaca

David L. Jelaca
President, WAEMSA

SIERRA-SACRAMENTO VALLEY EMERGENCY MEDICAL SERVICES AGENCY
827 7th STREET SACRAMENTO CALIFORNIA 95814
PHONE (916) 440-6232

April 19, 1979

Senator Allan Cranston
727 Russell Building
Washington, D.C. 20510

Attention: Louise Ringwald

Dear Senator Cranston:

Enclosed for your information is an issue paper developed by State, Regional and County EMS Administration relative to the EMS Act.

It is our hope that this opinion can be entered into the record of discussions currently being held.

I would particularly like to call your attention to the Rural Regional Administrative Issue on pp 3. There is, in my opinion, a high probability that rural regional programs, which have been developed and are functioning under Title XII, will deteriorate without some continued federal assistance. It would be tragic if the substantial federal investment and existing program services fell by the way side because of the unavailability of funds.

Sincerely

George V. Moorhead

GEORGE V. MOORHEAD
Regional Administrator

GVM:ew
Encl.

ISSUES AND SUGGESTIONS RELATIVE TO AMENDMENTS AND TITLE XII PHS ACT:

"THE EMERGENCY MEDICAL SERVICES ACT OF 1973" (42 USC 300d etal)

Developed by State, Regional, and County EMS Administrators

March 1979

FORWARD

Since 1974 when federal support for regional Emergency Medical Services systems began, we have witnessed valuable results from a strong, central, positive force coordinating medical resources and technology for emergency patients throughout this country. The EMS problem was identified in 1966 by the National Research Council in "Accidental Death and Disability: The Neglected Disease of Modern Society," and is now an accepted solvable nationwide medical care issue.

Previous local, state, and federal initiatives addressed single aspects of EMS or those parts of operations that seemed to represent the most acute and obvious need. It is now apparent that an EMS system includes all components, defined by federal program, and is no more effective than its weakest links. Further development of one or two strong links does not make a stronger chain and will not create a better system of care for critically ill or injured victims. The passage of the EMSS Act of 1973 provides an opportunity to establish priorities for emergency medical care at the local, regional, state, and national levels of our society, and to foster development of a comprehensive and sound system approach that affects all communities but especially the rural, the economically depressed, and the medically underserved. EMS is a total population services system. It is available to everyone around the clock, whether at home or away, and is totally responsive for all emergency medical conditions. It provides access for all in need and developes prearranged patient care pathways for advanced treatment and rehabilitation (primary-secondary-tertiary care).

EMS systems have shown that interdisciplinary programs to meet needs of certain target group such as trauma, cardiac, burn pediatrics, poison, and the like, can be coordinated regionwide. In these programs, categorical services are not running in competition. Each specific clinical discipline has access to and utilizes the system.

Amendments to the Emergency Medical Services Act of 1973 (Title XII, USPHS) have been proposed for congressional action this spring. Senator Cranston and Congressman Molohan propose extending the present Act for three (3) years now and then another three (3) years at an appropriate time in the future. Specific EMS research components are eliminated and funding authorizations scaled down in line with prior appropriations.

Amendments to continue the federal program are number one (1) priority for California and strongly supported.

However, much more can and should be accomplished in this legislation. There is an urgent need to:

a) Encourage development of effective lead State Agencies for EMS system development and maintenance;

b) Enhance the viability of rural administrative organizations after federal grants expire;

c) Focus system attention on development of specific arrangements to provide care for trauma and poisoning patients.

These issues have come into focus as the result of the lessons learned over the years in development of EMS systems under federal guidelines. Now is the time to address these issues.

THE STATE LEAD AGENCY ISSUE:

EMS systems are products of finely tuned organizational interrelationships at federal, state, and local levels. The State has a key role in development, maintenance, and advancement of local systems. The State role has been almost ignored in the past and it now requires strengthening and enhancement.

Whatever its structure, the local EMS system management organization must have a secure financial base, if it is to provide those system elements--such as administration, dispatching, communications, and training--that are not usually covered by user charges; it must have the authority to control the use of emergency ambulances in its service area; and it must have the ability to effect improvements in system components. The State must actively participate in the financing of these organizations and assist exercise of local controls for statewide program balance.

State authority over Medicaid programs is an important factor in that initial planning for EMS systems must recognize and deal with the need for funding beyond the developmental stage. An effort should be made, locally and nationally, to revise third-party insurance coverage to include reasonable costs of EMS system operation.

To protect the public, all states should enact comprehensive legislation assuring the basic quality of ambulance services, and this should apply equally to all ambulance providers, no matter how organized, managed, or financed. The development of advanced life support programs should be facilitated through the enactment of flexible legislation that permits paramedics to function under remote supervision by physicians (or specially trained nurses) as part of carefully monitored and evaluated programs. Such legislation should include the designation of a lead agency as having authority to set standards and adopt regulations, the provision for statewide and regional EMS advisory councils, and the appropriation of adequate funds to enforce such standards.

Other major areas requiring a lead state agency are in evaluation of EMS systems, hospital categorization, and inter-regional patient transfer arrangements.

Regional EMS planning should include establishment of arrangements with hospitals outside the EMS service area for specialized services not available in the area with state lead agency assistance and guidance.

State and regional EMS authorities should seek to develop service trade-offs among hospitals to offset the perceived economic threat of categorization.

The lead state EMS agency assists regions in preparing special inter-regional and interstate critical care plans.

A lead state agency for EMS is necessary to assist continuation of regional projects after federal grants expire and to assure program balance within the State so that areas, ordinarily unable to develop viable application, become special targets for state and federal assistance.

The lead state EMS agency should assist in replanning systems in regions where planning has not produced a system program and in which the EMS plan is dated and

of limited usefulness after a minimum of four (4) years inactivity. In such situations, the State lead EMS agency should designate the region a "hardship area" and assist the community develop new regional organization. This organization should be able to apply for another 1202(1) planning grant.

The lead state EMS agency should report the State's entire EMS budget, both revenue and expenditure and assign priority for use of all new federal, state, and other assistance. The State lead agency budget should be annually reported to the Secretary of the Department of Health, Education, and Welfare, and the Secretary should report the entire nation's budget to the Congress annually. The State's analysis of needs and priorities should also be annually reported to the Secretary and Congress, and through the Secretary to Health Services Agencies.

All related EMS systems grant activities of federal and private agencies should be reviewed by the State lead EMS agency. No DHEW or National Highway Traffic and Safety Administration (NHTSA) EMS system grant should be awarded over the objection of the State lead EMS agency.

The State lead EMS agency should develop a process that completes a statewide EMS plan which is used by both DHEW and Department of Transportation (DOT). The plan is actually an integration of regional operational plans into a statewide document.

A representative, selected from among state lead agency directors should be added to the federal interagency committee membership with the expressed duty to communicate and otherwise provide the council of advise of all state directors.

State lead EMS agency should review all federal guidelines before federal register procedures of adoption occur.

Whereas a lead state agency is needed, it need not require substantial direct federal support. State governments should be strongly encouraged to enact legislation to form or assign lead state EMS agency authority and responsibility.

THE RURAL REGIONAL ADMINISTRATION ISSUE:

Rural regions have a special problem with administrative funding after federal EMS grants are completed. The State lead agency assumes a significant role in rural administrative maintenance, but federal recognition of the problem and assistance in its solution is also necessary.

Rural regions in California are both large in area and meager in local financial capacity for health services. California enacted Proposition 13 which severly limits local tax support. The rural issue is simply a funding problem. Proposition 13 is new to California; many other states have similar enactments and problems. Continued federal assistance is necessary, especially where the regional agency does not have an operational activity that generates support. It is suggested that shared federal support be continued for two (2) years after 1204 applicants become ineligible for regional administrative function maintenance only, and that states also provide a percentage of assistance. This federal assistance should not be prohibited from a Health Services Agency organization that may take over the regional EMS agency since these EMS regional agencies may become appropriately part of HSAs.

THE TRAUMA INITIATIVE ISSUE:

Trauma is still the leading killer of children, young adults, and the third leading killer of all Americans. There are more than 100,000 trauma deaths and 11 million citizens are disabled each year. Regional trauma systems have demonstrated decreases in mortality rates up to 50 percent. The American Trauma Society estimates that 20,000-40,000 lives can be saved each year, and annual savings could amount to hundred of millions of dollars in medical costs, insurance and long-term care.

Trauma is a complex problem, comprehensive trauma systems are major undertakings for regional communities and involve an extremely wide spectrum of health and public safety providers. Unlike cancer and heart disease where further progress now depends on fundamental research advances in trauma require only organization of all community medical care agencies into a system for emergency health care delivery. Much of the basic system is already in place; there is now an obvious need for the development of high quality trauma systems.

The federal program of support for development of trauma care would provide enhancement of selected existing trauma centers throughout the nation. This enhancement assures an entire multi-state (DHEW) region with a predictable capacity to provide high quality trauma care and to train trauma professionals and paraprofessionals. The centers also study in depth their own regional trauma service programs and analyze their impact on patient care, survival, rehabilitation and costs. The centers conduct clinical research on diagnosis, treatment and prevention of traumatic injuries; conduct epidemiologic studies of various traumatic injury groups and provide public education to enhance appropriate understanding and use of existing systems. A trauma program application for federal funding must be based on a statewide trauma service plan which is adopted by the lead state EMS agency and conforms to national standards in program guidelines. The funding for this program should be $1,000,000 per year/per center and developed in at least three (3) centers in the nation. Without a state lead agency and plan, DHEW may act independently without prejudice.

THE POISON CONTROL CENTER INITIATIVE ISSUE:

Each year there are an estimated 10 million poisoning in this country. This number is continually increasing as new drugs, household and industrial products present a growing hazard to our citizens.

Poisonings are the fifth most frequent cause of accidental death. Eighty-five percent of all cases involve children, which makes poisoning the most frequent pediatric emergency; the remaining 15 percent are intentional or industrial adult poisonings and result in over 5,000 deaths per year.

Regional poison centers, properly organized into a system of care, can reduce mortality and morbidity. Regional centers service large populations (2-4 million) and provide consumer access and information about accidental ingestions of drugs and other potentially hazardous agents. Major regional poison control centers receive up to 40-60 thousand consumer inquiries per year. Of these poison calls, 85 percent are managed effectively at home, over the telephone, and thereby prevent inappropriate utilization of expensive emergency department and hospital health care resources. These centers provide consultation for physicians and other medical

personnel in the region so that they, in turn, provide expert care appropriate to the patient. Regional centers have developed data bases from which public education, professional training and accident prevention programs are developed.

The operational cost for a regional poison control center is approximately $250,000 per year. These costs when averaged across the community are negligible - especially when compared to the health care savings made possible by home intervention, early in the phase of poisonings.

The major regional poison centers are returning to the community these savings at a rate far above their operational costs. A national plan calls for some 60-70 regional poison information and control centers in order to provide optimal poison care for the nation.

The Poison Control Center (PCC) initiative envisions a federal program to assure complete development and stabilization of fully operational PCC's for the entire nation. The State lead EMS agency adopts a state PCC standard which is consistent with standards and assures a statewide service plan. The State lead EMS agency applies for funding for 1/3 of PCC program needs the first year, adding 1/3's in each of the next two (2) years. Funding should be shared by federal and state/-local resources. Each center requires approximately $250,000 per year in operational funding for public and professional information with follow-up information protocols, community prevention programs, professional outreach training and teaching programs and research studies. Funding, should begin with 20 centers in the nation receiving 50 percent federal funding in the first year; 20 more receive 50 percent funding in the second year and 20 more in the third year. During the second year, the initial 20 continue to receive 50 percent funding and in the third year only 25 percent funding. The same decreased federal cost sharing pattern is established for second and third generation programs. This funding is used to enhance programs already developed as well as assist establishment of new and urgently needed programs. The State is allowed to subvent no more than 10 percent administrative costs for any PCC application, notwithstanding any other DHEW or other applicable federal agreements. The state applications are encouraged where regional needs are best organized on that basis. Where no lead state agency and plan exists, DHEW may act independently without prejudice.

SUMMARY:

Regional EMS systems activities with their coordination of established medical services and public safety efforts, brings the emergency medical care program to an interface with community service activities previously outside the scope of established medical practice. An additional result of the regional EMS system effort has been demonstration that other essential nonemergency health services and programs can be patterned after the EMS model on a geographic and service demand basis. Some experience already suggests that programs such as blood, organ transplantation, and rehabilitation services as well as quality assurance programs can be enhanced by regional systems models.

The EMS Act Act of 1973 spurred great progress in system development throughout the nation. Continuation of the Act is of paramount importance. The lesson learned during development show clearly future directions should be taken:

1. The State lead agency role must be fully developed;

2. The rural administration problem must be resolved;

3. The trauma and poison centers initiatives should be carried out.

Congress is asked to consider these requests carefully and to enact legislation which advances EMS systems in these directions.

Owen Graduate School of Management
VANDERBILT UNIVERSITY
NASHVILLE, TENNESSEE 37203 TELEPHONE (615) 322-2534

March 19, 1979

The Honorable Senator Alan Cranston
Room 229, Russell Building
Washington, D. C. 20005

Attention: Ms. Louise Ringwald

Dear Senator Cranston:

As a citizen and as a social scientist I wish to express my concern in regards to the need for continued research on the problems of implementing effective emergency medical services at the local community level. As you know, the Federal Highway Safety Acts of 1966 provided the first federal recognition of this problem by making funds available to states to improve highway safety programs and emergency medical resources. In addition, the Emergency Medical Services Act of 1973 (P. L. 93-154) firmly established the concept of regional systems of emergency care as a high priority in the development of a comprehensive health delivery system and made funds available for the planning, development, and expansion of comprehensive emergency medical services (EMS) systems.

The critical need for continued research on the implementation of these systems is emphasized by the fact that, in spite of the energy, time, and money that has been expended, few dramatic changes have occurred in the effectiveness of emergency medical services. It has been estimated that inadequate emergency medical care accounts for a minimum of 60,000 premature deaths annually, plus untold disability. Accidents remain the leading cause of death for persons between the ages of one to 44. Studies have shown that 15-20% of the traffic deaths in the U.S. could be avoided if prompt, effective care were available at the scene of the emergency, on the way to the hospital, and in the hospital.

A growing concensus of researchers in the field are convinced that this problem really need not exist if the right kind of research is conducted at the community level. It is widely acknowledged that the technology, expertise, and even the resources are currently available to insure efficient and effective EMS systems to the majority of the population. However, the general failure of communities to implement EMS systems which effectively utilize the available innovations has become quite apparent as a result of the past activities supported by federal legislation.

While much has been done in the area of planning for EMS systems, little has been done in the area of implementation. Much of this planning has dealt with only the technical aspects of EMS systems. This emphasis of more and more costly technology has often resulted in the exclusion of certain non-technical factors (environmental, social, and political) that many researchers in EMS systems are increasingly convinced have direct bearing on the likelihood of the system being effectively implemented.

Sincerely,

Edwin M. Bartee

Edwin M. Bartee, Ph.D.
Professor of Management
Director, Center for
Research on Human
Service Systems

EMB/eb1

III. ADDITIONAL MATERIAL--PAPERS--ARTICLES

Consensus Development Conference on Supportive Therapy in Burn Care
November 10-11, 1978

LAY SUMMARY

A severe burn is a very destructive and disfiguring form of injury. Burns which cover a large part of the body surface evoke a myriad of both immediate and prolonged pathologic responses (respiratory and cardiovascular collapse, metabolic dysfunction, kidney failure, etc.) and require the most intensive care that hospitals can provide. Among surviving patients, scarring, skin contracture, and the loss of joint motion can result in extreme physical disabilities, are often accompanied by severe psychological stress, and may require many years of rehabilitative effort.

Nearly two million Americans suffer medically significant burns each year, of whom 130,000 are hospitalized and 70,000 require intensive care at a cost exceeding $300 million. One-third of the 10,000 who die are children under 15 years, with the great majority being preschoolers. Another large fraction involves people 65 years and older. Burn injuries are the nation's third leading cause of accidental death.

Over the past decade interdisciplinary basic and applied research concerning the total response of the body to burn injury has produced an impressive armamentarium of more rational and effective modes of therapy. These measures, now used in a few highly specialized research-oriented burn centers, have improved, by as much 50 percent, the survival rate of persons suffering burns covering up to 65 percent of total body surface.

Since 1968, the National Institute of General Medical Sciences (NIGMS) has supported the area of burn and trauma research. The NIGMS program gives special emphasis to the responses of the whole body to severe injury, in an attempt to discover ways to alleviate pain, shorten the disability often associated with injury, and reduce the incidence of mortality. A knowledge of the key physiologic functions in these patients cannot prevent injury but should permit more appropriate treatment. From the physician's vantage point, the ultimate goal of this research will be to minimize the adverse consequences of trauma and burns to the benefit of both the health and pocketbook of the patient.

A recent conference on supportive therapy in burn care sponsored by the NIGMS, with the cooperation of the American Burn Association, was part of a new effort by the Institute to bring together experts involved in the research and practice of burn medicine in order to consider several controversial and unresolved issues. There are, for example, important differences in specific therapies employed by those working in the field of burn research. There are also questions concerning the feasibility of the widespread application of such treatments to other less specialized hospitals. The specific topics chosen for discussion at the meeting were fluid resuscitation, control of infection, maintenance of metabolic balance, the role of excisional therapy and biological coverings, and the

detection of damage caused by smoke inhalation. In addition two ethical questions were considered: under what conditions, if any, would it prove futile to attempt to resuscitate the victim of a severe burn; and, considering their known role in lowering resistance to infection, when would it be justified in administering steroid drugs in response to smoke inhalation. The aim of the conference was to produce a consensus or agreement among the participants on the most appropriate treatment measures based on the best available current information.

Fluid Resuscitation

When extensive areas of the skin are destroyed, large amounts of body fluids seep into the wounds and are lost from the circulation. Of even greater importance is the discovery that additional large amounts of oxygen and water move into normal muscle cells far removed from the site of injury and precipitate a series of pathophysiologic events which challenge the survival of the patient. Prompt, adequate restoration of the circulating fluid volume is a foremost concern in the immediate post-burn phase of burn care. Several formulas are now in use to estimate fluid needs during this period.

The first group of panelists at the burn conference concurred that for effective resuscitation the keystones of therapy are sodium and water, and recommended that treatment should be begun with a balanced salt solution. There was general agreement that total fluid replacement should occur within the first 24 hours after the burn and range between two and four milliliters per kilogram percent burn, with the rate of administration striking some kind of balance between potential fluid overload and the need to rapidly achieve the outward signs of physiological repair. The panel further emphasized that although there was a need for individualized treatment, formulas do play a vital role by serving as a standard from which adjustments can be made.

Fluid and electrolyte therapy should be applied in an expeditious manner for both children and the elderly with greater than 10 percent burns, and for other adults with greater than 15 percent body burn. In children and in aged adults with greater than 20 percent burn, the standard is an intravenous regimen.

With regard to the question of efficacy of fluid resuscitation in patients with burns over greater than 70 percent of the body area, the panel stated that physicians had an ethical and moral responsibility to initiate therapy on all patients. Physical and/or emotional shock in the burn patient make it impossible for the victim to contribute to the early decision-making process.

Control of Infection

Extensive destruction of the skin barrier makes burn patients highly vulnerable to life-threatening infections. Sepsis remains a leading cause

of post-burn death. Prophylactic measures include wound cleansing and debridement (i.e., removal of dead tissue), use of wound covering materials and sterile nursing environments, and the topical and systemic administration of water soluble antibiotics. There are differing opinions as to the clinical effectiveness of many of these measures and the criteria for their selection.

Members of the second panel emphasized the need to test prospective modes of treatment under circumstances which allow a clearer documentation of benefit. They noted that several classes of patients, namely those at both extremes of age, those with very deep, full-thickness burn injuries, and those with serious associated diseases, are at the greatest obvious risk, but that other patients often develop abnormal responses during the course of treatment. Continual monitoring of the latter class of patient is essential to define those characteristics which appear to be normal in the early post-burn stages and then later become subject to invasive infection.

All agreed that proper nutrition is important both for local healing of the burn wound and on a systemic basis, particularly in support of host defense mechanisms. On the other hand, the panel could not reach a solid consensus about the utility of barrier systems that isolate the patient from potential infectious agents or about the specific role of dressings in the control of infection. Systemic antibiotics were discussed in some detail and although there was broad agreement regarding their use in established burn wound sepsis or in the circumstances of remote organ infection, the initial use of penicillin in particular, posed a problem. The panel concurred that local antibiotic therapy is an important adjunct to improved care.

Metabolic Balance

Hypermetabolism is well recognized as a distinct, life-threatening syndrome in severely burned patients. While the basic underlying mechanisms are unknown, in general the condition is related to the body's response to loss of heat through open wounds and to the extraordinary protein requirements for repair of the damaged cells. As a rule, oral routes for nutrition are seldom sufficient and often limited by facial burns and the damage to throat tissues by smoke inhalation. Other alternative routes have, therefore, become a principal means to achieve metabolic balance, although opinions vary as to the optimal composition of the supplementary liquids.

With regard to therapeutic applications for the treatment of the metabolic deficits in burn injury, the panel members concurred that burn patients who require nutritional replacement are those who either have greater than 20% total body surface burn, pre-injury nutritional deprivation, severe endocrine, pulmonary, or septic complications, or suffer greater than 10 percent decrease in pre-burn body weight during hospitalization. Nutritional replacement should be started as soon as functional G.I. tract activity can be detected and at latest by the fourth post-burn day, with optimal caloric requirements administered by the seventh day.

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The group recommended in order of priority the oral route, supplemented, if necessary, by the peripheral vein for administration of amino acid-fat emulsion solutions. The central vein was to be employed for glucose-amino acid solution only when the oral route was not available.

In adults the general formula 25 kcal/kg body weight plus 40 kcal/ percent total body surface burn was regarded as an acceptable method for estimating the extent of nutritional replacement, providing that readjustments are made for body weight changes, septic complications, and decreased host resistance. A specific formula could not be agreed upon for children, although it was felt that approximately double the normal number of calories seems necessary.

Smoke Inhalation

According to the American Burn Association, 30 percent of severely burned patients suffer damage from smoke inhalation. The damage may range from inflammation of oral tissue to swelling of lung tissue with acute respiratory distress and sepsis. Pulmonary function tests, bronchoscopy, and lung scans help to diagnose obscure damage, such as small airway obstruction, but there are questions as to the reliability of the data and their usefulness during the critical phase of resuscitation. There is a need to better assess the occurrence of carbon monoxide poisoning, which may compromise the cellular respiration of tissues and become life-threatening.

The fourth panel began with a categorization of the types of injury, which can include either an increase in the levels of carbon monoxide, damage to the airway, lowering of oxygen levels, or development of a form of respiratory distress syndrome which results from the combined insult of the airway and surface injuries. It was agreed that the variety of insults require a more precise, universally accepted classification scheme. The panel members then considered the techniques currently available for the diagnosis of smoke inhalation. The choice of technique depends upon the type of injury, with relatively simple tools such as the laryngeal mirror being used for upper airway injury. The diagnosis of terminal airway injury is very difficult at present. Xenon scans can show damage but not before three or four hours after a burn, a time beyond the point for optimal therapy.

In analyzing the need for steroids in treating smoke inhalation injury the panel took note of a recent study in which steroid treated patients suffered a mortality rate four times as great as the control group. They concurred that the use of steroids is not indicated for any degree of smoke inhalation at the present time.

Excisional Therapy and Biological Coverings

Cleansing and removal of debris in wounds is essential in burn care. Once the patient's condition is stabilized, cleansing is performed using

any of several detergents and may take place in hydrotherapy tanks when movement by the patient is possible. Traditional practice has been to allow the eschar (skin destroyed by burn injury) to separate and spontaneiously slough off from the underlying wound over a period of three to four weeks. More recently, prompt surgical excision of the dead skin and grafting of replacement skin has been employed within the first few days following injury. New methods of excision include the use of laser scalpels and degradative enzymes. Biological coverings include skin autografts obtained from undamaged portions of the patient's body, allografts donated by relatives, skin grafts from cadavers, and grafts of skin obtained from slaughtered pigs. Among the issues regarding the use of these measures are the development of criteria for determining which patients may withstand the stress of surgery and the best means of determining the depth of the burn injury and the corresponding degree of excision.

In discussing how best to treat deep burn wounds, the panel agreed that assessment of burn depth is critical. They found that vital dyes have not been of help and that although thermography and ultrasound can be useful in mapping the area and depth of injury these methods are tedious, cumbersome, and impractical at present. Most superficial burns (i.e., second-degree) can be accurately recognized.

The most effective excision technique at present is sequential, or layered, excision. This method allows the surgeon to sculpt the wound and minimizes the loss of viable tissue although there is considerable loss of blood. Excision of fascia (tissues located in the deepest layer of the skin) should be reserved for deep third-degree burns of large extent and can be carried out with conventional scalpel or electrocautery. After burn wound excision, grafting must be carried out immediately. Meshed autograft expanded to at least three to one should be used to the extent possible. The technique of allografting using immunologic compatible live donors coupled with the use of immunosuppressive agents appeared promising, but the panel recommended that it only be attempted in a specialized burn center. In all cases, excisional therapy should be done only under controlled circumstances by skilled surgeons.

There was a general consensus that for deep thermal injury excision should be carried out when the patient is hemodynamically stable. However, excisional therapy was not recommended for the patient who has associated smoke inhalation injury or who has other injuries in addition to the burn.

12/7/78 Prepared by:
Dr. Michael Goldberg & Dr. Emilie A. Black

Systems of Trauma Care

A Study of Two Counties

John G. West, MD; Donald D. Trunkey, MD; Robert C. Lim, MD

• **Cases of motor vehicle trauma victims who died after arrival at a hospital were evaluated in both Orange County (90 cases) and in San Francisco County (92 cases), Calif. All victims in San Francisco County were brought to a single trauma center, while in Orange County they were transported to the closest receiving hospital. Approximately two thirds of the non-CNS-related deaths and one third of the CNS-related deaths in Orange County were judged by the authors as potentially preventable; only one death in San Francisco County was so judged. Trauma victims in Orange County were younger on the average, and the magnitude of their injuries was less than for victims in the San Francisco County. We suggest that survival rates for major trauma can be improved by an organized system of trauma care that includes the resources of a trauma center.**

(*Arch Surg* 114:455-460, 1979)

Data collected in 1966 by the National Research Council have clearly demonstrated the need for improvement in the care of critically injured trauma victims in the United States.[1] Numerous studies have shown that a large percentage of trauma deaths is preventable.[2-6] More recently, several states and local regions have developed systems of trauma care. Their data suggest that this has resulted in an improved survival.[7-10]

It is generally agreed that the basis of any trauma care system includes optimal resuscitation and rapid transport from the scene of an accident to an appropriate hospital that can provide definitive care. There is controversy over what constitutes an appropriate hospital.

This report compares the results of trauma care in San Francisco County, a region where all patients are brought to a single trauma center, with the results of care in Orange County, where patients are brought to the closest receiving facility. One hundred consecutive victims of motor vehicle accidents were selected for study from each region. Field deaths and deaths occurring during transport were excluded. The injured who survived long enough to reach a medical facility were examined in an attempt to evaluate the effect of the hospital setting on the care rendered to victims of major trauma.

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METHODS AND MATERIALS

Orange County differs from San Francisco County in several respects. It covers 2,033 sq km (782 sq miles) and has a population of 1.7 million. The median age of residents in Orange County is 28 years. The county has 39 hospitals with emergency rooms, 31 of which are staffed around the clock with emergency room physicians. These 31 hospitals are classified as receiving centers and are certified to receive patients seen by paramedics. Twenty-nine of the county's 39 hospitals are proprietary, and one is a county hospital with full-time house staff coverage. Persons injured in Orange County are transported to the closest receiving center. During the period of study a paramedic service was being developed, and approximately 12% of trauma victims were seen by paramedics.

San Francisco County, on the other hand, covers 127 sq km (49 sq miles) and has an indigenous population of 667,000, which reaches 1.6 million during the working day. The median age of residents in San Francisco County is 35 years. Trauma victims are brought to the centrally located trauma facility, which is staffed around the clock by senior house officers in general surgery, anesthesia, neurosurgery, orthopaedics, internal medicine, and many other subspecialties. Full-time consultants are either in-house or are readily available for consultation in all specialties. The paramedics in San Francisco County rendered field care to approximately 20% of the patients.

One hundred consecutive motor vehicle fatalities were reviewed from each county, excluding field deaths and deaths occurring during transport. In Orange County, all deaths included in the study occurred in 1974. In San Francisco County, deaths from 1974 and 1975 were combined to reach 100. Ten deaths in Orange County were excluded because the patients had been referred to the county after initial care elsewhere. Eight deaths in San Francisco County were excluded for the same reason. Therefore, 90 cases from Orange County and 92 cases from San Francisco County were evaluated. Death certificates, coroners' reports, and autopsy data were available for review in all cases. Autopsies were done by forensic pathologists in both counties. The records from the San Francisco General Hospital were available for review of the San Francisco County deaths.

An injury severity score (ISS) was calculated for each patient. This is a method for numerically describing the overall severity of an injury.[11-13] The ISS is derived by grading injuries to the various body systems (ie, respiratory, cardiovascular, CNS, abdominal, musculoskeletal, skin, and subcutaneous) on a scale of 1 through 6. The ISS is equal to the sum of the squares of the highest three scores. Baker et al, working in Baltimore, have developed a graphic relationship between the ISS and mortality.[11-13] If we assume similarity between a given locale and Baltimore, the ISS can be used to predict mortality from a given severity of injury. Thus, a region can compare its results to those of Baker et al, if appropriate data are available.

RESULTS

We separated deaths primarily due to injury to the CNS from deaths where the primary cause was unrelated to such injury. There were 30 non-CNS-related deaths in Orange County and 16 in San Francisco County. There were 60 CNS-related deaths in Orange County and 76 in San Francisco County.

Non-CNS-Related Deaths

The average ISS for non-CNS-related deaths in Orange County was 37. The average score for similar deaths in San Francisco was 45 ($P < .03$). Thus, injuries in Orange County were judged to be less severe.

Figure 1 shows the distribution of deaths from non-CNS-related injuries according to age. The majority of deaths in Orange County occurred in the 10- to 40-year-old age group, as compared with a much older age group for San Francisco County ($P < .04$).

After careful review of the data for each case, the deaths were classified as either clearly preventable, potentially preventable, or not preventable. The process of classification was carried out by all three authors working together and arriving at a consensus in each case based on surgical judgment of available facts. Eleven of the 30 deaths in Orange County were judged as clearly preventable (see Table). Nine of these were secondary to hemorrhage. The magnitude of injury was such that surgical control of hemorrhage should have been possible. The death from pericardial tamponade could have been prevented with pericardial drainage. The single death from sepsis could have been prevented using standard surgical techniques for treatment of bowel perforation. On the other hand, no deaths in San Francisco County were considered clearly preventable.

Another 11 of the 30 deaths in Orange County were judged as potentially preventable. Most of the victims had combined thoracic and abdominal injuries. In eight cases the cause of death was hemorrhage. One patient died of fat emboli to the lungs six hours after admission, although no major fractures were described. One patient died of acute pulmonary congestion with multiple rib fractures and pulmonary parenchymal hemorrhage. One patient died as a result of gastric aspiration.

Review of the autopsy data using the same criteria as applied to deaths in Orange County suggests that no deaths in San Francisco County were potentially preventable. However, on closer examination of the hospital records, one death seemed to have been preventable. The patient was a 49-year-old woman admitted with blunt trauma. The initial chest roentgenogram was interpreted as showing a widened mediastinum. Aortography was delayed because of abdominal and extremity injuries. Twelve hours later, a repeat chest film was thought to show normal anatomy, and the aortogram was cancelled. Ten days later, while the patient was recuperating from her injuries, the thoracic aorta ruptured. The patient died two days after emergency repair.

Eight deaths in Orange County were considered not preventable. All of these patients had multisystem trauma. Six died of hemorrhage, and two died of pulmonary insufficiency. Only two of the patients underwent a major surgical procedure. All deaths in the San Francisco County group were from complications of multisystem trauma. Eleven victims died of pulmonary insufficiency or other organ failure, and all had undergone a major surgical procedure. Two elderly victims (aged 74 and 82) died of exsanguination caused by extensive chest and abdominal injuries. An additional two deaths from exsanguination were caused by a pulmonary artery avulsion and by complete avulsion of the hepatic veins from the interior vena cava.

CNS-Related Deaths

Sixty deaths in Orange County were of CNS origin, whereas 76 deaths in San Francisco County were so

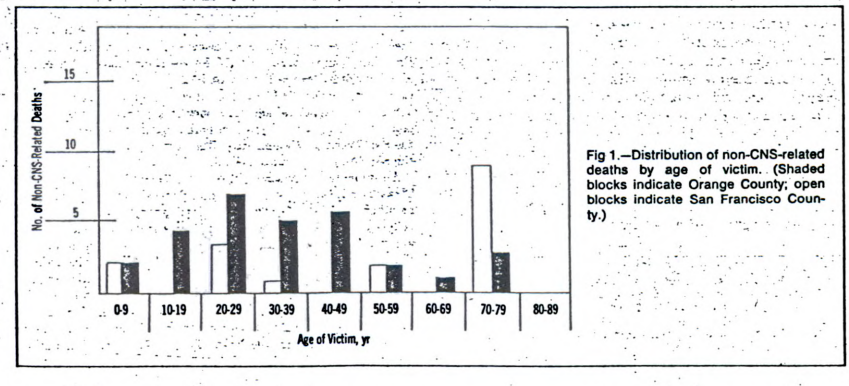

Fig 1.—Distribution of non-CNS-related deaths by age of victim. (Shaded blocks indicate Orange County; open blocks indicate San Francisco County.)

classified. The average ISS for CNS-related deaths was 38 in Orange County and 46.5 in San Francisco County ($P < .01$). The distribution of CNS-related deaths in both counties according to age is shown in Fig 2. Again, the majority of deaths in San Francisco County occurred in patients more than 50 years old, whereas in Orange County the majority of deaths occurred in a younger age group ($P < .01$).

The data were reviewed to determine the quality of care rendered to victims with CNS-related injuries. Only 12 of the 60 patients in Orange County received a neurosurgical procedure, as compared with 55 of the 76 patients in San Francisco County. In the Orange County group there were eight instances of undiagnosed extracerebral hematomas (seven subdural and one epidural) that appeared to have contributed to death. One subdural hematoma was inadequately decompressed. There were ten cases with small subdural hematomas that did not appear to affect the outcome. Additionally, there were nine patients with only mild to moderate cerebral contusions and a potentially preventable or treatable associated injury that appeared to be a major factor contributing to the patient's death. For

Preventable Deaths

Patient/Sex/Age, yr	Trauma	Cause of Death	Comment
1/M/51	Ruptured spleen; lacerated mesenteric artery	Hemorrhage	Patient observed 2 hr
2/F/25	Ruptured spleen	Hemorrhage	Interhospital transfer delayed definitive care; patient died 1 hr 45 min after injury
3/M/30	Lacerated liver	Hemorrhage	Patient died 1 hr 45 min after injury
4/M/5	Lacerated liver	Hemorrhage	Presumed diagnosis of CNS-related injury not confirmed on postmortem examination; patient died 1 hr 15 min after arrival in emergency room
5/M/75	Ruptured spleen; lacerated lung; tibial-fibular fracture	Hemorrhage	Cardiac arrest 2 hr after injury while fracture being set
6/M/51	Lacerated spleen; multiple long bone fractures	Hemorrhage	Patient observed in emergency room for 1 hr 45 min
7/F/76	Perforated small bowel	Sepsis	Patient observed in hospital for 36 hr
8/M/48	Lacerated mesenteric artery	Hemorrhage	Presumed diagnosis of ruptured aorta; thoracotomy performed
9/F/24	Blunt trauma to chest	Pericardial tamponade	Cardiac arrest in intensive care unit 3 days after injury; postmortem examination revealed 400 mL liquid blood in pericardial sac; hemorrhage predated accident
10/M/41	Lacerated liver	Hemorrhage	Patient observed in emergency room for 45 min; no resuscitation attempted; patient died 1 hr 10 min after injury
11/M/20	Lacerated liver	Exsanguination	Liver laceration closed with surface sutures; massive intrahepatic hematoma developed; patient died 5 hr 25 min after admission

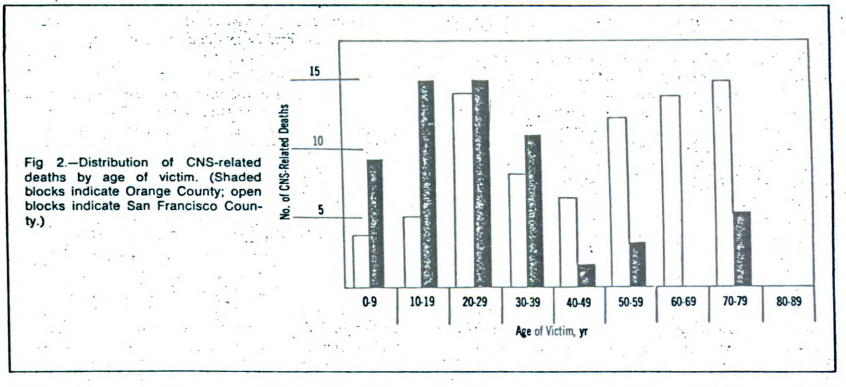

Fig 2.—Distribution of CNS-related deaths by age of victim. (Shaded blocks indicate Orange County; open blocks indicate San Francisco County.)

example, two patients had a pneumothorax with complete collapse of the lung that was not treated. Two patients had considerable gastric aspiration, and the remaining five had pulmonary contusions and multiple rib fractures. In the San Francisco County series, there were no cases of undiagnosed, space-occupying lesions, and there was only one case with a small residual, subdural hemorrhage following decompression. All but two of the CNS-related deaths in San Francisco County were associated with massive injury to the CNS. The two exceptions were elderly patients with moderate injuries who died of pneumonia.

COMMENT

As in any retrospective study, there were inherent problems with the data. For example, we did not have ISS ratings for the survivors and were unable to compare predicted mortality with actual mortality. Further, there may be ambiguity in interpreting the autopsy and coroners' reports. There is also an element of subjectivity in assigning ISS values. This was particularly apparent in Orange County, where hospital data were not available. However, when the magnitude of injury was ambiguous, the higher number (indicating more severe injury) was assigned.

Our data suggest that the San Francisco County system, which includes a trauma center, works quite well, while the Orange County system, which lacks a trauma center, does not. Of 92 consecutive deaths in San Francisco County, only one was judged potentially preventable. On the other hand, we believe that a substantial fraction, perhaps as much as 73% of the non-CNS-related deaths and 28% of the CNS-related deaths in Orange County, could have been prevented with vigorous resuscitation and aggressive surgical intervention. An aggressive approach to patients with non-CNS-related injuries is evident in the San Francisco County series, in which 15 of the 16 patients underwent a major surgical procedure, whereas only six of the 30 patients in Orange County were operated on.

Again, a more aggressive approach to the patient with CNS-related injuries is noted in the San Francisco County series, in which 55 of the 76 patients received a neurosurgical procedure, as compared with 12 neurosurgical procedures performed in 60 patients in the Orange County group. This is of major importance when we consider that there were eight cases of untreated extracerebral hematomas in the Orange County series. Furthermore, the lack of an aggressive approach to victims with CNS-related trauma noted in the Orange County series seems to have been based on a misconception: patients who have signs suggestive of massive CNS-related injuries have some underlying irreversible brain or brainstem injury.[12] This is outdated for two reasons. First, survival can be anticipated in a high percentage of patients who have signs of advanced CNS injury. Bruce et al[14] have reported substantial recovery in 85% of children with bilaterally fixed and dilated pupils; other investigators have reported satisfactory recovery in 15% of adults with similar findings.[13] A good recovery has been reported in 16% of patients with decerebrate rigidity.[16] These and similar findings have led Bruce et al to the conclusion that aggressive management is indicated for all patients with spontaneous ventilatory efforts.[17]

Second, initial neurological findings can be greatly modified by associated injuries. Miller et al[18] found that in 44% of trauma victims with major CNS-related injuries, there were associated injuries that produced hypotension, hypoxia, hypercarbia, and anemia. These potentially correctable systemic insults not only alter neurological signs, but also adversely affect the injured brain. In the Orange County group, nine patients had only mild to moderate cerebral contusions but potentially preventable associated injuries. It is likely that with vigorous management of these systemic injuries, an increased survival might have been anticipated. Miller and associates have demonstrated a 10% to 20% decrease in mortality with vigorous resuscitative efforts and aggressive management of systemic injuries and intracranial mass lesions. These authors present convincing evidence to support the concept that persons severely injured in motor vehicle accidents should be transported to a major trauma center with 24-hour senior neurosurgical coverage as well as in-house general surgical accident service.

Our data show an appreciable difference in the ISS ratings between the two counties. The average ISS for non-CNS-related deaths in Orange County was 37. Plotting this score along the curve developed by Baker and O'Neill[19] for the Baltimore series, a mortality of 37% would be predicted for injured patients with an average ISS of 37. The average ISS for non-CNS-related deaths in San Francisco County was 45, corresponding to a predicted mortality of 63% (Fig 3). The average ISS for CNS-related deaths in Orange County was 38, corresponding to a predicted mortality of 35%. The average ISS for CNS-related deaths in San Francisco County was 46.5, corresponding to a predicted mortality of 68% (Fig 4). These differences are even more notable when the age distribution of the victims at time of death is considered. In Orange County the majority of deaths from both CNS-related and non-CNS-related injuries occurred in the 10- to 40-year-old age group. In San Francisco County the majority of deaths involving both groups occurred in patients more than 50 years old. Baker et al[11] have shown that for a given ISS, mortality is higher in the 50- to 69-year-old age group and increases greatly for patients more than 70 years old. Thus the lower ISS, as well as the preponderance of deaths in age groups from 10 to 40 years, suggests to us that in Orange County a high proportion of the deaths might have been prevented if the victims had been treated in a trauma center. Our autopsy data clearly support this concept.

Planning a system of trauma care must take into account the local circumstances. The San Francisco County region, with its compact population and relatively small size, makes a centrally located trauma center appropriate, but Orange County is much larger (2,033 sq km vs 127 sq km) and has a lower population density. The question arises as to what guidelines are available for developing a system of trauma care that assures a high degree of quality yet remains cost effective. This question has been addressed

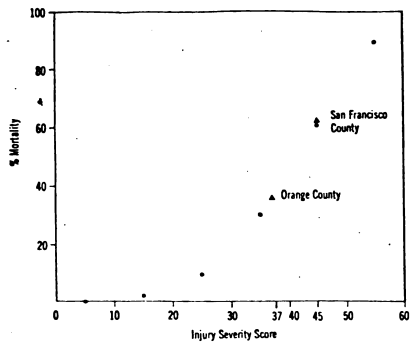

Fig 3.—Injury severity score in non-CNS-related deaths in San Francisco and Orange counties, plotted against percent mortality. Adapted from Baker and O'Neill[12]; closed circles represent Baker and O'Neill's grouped data for Baltimore. Reproduced from *Journal of Trauma* by permission of Williams and Wilkins Co, Baltimore.

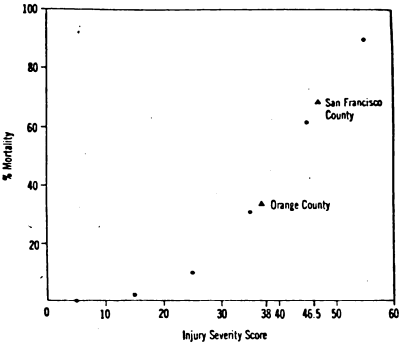

Fig 4.—Injury severity score in CNS-related deaths in San Francisco and Orange counties, plotted against percent mortality. Adapted from Baker and O'Neill[12]; closed circles represent Baker and O'Neill's grouped data for Baltimore. Reproduced from *Journal of Trauma* by permission of Williams and Wilkins Co, Baltimore.

by the American College of Surgeons in their report, "Optimal Hospital Resources for Care of the Seriously Injured."[1,9] The staffing requirements are stringent and for the most part can only be obtained in a large university teaching hospital with a house staff. Even if a trauma center could be developed in Orange County along the guidelines offered by the American College of Surgeons, it is doubtful that it alone could effectively serve the large size and relatively low population density of the county.

Teufel and Trunkey[10] have presented a more pragmatic approach to staffing patterns of hospitals that plan to care for critical trauma victims. They feel that a community hospital with in-house coverage by a general surgeon, an anesthesiologist, and an emergency room physician would provide the basic requirements necessary to resuscitate and definitively treat most trauma victims. Clearly this system would require a back-up staff of neurosurgeons, orthopaedic surgeons, and other specialists. Teufel and Trunkey suggest that a hospital with such a staffing pattern should refer to it as a trauma program, as opposed to the trauma centers previously described.

Teufel and Trunkey feel that for a trauma program to be effective, approximately 400 critically injured trauma victims should be seen per year. They suggest that a region can estimate the number of critically injured trauma victims as 5% of the yearly total motor vehicle injuries reported by the California Highway Patrol. Modifying this formula for Orange County, we estimate that the region would support a centrally located trauma center and two strategically located trauma programs.

Trauma care in Orange County is clearly in need of revision at this time. The evidence presented in this paper suggests a high degree of salvageability in victims who are now dying. The degree to which our conclusions apply to other parts of the country remains to be evaluated. The data presented clearly point to the need for evaluation and revision of trauma care delivery systems. The comparison of types of care available in San Francisco and Orange counties emphasizes the benefits of aggressive, experienced management of trauma victims. Although such management may take place outside a trauma center, we believe that trauma centers provide maximal opportunity for optimal care.

Dr Leonard B. Berman reviewed the manuscript and provided many valuable suggestions and criticisms.

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Discussion

CHARLES F. FREY, MD, Martinez, Calif: This report calls attention to the less than optimal care that trauma patients are presently receiving in many areas of the United States. In contrast, prehospital care has improved markedly over the past ten to 15 years, owing to improved training of ambulance attendants and emergency medical technicians, as well as to better communication systems and better equipped vehicles.

The problem of the lack of prompt, definitive in-hospital care of the trauma patient is well defined in this study of care available in Orange County. The problem is not limited to California. During 1977 alone, three other reports were published on this subject. These were presented from various geographic areas of the country: one from Vermont, by Pilcher and Foley; one from Wisconsin, by McManus and Darin; and a third from Utah, by Hutchens. They all convey the same message: in-hospital care of the trauma patient is deficient, with regard to errors of both omission and commission.

These reports, together with one by Von Wagoner published in 1961 and one by Baker and Rutherford published in 1972, emphasize that the problem of less than optimal care of the trauma patient is related to inadequate training of emergency room physicians in the care of the trauma patients, and also to the tendency to transport victims to the nearest hospital rather than to the best equipped and most adequately staffed hospital.

With regard to the latter problem, Baker's report emphasized another important factor in the care of the trauma patient. Repeated practice improves the judgment and coordination of those caring for the injured and results in better patient care. In the hospital receiving only occasional trauma victims, there is often delay and confusion among those responsible for patient care.

Drs West, Trunkey, and Lim have strongly endorsed the need for categorization of hospitals according to their ability to manage the severely injured patient. Their report also emphasizes that such categorization is not now an accomplished fact in many areas of the United States.

I would like to encourage those studying the quality of care given the trauma patient to follow the lead of Drs West, Trunkey, and Lim in using ISS ratings rather than either peer review or the protocols and standards of care. Protocols and standards of care reflect a measurement of process rather than of outcome.

LAWRENCE E. STEVENS, MD, Salt Lake City: What happens if we would look at 100 surviving patients in the same sort of study? We see a bit of the negative side of the matter in reports based on autopsies. Did you also look at 100 consecutive patients who survived and whose ISS ratings were perhaps equivalent, and did that review support the same conclusion?

DR WEST: I would like to thank Dr Frey for his comments. In Orange County we do have an excellent prehospitalization mechanism for care with an excellent paramedic system.

The comments regarding the survivors and the ISS and the magnitude of injuries of the survivors are very pertinent ones. Obviously, this report was a retrospective study of autopsy findings, and we did not have information on survivors available to us. We think the conclusions from our study are overwhelming when we consider the number of deaths that were clearly preventable, as judged from the age distribution of the patients and the magnitude of the injuries.

NEWS&FEATURES FROM NIH

PORTFOLIO – BURN CARE RESEARCH

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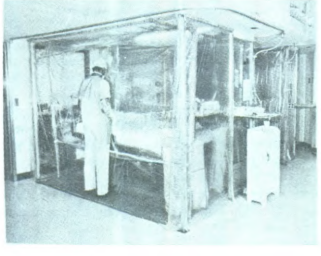

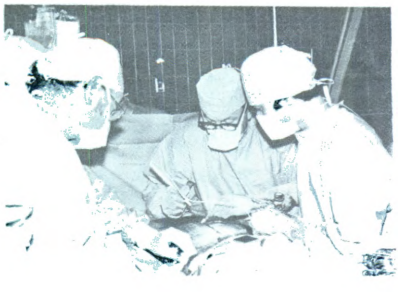

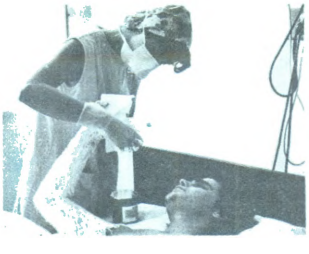

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PORTFOLIO ON BURN CARE RESEARCH

Burn Care

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(NIH Photo # BC-1)

PORTFOLIO ON BURN CARE RESEARCH

Introduction by Emilie A. Black, M.D.

A severe burn injury is one of the greatest emotional and physical handicaps known to man. Each year of the approximately 75,000 people who are hospitalized for severe burns (defined as involving 30 percent or greater of the total body surface), more than 30,000 require prolonged intensive care with an average hospital stay of 64 days. Despite the excellence of this care, 10,000 die, making burn injury the third leading cause of accidental death in the U.S. One third of the burn victims are children under 15 years of age,* and generally deaths in males outnumber those in females.

It is surprising that the U.S., which is a leader among the industrialized countries of the world, has the highest death rate and property loss from fire.** The overall economic loss, including medical cost, property loss, and the impact of days lost from work, approaches $1.5 billion per year.

It is evident that the management of severe burns remains a critical problem. There is no vaccine (as for polio myelitis which in its peak year killed 3,100 people) to stop the spread of burn injuries. However, clinican-scientists working in the field of burn medicine are in general agreement that the development of appropriate supportive measures for fluid resuscitation and restoration of caloric balance could lead to greatly reduced mortality. Life threatening infections and pulmonary and renal complications possibly could be prevented.

The goal of the program of the National Institute of General Medical Sciences (NIGMS) is to strengthen the scientific base related to the effects of burn injuries in order to ultimately improve patient care. Support for coordinated basic and clinical investigations related to burns is intended to foster a more rapid application of research advances in the areas of biochemistry, physiology, cell biology, bioengineering, and behavioral sciences. Burn research is directed toward the discovery of better ways to prevent death, mitigate pain, speed recovery of patients, and lessen the extent of disabilities caused by severe burns. A better understanding of the total body response to burn injury is sought including the fundamental aspects of wound healing and biological repair.

* DHEW Interagency Committee Report, Burn Care, July 1976
** Report of the National Commission on Fire Prevention and Control, America is Burning, May 1973

Burn Care

To accomplish its goals in burn research the NIGMS provides a wide array of support mechanisms. The research center grant is intended to bring about collaboration between basic and clinical scientists. Through the support of research on a group of closely related projects, the center grant seeks to solve significant problems in the field of burn medicine. Several spin-offs have developed from the burn research centers: direct application of successful laboratory findings to patients and the opportunity for active teaching and training programs for residents, nurses, and allied paramedical staff.

Support of individual research projects provides a mechanism for indepth studies of specific aspects of burn pathophysiology such as wound healing, infection, and fluid resuscitation.

In addition, the Institute offers a special research grant for the new investigator (R23), a Research Career Development Award (K04) and Postdoctoral Individual (F32) and Institutional (T32) National Research Service Awards (NRSA) in the area of burn research.

The R23 grant for support for burn research is designed to encourage new investigators to develop their own research projects related to the pathophysiology of severe burn injuries. Its purpose is to help bridge the gap between the research trainee and the independent investigator. A maximum of three years support is offered to the applicant who must devote at least 50 percent of his time to research. The program is intended to provide the initial support for independent research by talented physicians who wish to pursue a research career.
The NIGMS Research Career Development Award (K04) in burn research is a grant for special salary support awarded to an individual with high potential in an active research environment for a biomedical or behavioral research career. It is designed to provide the additional experience which is needed to enable the applicant to launch a career as an independent investigator. Since the rank of associate professor or the successful competition for more than one substantial research grant usually indicates that the candidate has been judged to be an independent investigator, preference in selection of NIGMS awardees will be given to individuals whose achievements at the time of application have not been so recognized. The award is offered for a total of up to five years.

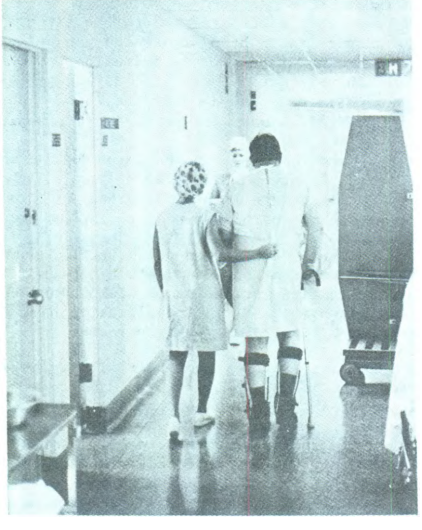
The Postdoctoral Individual National Research Service Awards (F32) are for a total of three years. They are offered to individuals with the M.D. degree who are preparing for careers in clinical research. Ph.D.s who seek competence to apply the knowledge and methods of basic biomedical disciplines to medical problems related to burn injuries may also apply. The Ph.D. usually works in close collaboration with clinical scientists. The M.D. is expected to spend two years in basic sciences laboratories.
The Institutional National Research Service Awards (T32) in burns offer multidisciplinary research training for M.D.s and Ph.D.s to enhance their capability of advancing our knowledge of the body's complex reactions to burn injuries. The supervisory staff should include burn specialists as well as basic scientists. For the M.D., emphasis should be placed on basic training for at least two years withing such departments as physiology, biochemistry, immunology, and microbiology.

Burn Care

In addition to the granting mechanisms available to investigators, the NIGMS has sponsored a number of conferences related to burn research. These have been in the form of technology assessment and transfer workshops, a consensus development conference, international symposia, and Communications Technology Satellite (CTS) broadcasts on burn research.

During the short time of its existence the burn research program has made marked advances in understanding the extent of burn injury and how best to treat it. Serious burns involving over 90 percent of the total body surface are no longer considered impossible to manage and the patients involved may survive to lead a useful life in society.

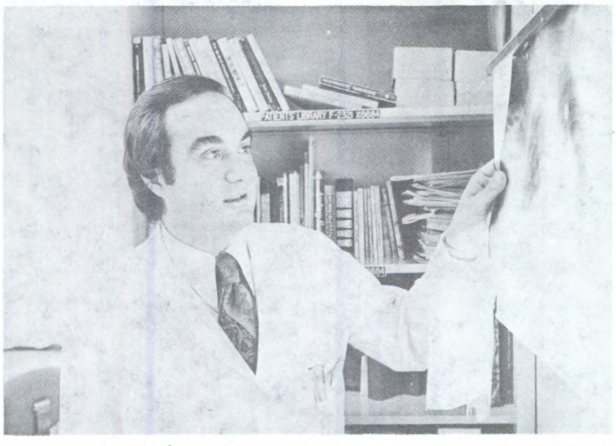
The following pages cite some of the accomplishments by NIGMS grantees working in the area of burns.



Burn Care

CORNELL MEDICAL CENTER

DR. P. WILLIAM CURRERI



Dr. P. William Curreri, Professor of Surgery at the Cornell Medical Center and grantee in burn care research from the NIGMS. (NIH Photo # BC-2)

During the past 20 years, mortality and morbidity, as a result of thermal or accidental trauma has been markedly reduced. More rapid transportation of severely injured individuals to burn centers, improved means of fluid resuscitation, better understanding of posttraumatic pulmonary complications, as well as early detection and therapy of septic complications have been instrumental in the improved clinical results.

Statistical analysis of current clinical experience indicates that a 50 percent survival is observed in patients with burns over 60 to 65 percent of their body in the age groups from 0-44 years. A fifty percent survival also is observed in patients with 50 percent burn in the 45-64 age group. The results indicate that there is a 33 to 50 percent improvement in clinical care when compared to similar studies performed in the mid 1960's. In fact, most major burn centers now observe few deaths among their extensively burned young adult population during the first two weeks after burn injury. Thereafter, both mortality and morbidity, as a result of pulmonary dysfunction or wound sepsis are infrequent.

Pulmonary Dysfunction

During the past six years, Dr. P. William Curreri's laboratory has intensively investigated the various physiological insults which induce severe lung dysfunction at various stages following thermal injury. Simultaneously, he and his colleagues have been able to document a striking elevation in the serum concentration of fibrin split products during the first several postburn weeks. Fibrin split products are derived from fibrinogen, the plasma protein which forms the essential portion of a blood clot.

Recent clinical observations have suggested that there exists a cause-and-effect relationship between the appearance of elevated levels of one fibrin split product (fragment D) and the subsequent development of acute respiratory distress syndrome. This relationship has been conclusively demonstrated in nontraumatized, non-anesthetized rabbits. Furthermore, the induction of acute pulmonary failure appears to be mediated through the release of histamine from platelets after induction of elevated fibrin split product levels.

Two alternative therapeutic approaches are potentially available to modify the pathophysiological consequences of increased concentration of fibrin split products. First, it appears that it may be possible to preserve pulmonary function by blocking mediators released from cellular components following induction of elevated fibrin split product levels. Pretreatment with antihistamines in pharmacological doses has been shown to be effective in preventing pulmonary dysfunction in the animal model. Similar agents may prove to be effective prophylactically in burn patients when administered in the immediate post-traumatic period. This clinical study is currently in progress.

A second therapeutic approach would be aimed at pharmacologically altering the production of those specific fibrin split products which appear to induce the greatest toxicity. The development of such a treatment modality is dependent upon the pharmacological toxicity of each fragment released from the degradation of fibrinogen. Current studies are aimed at the clear delineation of the biochemical and pathological mechanisms which result in pulmonary endothelial dysfunction induced by fibrin split products.

Nutrition Therapy

As a result of previous clinical investigation, clinicians throughout the country have become increasingly aware of the importance of nutritional programs when treating the hypermetabolic state of patients with major thermal injury. Death from malnutrition along with cellular and organ dysfunction may often be prevented, if sufficient energy is provided the burned patient. Researchers at Cornell have clearly delineated that patients maintained in prolonged negative energy balance exhibit a "sick cell syndrome" characterized by diminished cellular transport and accumulation of intracellular sodium.

Current investigations are aimed at refining improved treatment modalities which will allow the safe delivery of large caloric intakes. At the same time new means of controlling the hypermetabolic response to burn injury are being investigated, which hopefully will allow more conventional nutritional therapy. Metabolic reserve, often required during temporary periods of stress caused by sepsis or other posttraumatic complications, must be maintained.

Calorie and protein goals in therapeutic dietary programs have been outlined, and extraordinary efforts are required to achieve positive caloric and nitrogen balance. Nevertheless, currently available means of adminstering high concentrations of parenteral carbohydrates through a central vein are not without

significant risk in patients with infected burn wounds. The safe reduction of metabolic rate by pharmacological manipulation and the alteration of current treatment methods might permit maintenance of positive energy balance by the more conventional and safer oral and parenteral route.

The major steps in outlining the mechanism of the hypermetabolic response to burn injury during the past few years give promise of finding new and safe means to control therapeutically the metabolic response. It is now relatively well established that the brain's regulatory role in the hypermetabolic response to burn injury is expressed through the neural hormonal pathways involving the hypothalmus and catecholamine production.

Studies during the past few years by Cornell investigators suggest that the hypermetabolic response is initiated by prostglandins, which are known to be released in high concentration from the burn wound. Prostaglandins, hormone-like substances produced by the body from fatty acids, function as regulators and modulators of diverse metabolic processes at the cellular level. Hypermetabolism in an animal model can be diminished by pretreatment with prostaglandin inhibitors, offering hope that a similar treatment may be effective in burn patients.

SHRINERS BURN INSTITUTE, BOSTON — DR. JOHN F. BURKE

Researchers at the Shriners Burn Institute, in collaboration with the Harvard Medical School and the Massachusetts General Hospital are investigating the following five areas:

Development of Artificial Skin

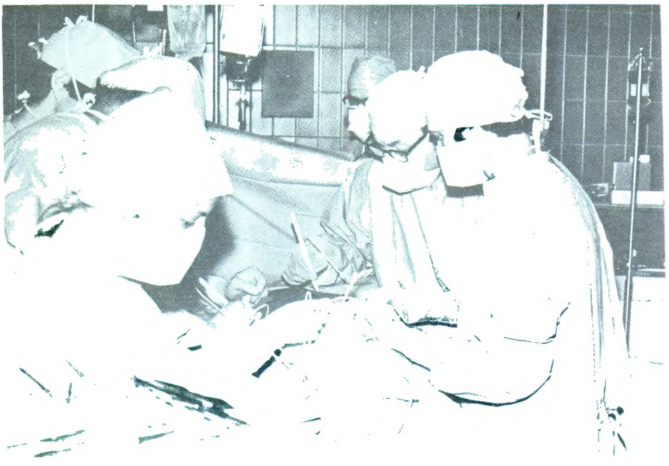
Over the last 15 years active research has been carried out in an attempt to identify a synthetic material that would serve satisfactorily as a skin substitute. For the first time a synthetic material has been developed which has proven to be a successful temporary skin substitute in a burned animal.

Investigators at the Shriners Burn Institute, in collaboration with the Mechanical Engineering Department at Massachusetts Institute of Technology, have now devised a composite biomaterial which has some of the biologic and physical properties of skin.

This artificial skin, made from animal tissues, is a composite of carbohydrates and protein fibers derived from cattle. The fibers are reinforced with a second biologic material that protects the fibers from being eroded by the naturally occurring enzymes in tissue. The fiber reinforcement makes the material strong and, when it is in place, covering a burned area, it prevents fluid loss and infection, two of the most serious complications of severe burns.

The material does not produce inflammation or irritation to the tissue, stimulate antibody formation, nor act as a foreign body in the tissue. A physiologic interation takes place between the burned tissue and the synthetic covering. Normal fibroblasts from the burned animals, as well as normal blood vessels, have been induced to grow into the skin graft material so that, after a few days, the synthetic material which is populated with the cells of the injured animal so that it is then not completely foreign. Human studies are planned in the near future.

Burn Care



Primary Excision and Immediate Wound Closure

It has always been recognized that survival and recovery from a burn injury are dependent on the removal of the skin killed by the burn (eschar) and on the repair of the resulting open wound. Until recently the eschar was allowed to separate spontaneously over a period of three to four weeks. This delay created a life-threatening condition in the patient. Methods have now been developed to satisfactorily stabilize the patient so that extensive surgical procedures such as removing the eschar and replacing it with skin grafts can be completed in the first few days following injury.

The first successful use of this early excision and prompt wound closure as a routine method for burn care was developed over the last seven years. The results have demonstrated that this treatment method not only reduces the mortality but also improves the patient's ability to function. Early excision and wound closure reduces the time necessary for treatment to about half of that required by previous methods.

Hypotensive Anesthesia

The amount of blood loss during primary excision of burn eschar has made this procedure a complicated and difficult procedure. The development of hypotensive anethesia in the burn patient has provided a significant reduction in the amount of blood lost during the operation and has greatly improved the effectiveness and safety of early excisional therapy.

Hypotensive anesthetic technique permits the deliberate reduction of the patient's blood pressure at any point during the surgical operation when blood loss is marked. Blood pressure can be restored back to normo-tensive levels in less than a minute's time. Accurate blood pressure control is achieved by the use of a potent drug, sodium nitroprusside, which dilates the small blood vessels of the body, thus reducing the resistance to flow and lowering the blood pressure.

Sensitive control of blood pressure reduction to levels where blood loss is markedly reduced but where accurate tissue perfusion is maintained is achieved through the monitoring of the patient's central arterial pressure and cardiac activity. Electronic devices continuously read out the pressure on an oscilloscope for the anesthesiologist and the surgeon to see. Using this method of anesthesia, surgery has been made safer and treatment of the burn patient more effective.

Bacteria Controlled Nursing Unit

Bacterial infection is a constant and serious danger to the burned patient. Immediately after the injury itself the loss of skin prevents exclusion of bacteria from the body. Infection, despite the extensive use of antibiotics, continues to be a frequent cause of death or serious complication.

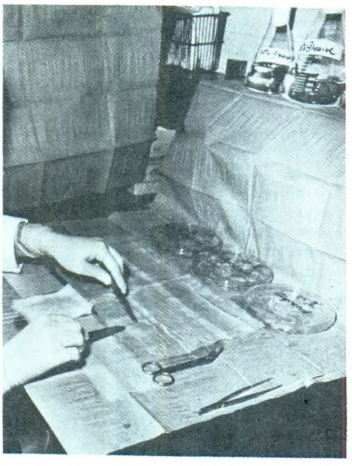
In the burned patient who is so susceptible to bacterial infection, and in whom treatment is extremely difficult, prevention of such infection is of the utmost importance. Infection of the wound can be prevented if bacteria are excluded from the patient's surroundings. The Bacteria Controlled Nursing Unit, which provides a protective environment for the burned patient, is highly effective in keeping bacteria from the patient's surroundings out of the burn wound.

This isolation is accomplished by the use of see-through curtain walls and a piston-like down-flow of bacteria-free air that constantly washes over the patient. In addition to protecting the patient from bacterial contamination, the protective environment provides the temperature and humidity control exactly suited to the patient's needs. The medical and nursing staff who perform all treatment from outside the protective environment itself can work at ordinary, comfortable room temperature.

Immunosuppression and Temporary Skin Transplantation

Survival following a deep burn which covers 80 percent or more of the body surface has only recently been possible. Success in treating this group of patients is largely related to the development of a satisfactory treatment to prevent the rejection of skin grafts using skin from other individuals for periods of two months or more.

A patient with an extensive burn is under serious risk until all dead tissue is removed and the wound closed with living skin. This living skin must eventually come from the burned patient himself as a thin layer from the remaining unburned skin in split thickness skin grafts.



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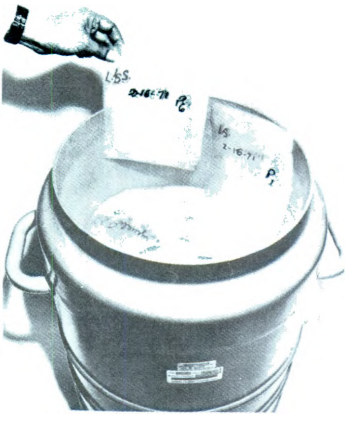

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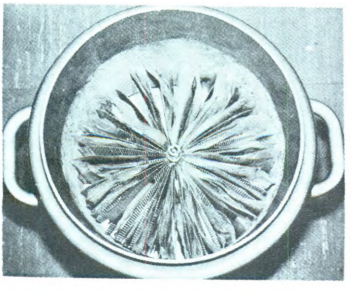


(C)

(A) *Skin grafts being prepared for storage in the "skin bank"*
(NIH Photo # BC-3)

(B) *The grafts being frozen in sealed plastic envelopes*
(NIH Photo # BC-4)

(C) *A "skin bank" repository in the deep freeze.*
(NIH Photo # BC-5)

However, in a serious burn the area of unburned skin is often not large enough to supply the split thickness grafts needed for closure. This problem can be temporarily solved by borrowing skin (allograft) from other people.

Using a typing system similar to that used to type blood, a skin donor, usually a family member, is selected. The ability to use allograft skin has been dramatically improved by the development of reliable and efficient methods of skin banking. The first operational skin bank was opened at Boston Shriners Burn Institute in 1969.

The donor skin can be borrowed from the bank to temporarily replace the burned skin for periods long enough to allow repeated harvesting of the small area of the unburned skin as it regenerates.

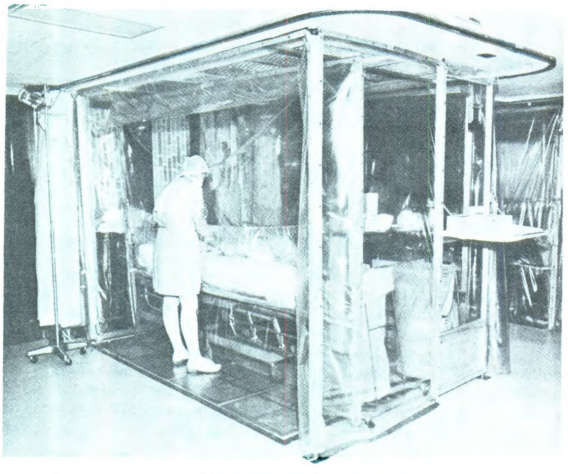
In the first 10 days post-injury, the dead tissue is completely removed in up to five operations. During the first operation the portion of dead tissue removed is replaced with skin harvested from the unburned skin of the patient. While this donor site regenerates for a second cropping, the subsequent operations remove the remaining portion of the burned skin which is replaced by split thickness skin obtained from the most suitable donor.

The rejection of this "non-self" skin, which would ordinarily occur in about two weeks, is prevented by a treatment called immunosuppression which prevents the patient from rejecting the foreign tissue. Rejction is prevented by destroying the cells, the T-lymphocytes, which normally recognize and destroy foreign cells or tissue. This is done by using a specially prepared antibody to the T-lymphocytes themselves.

The dose of the administered antibody is of great importance. If too little antibody is given the T-cells will persist and rejection of the skin graft will occur. If more antibody is given than needed, the patient's defenses against bacterial invasion will be impaired and infection will result.

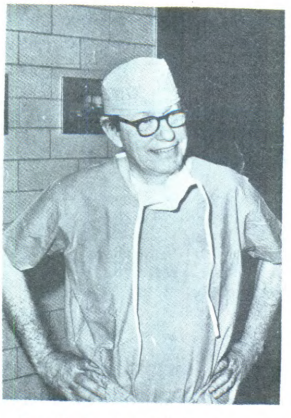
Regulation of the dose of antibody, is therefore, carefully carried out by a diagnostic test called a rosette count which uses sheep red blood cells that naturally stick to and identify T-lymphocytes. With the use of specific doses of antibody to T-lymphocytes, skin graft rejection is prevented and about two-thirds of the patients who were massively burned have survived and have returned to normal life.

Burn Care



A plastic isolation tent in the bacteria controlled Nursing Unit. (NIH Photo # BC-6)

Dr. John F. Burke performs primary excisional surgery. Dr. Burke is an NIGMS grantee. (NIH Photo # BC-7)



Dr. Burke is Chief of Staff at the Shriners Burn Institute and Professor of Surgery, Harvard Medical School. (NIH Photo # BC-8)

Burn Care

SAN FRANCISCO GENERAL HOSPITAL

DR. DONALD D. TRUNKEY

Burn research at the San Francisco Trauma Center has been directed toward finding the causes of immune depression following thermal injury. When the immune system is shocked, the burn patient can be left defenseless against a wide variety of infectious organisms.

Body cells which play a major role in the immune response are the lymphocytes and macrophages. The major types of lymphocytes are the thymus-derived T-cells, and the bone marrow-derived B-cells. The macrophages are large mononuclear cells which act as accessory to the T-cells.

Mature B-cells are responsible for the manufacturing of antibodies which circulate in the blood or other body fluids. Such antibodies, in turn, respond to antigens found on the surface of most viruses and bacteria, preventing spread of infection.
Initial investigations by the San Francisco researchers, using a combined clinical and laboratory approach, found that the activity of the B-cells in producing antibody was unaffected by burn injury. This was not the case, however, in patients who were nutritionally depleted.

T-cells are produced in the thymus, an organ located in the upper front part of the chest just under the breast bone. Complex interaction between the macrophages and the T-cells provide cellular immunity and are very important in protecting a person from certain micro-organisms such as fungi and molds. Macrophages and T-cells are also largely responsible for the rejection of tissue transplants and for skin reactions to poison ivy and other allergens.

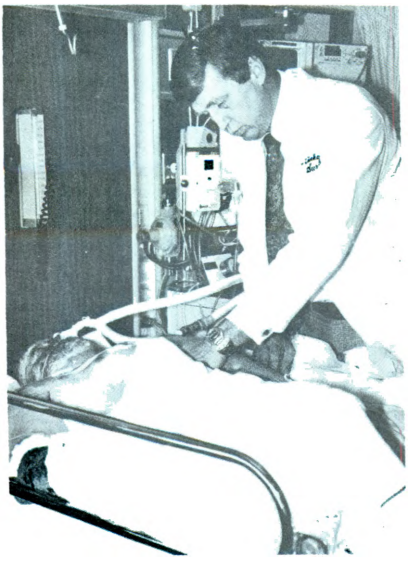
Dr. Donald D. Trunkey performs laboratory tests to determine T-cell activity with Dr. Carol Miller, staff immunologist at the Trauma Center. (NIH Photo # BC-9)

The three cell types form a "network" which regulates the production of antibodies and of the other systemic defensive responses to "alien" invaders. Balancing the activity of this defensive network in the normal person is that of the suppressor T-cells, which help regulate the immune response. Auto-immune diseases, such as arthritis, are believed to result from the failure of the suppressor system to function adequately, permitting the body to literally become allergic to itself and destroy certain of its own tissues.

Massive burn injury seems to cause the opposite reaction to take place. The suppressor T-cell system becomes hyperactive, throwing the defensive network out of balance.

It has been shown in mice that the suppressor T-cells can modulate the accessory macrophages to inhibit rather than aid in the T-cells' immune response. Removal of the suppressor T-cells and replacement by normal T-cells restored the immune response in the mice.

An increase in suppressor T-cells has been identified in extensively burned patients. Although it is not found in all patients, its presence is associated with a 75 percent mortality due to infection.



Dr. Trunkey is Associate Professor of Surgery at San Francisco General Hospital and an NIGMS grantee. (NIH Photo # BC-10)

The San Francisco researchers are currently investigating the [illegible] but little understood relation between T-cell function and macrophage function. In thermal injury the macrophages are engaged in engulfing debris thrown off by the burn wound. This clean-up response may distort the macrophages' ability to communicate with the T-cells, leading to the overstimulation of suppressor T-cell activity and leaving the burn victim susceptible to infection.

At present the approach taken by the San Francisco researchers is to determine which immune cell system may be out of order to identify the patients at risk. For those burn patients found at risk, antibiotics are given in prophylactic doses.

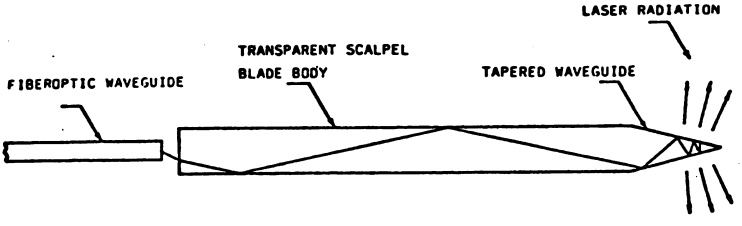
Ultimately the San Francisco researchers hope to manipulate pharmacologically the immune system in order to restore the necessary balance. Such manipulation could take the form of heparin administration to reduce the amount of debris thrown off by the injury, or thymosin dosage to stimulate the production of T-cells. Experimental work is currently being done in animals to find the most effective and least hazardous treatment.

UNIVERSITY OF WASHINGTON SCHOOL OF MEDICINE — DR. C. JAMES CARRICO

Advances in several areas of research at the University of Washington School of Medicine are leading to significant improvements in patient care. Among these are the following five developments:

Laser Scalpel

A new type of laser scalpel has been developed under the leadership of Dr. David Auth, Associate Professor of Bioengineering and Dr. David Heimbach, Associate Professor of Surgery. The scalpel uses high power argon laser radiation transported via a single low loss optical fiber into and through a transparent sharp knife. Laser radiation can be flexibly coupled from a laser source through a fiberoptic waveguide, and then coupled into the transparent scalpel blade. The radiation is trapped within the transparent blade by the critical angle of internal reflection for the particular dielectric material (quartz or sapphire) comprising the blade. The laser radiation forms from the input edge toward the tapered scalpel edge defining a sharp mechanical knife. The laser light reflected out at the tapered zone is available for hemostasis of vessels proximal to the cutting edge of the blade. Thus, as an incision is made, the blood vessels are pressed shut and fused with a cauterizing dose of laser radiation at the margin of the incision.

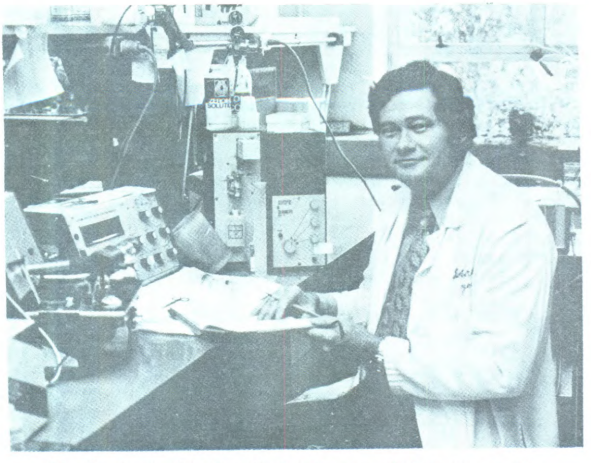


Burn Care

Green argon laser radiation is used because it is available in high power and because it is selectively absorbed by the red color of hemoglobin. The selective absorption by red blood cells permits preferential coagulation of blood with minimal damage to surrounding white tissue. The hemostatic properties of the laser are utilized in conjunction with a sharp mechanical knife.

Several models of the "laser blade" have been developed over the past several years. Both quartz and sapphire material have been used for the transparent blade and many ways of coupling the laser light from the fiberoptic wave guide into the transparent blade have been investigated. In addition, several geometric configurations for the blade have been developed. The blades are sufficiently sharp to permit cutting of tissue without laser radiation being present. In fact, the laser radiation appears to improve the blade's cutting efficiency for tissue.

Bleeding in animals has been investigated to compare the laser blade with the cold knife and the electro-cautery knife. The blood loss with the laser was extremely small, contrasted with a very large and profuse blood loss with the cold steel scalpel. On the average, the laser blade took nearly the same time to debride burn wounds as did the electric cautery knife but the blood loss was reduced by a factor of approximately threefold. These results show that a dramatic improvement is possible with the laser blade as compared to the standard surgical blade or to the electric knife, even when the electric knife is used in a careful hemostatic manner. Histological evaluation of tissue destruction



Dr. C. James Carrico is Professor of Surgery at the University of Washington, Seattle and a grantee of the NIGMS. (NIH Photo # BC-11)

has shown that the depth of necrosis with the laser blade is approximately one-third that which is seen with the electric knife.

This new technique of laser surgery appears to hold great promise as a means of performing surgery in heavily vascularized regions with precise control and tactile sensation. It is being used in selected burn patients.

Modified Whole Blood Transfusions

Studies conducted by the University of Washington researchers in conjunction with the Puget Sound Blood Center in Seattle, Washington have resulted in increased understanding of the physiologic effects of massive transfusions and have led to significant changes in transfusion practices. The sometimes massive amounts of blood required for the treatment of injured patients and the evolution of early excisional therapy of burns has made this knowledge of the requirements for transfused elements event more important.

The Blood Center has developed and adapted techniques for the removal and storage of platelets from fresh blood and for the removal of Factor VIII (anti-hemophiliac globulin) for use in hemophilia and other clotting abnormalities. The blood available is thus "modified whole blood" which has all of the usual components other than Factor VIII and platelets.

An initial study was conducted to determine the reliability and safety of using this modified whole blood for replacement of massive blood loss. The results of this investigation confirmed the fact that injured and stressed patients produce excess amounts of Factor VIII and thus no adverse consequences resulted from administration of blood deficient in Factor VIII.

Thrombocytopenia (or platelet depletion) was found in injured patients following administration of large amounts of modified whole blood; however, this same problem is described after massive transfusion with any sort of banked blood. Thus, modified whole blood appears to be a safe and advantageous product for administration to patients with massive blood loss.

The study further showed that abnormal bleeding (bleeding due to abnormal coagulation rather than to direct vessel injuries) was very low in these patients. Studies are now underway to determine if platelets should be given at a predetermined point during massive transfusion of patients or platelet administration should be delayed until signs of abnormal bleeding occur.

Sodium Content Signals Infection

Overwhelming infection remains a major problem in burned and traumatized patients. The ability to diagnose the presence of systemic infection early depends on clinical signs. Culturing organsims form the blood stream is not always reliable, and the growth of organisms is not seen until hours or days after the start of the bacteremia.

Preliminary studies in the Trauma Unit have suggested that alterations in the function of the red cell membrane cause the sodium content of the cells to

rise. Although this change is always found in nutritionally depleted patients, it is also found in patients with adequate nutrition. Should the current animal studies confirm these findings, this sodium shift is expected to represent a valuable tool in diagnosis and early treatment of overwhelming infection.

Other studies along the same line include attempts to identify antibodies to gram negative organisms which usually cause such infections. These antibodies may be used as an early indicator of significant systemic infection.

Doppler Principle Measures Cardiac Function

In using fluid therapy in burned patients and other injured patients it is essential to measure the cardiac output and its response to therapy. Current measuring techniques involve invasion of the vascular tree and frequently require the always risky insertion of a catheter into the pulmonary artery. In conjunction with the department of bioengineering, an ultrasound device using the Doppler principle is being evaluated for the measurement of the cardiac output.

This device has proved accurate in animals and in a small group of patients within the Intensive Care Unit. Its reliability under extreme conditions such as those in patients requiring special breathing assistance (positive end expiratory pressure) is being evaluated. The fact that this instrument is non-invasive and carries very little risk will permit the use of such sophisticated monitoring in a much broader spectrum of patients.

UNIVERSITY OF TEXAS
SOUTH WESTERN MEDICAL SCHOOL, DALLAS DR. CHARLES BAXTER

Severe burn injury results in a unique type of "shock" which is characterized by the initial translocation of tremendous quantities of body fluid and a series of body-wide pathophysiologic events which challenge both the immediate and ultimate survival of the patient. Significant progress has been made in defining the quantity, type and timing of fluid replacement necessary to restore circulatory adequacy and thus minimize the early deaths resulting from inadequate resuscitation, once the leading cause of mortality among burn victims.

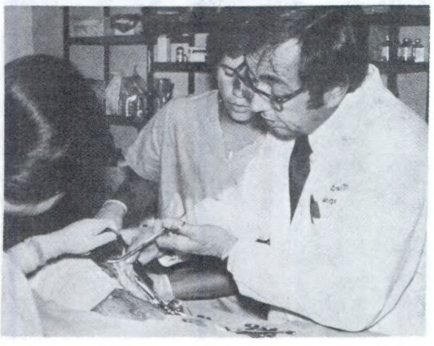
Studies of the mechanisms responsible for body fluid losses have been undertaken at the University of Texas Health Science Center at Dallas. These have yielded unexpected results. It has been found that, immediately after injury, sodium and water were translocated into normal skeletal muscle cells far removed from the injury site, as well as being lost into the tissues in the area of injury.

Burn Care

The pathogenesis of burn wound edema has been studied and found to arise principally as a result of abnormal extravascular clotting within the wounded area. Semifluid gels of fibrinogen (blood-clotting protein) degradation products, found in great quantity both in and beneath the area of injury, progressively obliterate the lymphatic and venous drainage. These fibrin "splits" effectively block the rapid mobilization of fluid entering the wounded area.

Resorption of these clotting fractions were found in the systemic circulation and have now been implicated in the abnormally fast clotting time of the blood. They may also be involved in several important pathologic processes which include a factor responsible for decreasing the pumping action of the heart, increases in lung capillary permeability, and perhaps several more physiologic and biochemical events vital to normal organ function.

Study of the many significant systemic problems threatening early survival in burn victims has yielded new information important in treatment. Foremost has been the redefining of the mechanism of the early and severe anemia from increased red blood cell (erythrocyte) destruction during the first weeks after injury. This destruction was once thought to result from heat damage to the erythrocytes at the time of injury.
Crossover studies in patients and normal volunteers have shown that abnormal cell wall morphology can be corrected by placing the cells from the burn patient in normal plasma from an unburned recipient (^{51}Cr labeled RBC cross transfer). This information furnished several clues to the basic biochemical derangements in the cell wall that are currently being pursued. This may result in preventive therapy which may decrease dramatically the number of transfusions necessary for burn care.

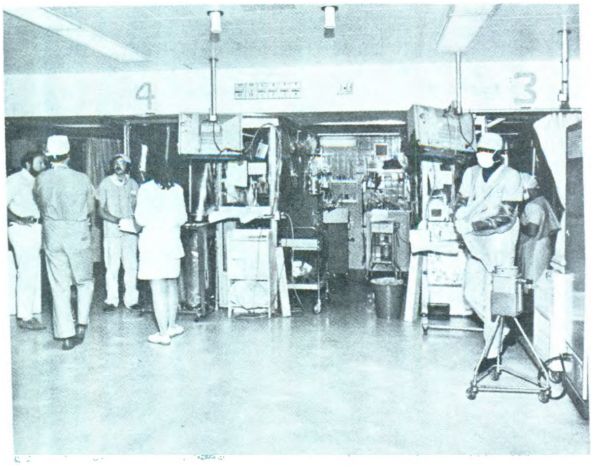


Dr. Charles Baxter is Professor of Surgery at the University of Texas Health Science Center at Dallas and an NIGMS burn care research grantee. (NIH Photo # BC-12)

It has been noted that cardiac function is often significantly compromised in the first days following thermal injury by a circulating myocardium depressant factor. Additional studies of the heart following this period have found it to be hypercontractile, exhibiting a work load comparable to that of a competing athlete. Both the cause and treatment of this contractility are being vigorously pursued since it is likely that this physiologic abnormality weighs heavily on the ultimate outcome of many burn victims.

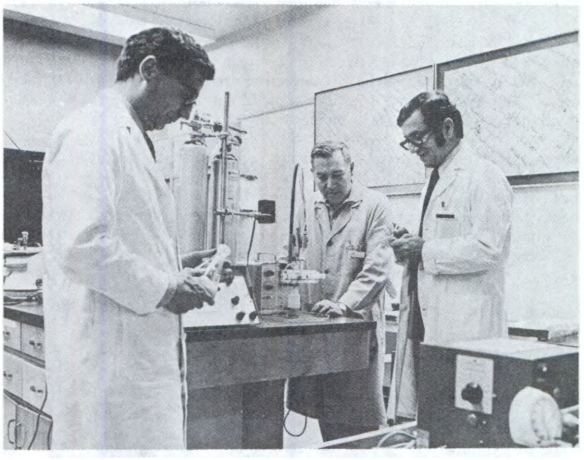
Repetitive studies of cardiac output ejection fraction and muscle fiber length are being conducted by noninvasive radioisotope myocardial imaging in both clinical and experimental subjects. Several other lines of investigation are being undertaken to better understand and control this devastating abnormality. Clinically, the changes in the body fluid spaces, including blood volume, metabolic rate, anemia and other factors are being documented as a basis for employing pharmacologic therapy.

The past decade of studies have produced a more optimal resuscitation treatment regimen and proceeded to establish a more realistic pathologic description of the burn illness. Research has now entered into the phase of biochemical definition of the observed pathophysiologic events. This may result in new modes of beneficial therapy.



Burn Care

ST. JOHN'S MERCY MEDICAL CENTER DR. WILLIAM W. MONAFO



Dr. William W. Monafo (left) consults with two of his staff. Dr. Monafo is chairman of the department of surgery at St. John's Mercy Hospital, St. Louis and an NIGMS grantee. (NIH Photo # BC-13)

Research at St. John's Mercy Medical Center in St. Louis, Missouri has focused on three major areas: burn shock and its treatment; control of the microbial flora in the wound with topical agents; and the hypermetabolism that occurs after thermal injury.

Previous work at St. John's has shown that burn injury induces a major extravascular sodium deficit which must be corrected to prevent death. Moreover, the presence of associated lung injury significantly increases the sodium requirements necessary for resuscitation. It has been demonstrated at this institution that the volumes of sodium-containing fluids necessary for resuscitation (both experimentally and clinically) can be decreased by 30-50 percent by using balanced hypertonic sodium solutions.

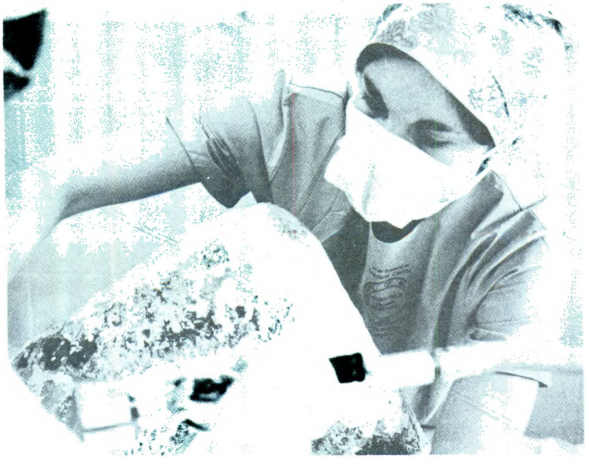
More recently, the effects of the histamine H_2 receptor blockade in burn shock have been under study. The preliminary evidence is that the sodium and water fluxes into the injured tissue can be significantly reduced by H_2 receptor blockade, thus concomitantly reducing the water and sodium requirement for resuscitation.

In the area of topical antisepsis, significantly improved clinical results have occurred by the incorporation of the antibacterial salt, cerium nitrate, into the already widely used silver sulfadiazine cream. Gram-negative bacterial burn wound infections have occurred much less frequently in severely burned patients when this agent is used prophylactically, resulting in a lower mortality rate.

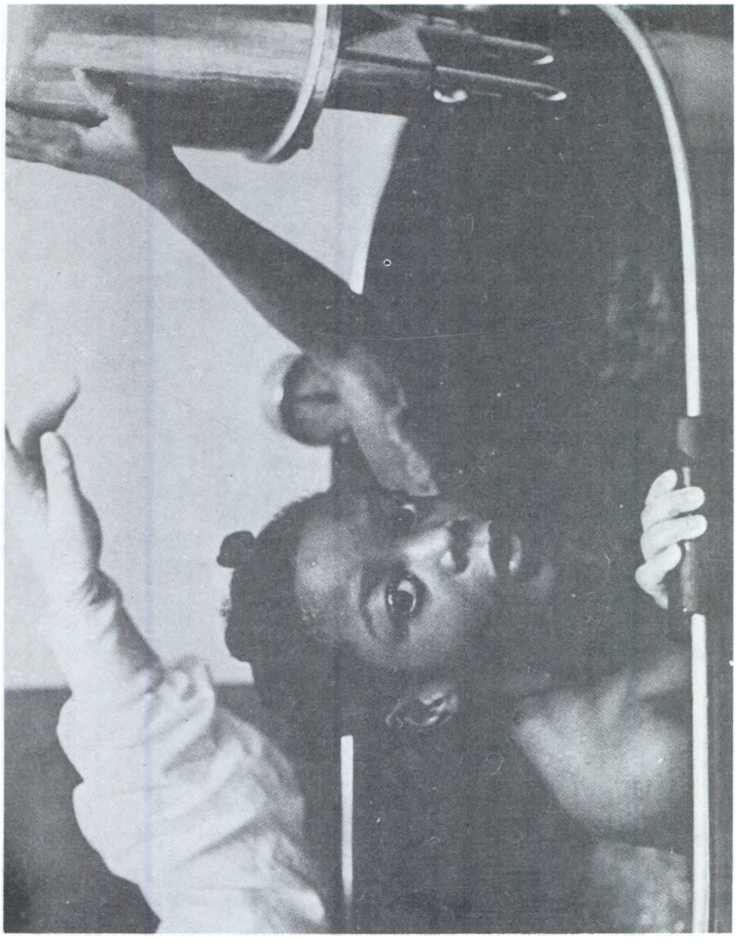
Burn Care

Using a clinical environmental chamber, the investigators are presently studying the effects of thermal injuries of varying extents and depths on the metabolic rate and on the mechanisms of heat loss. Oxygen consumption, wet heat loss, and skin and wound temperatures are being monitored under different ambient conditions in the pathogenesis of burn hypermetabolism, and at varying times after injury. The goal is to further elucidate the role of increased water vapor loss that occurs through burned skin.

In extensively burned patients exercise tolerance is also being quantitated at varying times after their convalescence in the environmental chamber. Extensive areas of grafted skin seriously impair the ability of the body to dissipate a sudden heat load. Preliminary evidence, however, indicates that, with time, adaptation and/or conditioning results in lessening of the hyperthermia that attends exercise. These data will be important in determining the degree of permanent disability resulting from burn injury.



Burn Care



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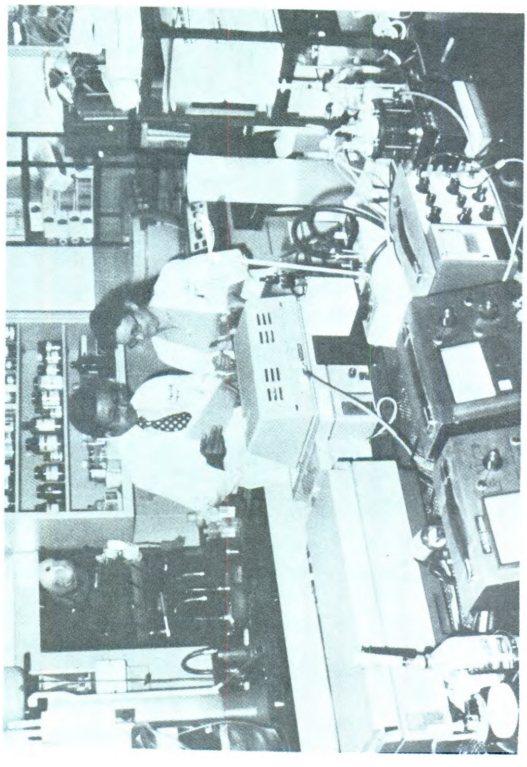

Dr. Charles Baxter at the Dallas Health Science Center evaluates a report with a laboratory assistant. Surrounding them is the complex instrumentation used in assessing burn patient status. (NIH Photo #BC-15)

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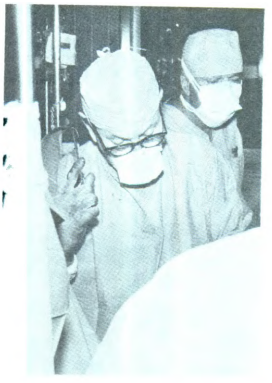

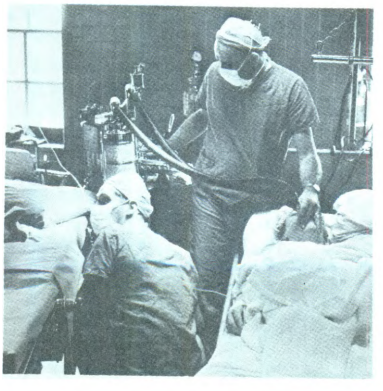

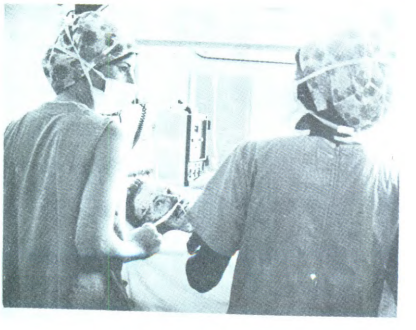

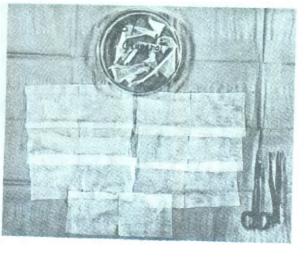

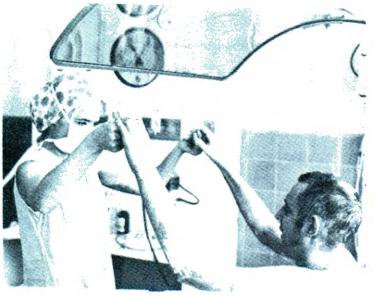

THE NEED FOR REGIONAL POISON CONTROL CENTERS IN THE U.S.A.

Walter D. MEESTER (*)

Since 1953, poison control centers have proliferated throughout the United States. Unfortunately, like the rest of our health facilities, they have developed haphazardly, each community and sometimes each hospital attempting to establish one of its own, without regional planning. Several exist sometimes within the same city. As a result, most are small, without any independent existance from the emergency room and without specialized staff or budget. Poison Calls are answered by an emergency room clerk or an available nurse or a physician, many of whom are simply rotating through the emergency department. Often their information resources on toxic substances are incomplete and cannot provide up-to-date product information and clinical management. Most have no access to a clinical toxicologist or a clinical toxicology laboratory. Few of them have toll-free telephone lines, follow-up procedures, or public information and prevention programs. The number of calls handled by most centers is usually too small to justify a financial investment and too small to maintain a staff of experts.

Slide No. 1 In December of 1976 we completed a survey of 595 poison centers in the United States. Analysis of 417 replies (70 %) revealed that :

Poison control centers survey 1976	
No. of questionnaires	595
No. of responders	417
Percent response	70 %

TABLEAU 1

(*) M.D., Ph.D., F.A.A.C.T., Director Western Michigan Poison Center, Grand Rapids, Michigan 49506 (U.S.A.).

Slide No. 2 92 % of the centers are located in a hospital emergency department.

P. C. C. located in emergency department	
YES	92 %
NO	8 %

TABLEAU 2

Slide No. 3 40 % of these poison centers have no separate telephone listing even though they provide information to the public.

Listed in phone book as P. C. C.	
YES	60 %
NO	40 %

TABLEAU 3

Slide No. 4 Only 5 % maintain a toll-free telephone service.

Toll-free telephone service	
YES	5 %
NO	95 %

TABLEAU 4

Slide No. 5 70 % of the poison calls are handled by nurses ; 20 % by pharmacists ; and 10 % by other professionals.

Who answers the poison call ?	
Nurse	70 %
Pharmacist	20 %
Other	10 %

TABLEAU 5

Slide No. 6 Less than 8 % of those answering the poison calls devote full time to this function.

Is this their primary duty ?	
YES	8 %
NO	92 %

TABLEAU 6

Slide No. 7 More than 75 % of the centers handle less than 3 calls a day.

No. of calls per year	
1000 or more	25 %
500 - 1000	22 %
100 - 500	30 %
Less than 100	23 %

TABLEAU 7

Slide No. 8 Home treatment is only recommended 22 % of the time and follow-up procedures are only carried out 14 % of the time, except for serious cases in which the follow-up is less than 40 %.

Slide No. 9 Over 200 of the poison centers surveyed do not employ follow-up procedures.

Is home treatment recommended ?	
Never	14 %
Occas.	64 %
Often	22 %

TABLEAU 8

Follow-up procedures on poison calls	
Always	14 %
Only serious cases	37 %
No follow-up	49 %

TABLEAU 9

Slide No. 10 More than 35 % of the centers fail to maintain permanent records on poison calls.

Are permanent records maintained ?	
YES	65 %
NO	35 %

TABLEAU 10

Slide No. 11 Inasfar as resources are concerned, 90 % of the centers use toxicology textbooks ; 88 % subscribe to the National Clearinghouse card files ; 51 % subscribe to Toxifile, a microfiche system and *Slide No. 12* another 45 % to the Poisindex microfiche system. The latter was the resource found to be most useful.

Available resources	
Toxicology texts	90 %
Nch card file	88 %
Toxifile	51 %
Poisindex	45 %
Computer program	4 %

TABLEAU 11

Resource most often used	
Microfiche	51 %
Nch card file	40 %
Texts	27 %
Physician	19 %

TABLEAU 12

Slide No. 13 Less than 10 % of the centers are weekly or monthly involved in a poison prevention education program. Most of the poison *Slide No. 14* prevention education is directed to lay groups and schools. Few centers are involved in the teaching of other health professionals. *Slide No. 15* Most of the poison prevention education was done by nurses ; least by physicians.

Poison prevention education involvement in teaching programs	
Weekly	8 %
Monthly	8 %
Occasionally	32 %
Seldom	11 %
Never	41 %

TABLEAU 13

Poison prevention education	
Lay groups	38 %
Professionals	29 %
E. M. T.	28 %
Elem. school	25 %
High school	23 %
Junior high	20 %
First aid classes	19 %

TABLEAU 14

Poison prevention education Who teaches	
Nurse	37 %
Pharmacist	27 %
Physician	21 %
Other	15 %

TABLEAU 15

Slide No. 16 83 % of the centers lacked in-house toxicology conferences.

In-service toxicology conférences	
None	83 %
Yearly	10 %
Monthly	5 %
Weekly	2 %

TABLEAU 16

Slide No. 17 Only 13 % of the centers indicated that they are operating on a specific annual budget which ranges from a low of $ 260/year for
Slide No. 18 one center to a high of $ 200,00/year for another center.

Specific budget for P. C. C.	
YES	13 %
NO	87 %

TABLEAU 17

Range of annual budget
$ 260 - $ 200,000

TABLEAU 18

Slide No. 19 Funding for poison control is obtained for 78 % of the centers from hospital operating funds, 9 % from donations, 10 % from state funds ; 5 % from grants ; 5 % from federal funds ; 3 % from local government funds ; and 1 % from fees for service.

Funding	
Hospital	78 %
State	10 %
Donations	9 %
Grants	5 %
Federal	5 %
Local	3 %
Fees	1 %

TABLEAU 19

Slide No. 20 Only 20 % of the centers have the expertise of a clinical toxicologist available to them and only 27 % have ready access to a toxicology laboratory, but only half of them provided a *stat* service.

Slide No. 21

Slide No. 22

Clinical toxicologist available	
YES	20 %
NO	80 %

TABLEAU 20

Toxicology laboratory services available	
On premises	27 %
Same city	19 %
Within 25 miles	11 %
Within 50 miles	9 %
Within 100 miles	16 %
Unavailable	18 %

TABLEAU 21

Does the tox. lab provide a STAT service ?	
YES	57 %
NO	43 %

TABLEAU 22

Slide No. 23 Although Syrup of Ipecac for the induction of emesis and activated charcoal for the absorption of toxic substances is available in almost all of the emergency departments in which the poison centers are located, almost a hundred centers did not have physostigmine available for anticholinergic and tricyclic anti-

Slide No. 24 depressant overdoses. In spite of its uselessness, 50 % of the emergency rooms still use the universal antidote. Some centers

Slide No. 25 still recommended mustard, saline and raw eggs as agents to induce vomiting.

Drugs and antidotes available in emergency department	
Syrup of Ipecac	94 %
Activated charcoal	91 %
Naloxone	88 %
$MgSO_4$ or $NaSO_4$	87 %
Physostigmine	78 %
Methylene blue	75 %
Bal	73 %

TABLEAU 23

Drugs or antidotes (cont.)	
Snake antivenin	68 %
Ethanol	60 %
Apomorphine	59 %
Cyanide antidote kit	54 %
Ca EDTA	51 %
Universal antidote	50 %
Deferoxamine	46 %
Spider antivenin	46 %

TABLEAU 24

Agents recommended for emesis	
Syrup of Ipecac	93 %
Apomorphine	13 %
Mustard and water	13 %
Saline solution	12 %
Raw eggs	9 %
Other	5 %

TABLEAU 25

Slide No. 26 Inasfar as population served, 14 % of the centers serve a population of one million or more, 20 % between half million and one million ; 28 % serve 100,000 to 500,000 people ; 19 % serve 50,000 to 100,000, 10 % serve 10,000 to 50,000 and 1 % 5,000 to 10,000, and 8 % of the centers did not know how many people they serve.

Population served	
1 million or more	14 %
500 000 - 1 000 000	20 %
100 000 - 500 000	28 %
50 000 - 100 000	19 %
10 000 - 50 000	10 %
5 000 - 10 000	1 %
Unknown	8 %

TABLEAU 26

Slide No. 27 52 % of the centers indicated that the area they serve is also served by another poison center.

Other poison centers serving same area	
YES	52 %
NO	48 %

TABLEAU 27

Slide No. 28 Only 30 % of the centers had hemodialysis available on the premises.

Availability of hemodialysis	
Same location	30 %
Same city	20 %
Within 25 miles	14 %
Within 50 miles	14 %
Beyond 50 miles	22 %

TABLEAU 28

From this survey, it is evident that poison control, except in a few large centers, is usually a *part time* operation. Therefore, in spite of a favorable public image, poison control in the U.S.A. is not adequately taken care of. Many doctors have been disillusioned by the services a poison center provides and the public unknowingly is being cheated. In an attempt to provide a better service to the poisoned patient and to prevent unnecessary duplication of efforts, a movement has started in the United States during the last few years to develop regional poison information and treatment centers which have a professional staff, devoted full time to the treatment and prevention of poisoning. Recently, the American Association of Poison Control Centers adopted the following criteria for regional poison control programs :

AMERICAN ASSOCIATION OF POISON CONTROL CENTERS CRITERIA FOR REGIONAL POISON CONTROL PROGRAMS

I. — Determination of region

A. GEOGRAPHICAL CHARACTERISTICS

A regional program may serve a single state, a multi-state area, or only a portion of a state. The region should be determined by local geopolitical needs, in conjunction with state health agencies, local medical societies, hospitals, and other interested health care agencies and health care agencies

and health care providers. The ultimate authority for designation of regions should lie with state health departments or consortiums of multi-state departments or health systems agencies.

B. Population base

A regional program should serve a population base of no fewer than one million people. It is unlikely that a single information center or regional program could adequately serve more than 10 million people.

II. — Services to be provided

Regional programs should provide the following services:

1. A regional poison information service.
2. A regional system for providing poisoning care, with at least one comprehensive poisoning treatment center.
3. An outreach health profession education program.
4. An outreach public education program.
5. A regional data collection and reporting system.

Description of these services is as follows:

A. Regional information center

Each regional program should provide a regional information center with the following capabilities:

1. Information availability 24 hours a day, 365 days per year.
2. Toll-free telephone access to the center from all areas within the region.
3. Comprehensive information resources.
4. Management protocols for initial management of consumer calls and standardized recommendations for health professional calls.
5. Adaptation of information and treatment protocols to

meet appropriate consumer and health professional needs.

6. Access to regional treatment facilities for patient referral and transport.

B. Regional treatment system

Each region should provide a patient care system that provides :

1. A system for identifying hospital capabilities for managing the poisoned patient.
2. A comprehensive poison treatment center(s) for both pediatric, adolescent, and adult patients.
3. Availability of comprehensive analytical toxicology services.
4. A patient transport system to move appropriate poisoning victims to the regional treatment center while providing adequate patient care and supervision.

C. Outreach health profession education program

Each program should provide continuing education as follows :

1. Professional groups served should include :

   Emergency room physicians.
   Other area physicians.
   Emergency room and ICU nurses.
   Paramedics and EMT's.
   Other professionals with interest in poison control and toxicology.

2. Topics to be covered should include at least :

   Services and availability of poison control center.
   First aid and general management of poisonings.
   Advances in poison information and poison treatment.

D. Outreach public education program

Each program should provide a general public education program covering at least :

1. Services and availability of poison control program.
2. Poison prevention.

E. Regional data collection system

Each program should have a data collection system to include :

1. Recording of all cases handled by the regional center.
2. Tabulation and reporting of center experience at least on an annual basis.

III. — Staffing of program

A. Staffing of the poison information center

1. A medical director, qualified to provide medical training and supervision, and to be responsible for medical decisions and treatment protocols, by reason of his or her training, experience, and/or specialty certification in medical toxicology.
2. Information specialists, with appropriate professional backgrounds and experience or training in poison control and toxicology, who would be responsible for provision of primary telephone consultations and who would be fulltime employees of the poison center program.
3. Administrative staff as needed.

B. Staffing of the comprehensive treatment facility

Staff of the comprehensive treatment facility should consist of :

1. Appropriate board-certified physician specialists who can provide basic poisoned patient care.
2. A physician-medical toxicologist, who can serve as an attending physician or consultant on admitted poisoning cases.
3. Appropriate range of other skilled health professionals.

Currently, there are about 15 regional centers in the United States which fulfill these criteria. It is estimated that 50 to 60

regional centers can effectively serve the entire population of the United States and deliver a much higher quality of care of the poisoned patient than is currently being done by over 600 poison control centers. Since poison information is a public health service, it should be funded by tax dollars from local, state, and federal funds. In some states, such as in Michigan, legislation has been introduced for the funding of a regional poison control network in the state. Hopefully, such funding will be forthcoming. The Emergency Medical Services Agency of the U.S. Department of Health, Education, and Welfare has also promoted the establishment of regional poison control centers and during the past three years has funded some of them. In general, it is felt that effective home management of the large majority of poisonings in the United States can provide a tremendous savings in medical costs and prevent many unnecessary hospital and emergency department visits. Thank you for your attention.

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MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

Edited by
JONATHAN E. FIELDING, M.D., M.P.H., AND PEARL K. RUSSO

A STATEWIDE PLAN FOR CARE OF THE POISONED PATIENT: THE MASSACHUSETTS POISON CONTROL SYSTEM

FREDERICK H. LOVEJOY, JR., M.D., DEBRA L. CAPLAN, A.B., THOMAS ROWLAND, M.D., AND LOUIS FAZEN, M.D.

An estimated five million poisonings occur in the United States each year, causing over 5000 deaths. As a cause of accidental death, poisonings are surpassed only by motor-vehicle accidents, drownings and burns.[1] This problem did not begin to attract sufficient attention to initiate professional and legislative activity until the late 1940's and early 1950's.[2] As a result of the co-operative efforts of the Illinois Chapter of the American Academy of Pediatrics, the Illinois State Health Department and seven major hospitals, the first poison control center was established in 1953 as a pilot project in Chicago.[3] Others followed, and the poison control movement spread rapidly throughout the country. The centers sought to provide information on treatment and to establish effective prevention programs. Poison control centers were so well received that 641 centers now exist in the United States,[4] and a large number in Canada and Europe.[5]

Although the number of centers in the United States suggests acceptance and even some success in accomplishing their original goals, analysis of their performance gives a less optimistic picture. Over the past 10 years, health professionals have noted the following inadequacies: too many centers with inadequate regionalization for the population served[1-8]; insufficient utilization to accumulate needed experience and to justify a full-time, highly trained staff[7]; insufficient attention to the adult suicide overdose, to the intentional self-poisoning in the group six to 18 years old and to industrial and environmental exposure[2]; and lack of data demonstrating the effectiveness of poison centers.[8]

Poison Control in Massachusetts

During the past 20 years, six poison centers in Massachusetts have offered poison control services to populations predominantly within their geographic purview. Located in Boston, Worcester, Fall River, New Bedford and Springfield (two centers), these centers have functioned independently, without a co-ordinated statewide approach. Inadequately funded, they have depended on the budget of the hospital in which they were housed.

In 1971 the Massachusetts Legislature passed a Poison Control Law for the state,[9] which empowered the Department of Public Health to ensure the development of a comprehensive poison system. Two years later, Congress passed the National Emergency Medical Services System Act of 1973, which mandated a "systems approach" in developing critical-care systems for burns, trauma, spinal-cord injury and cardiac, newborn, psychiatric and poisoning emergencies.[10] Over the past two years, a statewide committee, appointed by the Commissioner of Public Health and made up of physicians, pharmacists and nurses, with representation from the six poison centers, has formulated an organized statewide approach to the management of the acute overdose. Built on national experience, with modification to best serve the state's medical-care needs, a new statewide Poison Control System became operational on January 1, 1978.

Massachusetts Poison Control System

The Massachusetts Poison Control System is a consortium of institutions affiliated with all four Massachusetts medical schools, schools of pharmacy, 80 acute-care hospitals (designated member institutions) throughout the state, educational institutions

From the Massachusetts Poison Control System, the Massachusetts Department of Public Health and the Coordinating Committee of the Massachusetts Poison Control System (address reprint requests to Dr. Lovejoy at 300 Longwood Ave., Boston MA 02115 [617] 734-6000, Extension 3171).

designated in the various Health Systems Agency (HSA) areas of the state and the Massachusetts Department of Public Health. A single Poison Information Center located at the Children's Hospital Medical Center (Boston), the member institutions and the educational institutions carry out the functions of the System.

The Information Center has multiple responsibilities. It provides emergency consultation on poisonings and assists in the transfer of appropriate patients to medical facilities. It also makes available educational materials to the public, professionals and member and educational institutions and co-ordinates the collection and analysis of data for the System. The educational institutions co-ordinate programs of professional and public education. In addition, they give consultative advice to neighboring hospitals and professionals.

The System is funded jointly by public and private sources. Half the yearly funds emanate from federal support (Maternal and Child Health and Emergency Medical Services) and from the Commonwealth of Massachusetts. The other half of the support comes from member institutions and the consortium of teaching institutions affiliated with the System. The annual budget of $180,000 covers the costs of library and computerized information resources, salaries, public and professional educational material, telephone communications to and from the Information Center and overhead costs. On the basis of the 45,000 calls handled during 1978, the cost per call was $4.

To ensure consideration of and response to statewide medical needs, the Massachusetts Poison Control System is responsible to two advisory boards, both appointed by the Commissioner of Public Health. The first, which has senior representation from the Department of Public Health, teaching institutions, acute-care hospitals and medical groups concerned with health-care needs in the Commonwealth, is primarily responsible for broad policy decisions and funding of the System. The second, a working group composed of members representing diverse, statewide geographic and professional interests, is responsible for assuring optimal functioning of the multiple programs of the System.

Programs of the Massachusetts Poison Control System

Poison Information

The Poison Information Center, now available for the entire state 24 hours a day, seven days a week, is reached by both the public and professionals through a toll-free number (1-800-682-9211) as well as through a local metropolitan Boston number (617-232-2120). The staff of the Center includes the director, a pediatrician/clinical toxicologist; the assistant director, a doctor of pharmacy trained in clinical toxicology; 12 pharmacists and nurses who serve as information specialists; the editor of *Clinical Toxicology Review*, a physician/clinical toxicologist; and the co-ordinator of the System's computer program. The information specialists work full time, and are trained to provide information about diagnosis and treatment of drug overdose and poison prevention.

Closely associated with the Center are members of the faculty of the Clinical Pharmacology Division of Harvard Medical School and physicians in its pharmacology/toxicology fellowship training program. The Center also provides a broad range of knowledge through its consultants — environmental and industrial toxicologists at Harvard School of Public Health and Massachusetts Institute of Technology, mycologists from the Boston Mycological Society, marine biologists from the New England Aquarium, entomologists from Harvard University and botanists from the Arnold Arboretum. Surgeons, ophthalmologists, psychiatrists, dermatologists, nephrologists and cardiologists are among the additional clinical specialists used frequently by the Center. The information specialists refer complex poisonings reported by hospitals and physicians to staff clinical toxicologists and consultants. The latter provide information on the toxicology of drugs, household products and biologic poisons and assist in the clinical diagnosis, analytic confirmation, emergency treatment and ongoing management of specific poisonings.

The Information Center uses extensive information-retrieval capabilities to facilitate its work. These include a microfiche system, an online computer to a data bank at the National Clearinghouse for Poison Control in Washington, National Clearinghouse card files, journals and texts in toxicology, pharmacology, and medicine toxicology reprint files, a registry of hospitalized cases and computerized case files. All sources are up-to-date and readily accessible for information and education purposes.

Professional Education

A major emphasis of the Massachusetts Poison Control System is the establishment of statewide continuing medical education in toxicology for physicians. The Information Center itself, with access to a wide volume of patient material and available appropriate faculty, serves to integrate many aspects of professional education. Training now exists for medical students during their third and fourth years, for pharmacy students as part of formal courses in clinical toxicology, for house staff from various training programs during elective periods and for physicians pursuing postgraduate training in clinical toxicology. At all levels, the Center provides the opportunity for ex-

perience in using information resources, for participation in weekly toxicology rounds involving discussion of current clinical cases with critical in-depth analysis of specific subjects of interest, for training in emergency overdose treatment and poison prevention and for experience in responding to consultations from the public and professionals. Physician education also occurs through consultative advice given on specific overdoses as well as through management protocols and toxicology information transmitted to the physician on the day after a request is made. Physicians may also receive from the Center the monthly *Clinical Toxicology Review*, a review of the clinical presentation and management of specific overdoses with discussion of current toxicologic problems in the state.

The Center's staff participates in formal lectures on subjects of current toxicologic interest presented at hospital grand rounds or postgraduate teaching courses. Physicians in practice come to spend time in the Center to learn how it functions and to acquire a background for their own study of clinical toxicology. Finally, the Center staff participates in educational programs sponsored by professional organizations in Massachusetts and helps educational institutions coordinate continuing-education programs in toxicology for physicians, nurses and pharmacists.

Public Education

Since the best approach to poisonings is their prevention, statewide programs of public education have been initiated. Emphasis has been placed on notifying the public how to reach the Information Center, and informing people of the dangers of various drugs and household products and prevention of their ingestion and the correct use of syrup of ipecac and of safety enclosures.

Transmittal of information to the public takes many forms — lectures by staff members to lay groups and school classes, poison education brochures, films, and telephone stickers carrying the Information Center number, television and radio programs, magazines and newspaper articles. Professional organizations (for example, the Massachusetts Pharmaceutical Association and Massachusetts Chapter of the American Academy of Pediatrics) and civic organizations actively assist in furthering poison prevention efforts.

Data Collection and Research

The Center has accumulated epidemiologic and patient-tracking data to assess the effectiveness of the System and to support public and professional educational efforts. During the first six months of operation, the Center received 21,000 calls, of which 2 per cent were for questions pertaining to drug information and 98 per cent for an actual exposure; 19 per cent of the affected persons were experiencing symptoms as a result of their overdose, and 3 per cent required hospitalization. Approximately 12 per cent of calls were from medical professionals, and 88 per cent from the public; 62 per cent involved children five years of age and under, 11 per cent those six to 20 years of age, and 27 per cent adults over the age of 20; 67 per cent of exposures were by ingestion, 3 per cent by inhalation, and 30 per cent by skin or mucous-membrane contact. Poisonings occurred with drugs, household products, biologic poisons, industrial poisons and drugs of abuse. The most common drug and household-product exposures for January through June, 1978, are shown in Table 1.

Table 1. Descending-Order Frequency of Poisoning, Massachusetts Poison Control System, January-June, 1978.

	Drug	Household Products
1.	Aspirin	Bleach
2.	Diazepam	Alcoholic beverages
3.	Acetaminophen	Gasoline
4.	Vitamins	Cologne
5.	Rubbing alcohol	Perfume
6.	Flurazepam	Enamel paint
7.	Brompheniramine maleate	Ammonia
8.	Penicillin	Mothballs
9.	Hydrogen peroxide	Cigarettes
10.	Desitin (ointment & powder)	Shampoo

Conclusions

The Massachusetts Poison Control System has emphasized Department of Public Health responsibility, private-institution operation, public and private funding and a systems approach to care. It may thus serve as a useful model for the delivery of regionalized poison services for other states.

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Calendar No. 104

96TH CONGRESS
1st Session

SENATE

REPORT
No. 96-102

EMERGENCY MEDICAL SERVICES SYSTEMS AMENDMENTS OF 1979 AND SUDDEN INFANT DEATH SYNDROME AMENDMENTS OF 1979

REPORT

OF THE

COMMITTEE ON LABOR AND HUMAN RESOURCES

UNITED STATES SENATE

TO ACCOMPANY

S. 497

APRIL 30 (legislative day, APRIL 9), 1979.—Ordered to be printed

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EMERGENCY MEDICAL SERVICES SYSTEMS AMENDMENTS OF 1979 AND SUDDEN INFANT DEATH SYNDROME AMENDMENTS OF 1979

APRIL 30 (legislative day, APRIL 9), 1979.—Ordered to be printed

Mr. KENNEDY, from the Committee on Labor and Human Resources, submitted the following

REPORT

[To accompany S. 497]

The Committee on Labor and Human Resources, to which was referred the bill (S. 497) to extend the authorizations of appropriations relating to emergency medical services systems under title XII and section 789 of the Public Health Service Act, having considered the same, reports favorably thereon with an amendment in the nature of a committee substitute, and an amendment to the title, and recommends that the bill as amended do pass.

COMMITTEE AMENDMENTS

SUMMARY OF SUBSTANTIVE CHANGES

The Committee made a number of substantive amendments to existing law. As included in the Committee bill, they are as follows:

A. Emergency Medical Services Systems Programs (Title I)

(*1*) *Planning grants* (*sec. 1202(f)*)—This section would be amended to delete the requirement in current law that no more than 50 percent of the sums appropriated each year for grants and contracts for planning may be made for second planning grants, and provides that priority for making grants or entering into contracts for planning shall be afforded to eligible entities applying for first planning grants.

(*2*) *Authorizations of appropriations* (*sec. 1207(a)*)—This section would be amended to extend the authorizations of appropriations for grants or contracts for planning, initial development, and expansion of emergency medical services systems for 3 fiscal years at $40 million

per year, and to add a new clause to paragraph (5)(A) of subsection 1207(a) mandating a 1-percent earmark of funds appropriated for planning grants rather than the 2½- to 5-percent earmark in current law, and to extend through the next 3 fiscal years the current earmark of not less than 20 percent each for section 1203 initial development and operation grants and section 1204 expansion and improvement grants.

(*3*) *Research grants* (*sec. 1207*(*b*))—This section would be amended to extend the authorizations of appropriations for research grants for 3 fiscal years at $3 million per year.

(*4*) *Interagency committee on emergency medical services* (*sec. 1209*(*c*)—This section would be amended to provide for a representative of the Federal Emergency Management Agency on the Interagency Committee on Emergency Medical Services.

(*5*) *Burn, trauma, or poison injuries* (*sec. 1221*)—This section would be amended to include trauma or poison among programs eligible for support under section 1221, and to extend the authorizations of appropriations for section 1221 programs for 3 fiscal years at $3 million per year.

(*6*) *Training* (*sec. 789*)—This section would be amended to extend the authorizations of appropriations for grants or contracts for training in emergency medical services for 3 fiscal years at $4 million per year.

B. Sudden Infant Death Syndrome (*Title II*)

(*1*) *Identifiable administrative unit* (*sec. 1121*(*a*)(*1*))—This subsection would require that an administrative unit within the Department of Health, Education, and Welfare be identified by the Secretary to carry out the Sudden Infant Death Syndrome (SIDS) program in a coordinated and cohesive fashion, and would require the Secretary to provide the unit with adequate staff to carry out the SIDS program effectively.

(*2*) *Reporting system and clearinghouse activities* (*sec. 1121*(*a*)(*2*))—This subsection would require the Secretary to develop a system for the annual reporting to the Department of data collected by the counseling and information projects and to carry out coordinated clearinghouse activities with the various entities within and outside the Department regarding SIDS in order to improve the dissemination of information to individuals and organizations interested in SIDS.

(*3*) *Counseling and information projects* (*sec. 1121*(*b*))—This section would be amended to provide that the information to be collected by the counseling and information projects under section 1121(b)(1)(A) include not only data on the causes of SIDS, but other aspects of SIDS as well; to require grant applications for information and counseling projects under section 1121(b) to provide for the involvement of appropriate voluntary groups with a demonstrated interest in Sudden Infant Death Syndrome in the development and operation of such project; and to direct the Secretary to seek an equitable distribution of appropriated funds among the HEW regions and to ensure that the needs of rural and urban areas are appropriately addressed.

(*4*) *Reporting requirements*—A new section 1122 would extend the previous annual reporting requirements regarding research ac-

tivities carried out through the National Institute of Child Health and Human Development. A new section 1121(c)(1) would require an annual report concerning the activities of the counseling and information projects administered by HEW, and would require development and submission of a plan for expansion of counseling and information to all States by July 1, 1980, and to all territories and possessions of the United States by July 1, 1981, as part of the annual report on information and counseling programs due on or before February 1, 1980.

(5) *Authorizations of appropriations (sec. 1121(d)(1))*—This provision extends and expands for 2 fiscal years the authorizations of appropriations for SIDS programs to allow for continued project expansion and improvement with eventual transition to a community-supported program.

(6) *Study (sec. 1121(c)(2))*—This section would require the Secretary to conduct a study regarding the death investigation laws and systems in the various States and the impact these laws and systems have on sudden and unexplained infant death.

(7) *Research (sec. 1122(a))*—A new section 1122(a) would require the Secretary to provide assurances that adequate funding is made available for NICHD research activities in the area of SIDS.

(8) *Research reports (sec. 1122(b))*—This new subsection would require, in addition to research specifically related to SIDS and research generally related to SIDS, that the Secretary provide information on research activities in the area of high-risk pregnancy and high-risk infancy relating to SIDS and that annual research reports include summaries of research findings, their possible clinical applicability, and the costs and implication of such application.

Text of S. 497 as Reported

The text of the committee substitute amendment is as follows:

Strike out all after the enacting clause as follows:

[That this Act may be cited as the "Emergency Medical Services Systems Amendments of 1979".

[PLANNING, INITIAL OPERATION, AND IMPROVEMENT

[SEC. 2. (a) Section 1207(a)(1) of the Public Health Service Act (42 U.S.C. 300d–6(a)(1)) is amended by—

[(1) striking out "and" after "1977",

[(2) striking out the semicolon after "1978" and inserting in lieu thereof a comma,

[(3) striking out "and for the purpose of making grants and contracts under sections 1202, 1203, and 1204, there are authorized to be appropriated" the second time it appears, and

[(4) inserting before the period at the end thereof a comma and "$40,000,000 for the fiscal year ending September 30, 1980, $43,000,000 for the fiscal year ending September 30, 1981, and $46,000,000 for the fiscal year ending September 30, 1982".

[(b) Paragraph (5)(B) of subsection (a) of section 1207 of such Act is amended by striking out "two" and inserting in lieu thereof "five".

[RESEARCH

[SEC. 3. Section 1207(b) of the Public Health Service Act (42 U.S.C. 300d–6(b)) is amended by inserting before the period at the end thereof a semicolon and "and $3,200,000 for the fiscal year ending September 30, 1980, $3,500,000

for the fiscal year ending September 30, 1981, and $3,800,000 for the fiscal year ending September 30, 1982".

[BURN INJURIES

[SEC. 4. Section 1221(c) of the Public Health Service Act (42 U.S.C. 300d–21 (c)) is amended by—

[(1) striking out "and" after "1978", and

[(2) inserting before the period at the end thereof a comma and "$3,000,000 for the fiscal year ending September 30, 1980, and for each of the next two fiscal years".

[TRAINING

[SEC. 5. Section 789(g)(1) of the Public Health Service Act (42 U.S.C. 295g–9(g)(1)) is amended by striking out "five" and inserting in lieu thereof "eight".]

and insert in lieu thereof the following:

TITLE I—EMERGENCY MEDICAL SERVICES SYSTEMS AMENDMENTS

SEC. 101. This title may be cited as the "Emergency Medical Services Systems Amendments of 1979".

PLANNING, INITIAL OPERATION, AND IMPROVEMENT

SEC. 102. Section 1202(f) of the Public Health Service Act (42 U.S.C. 300d–1(f) is amended to read as follows:

"(f) Priority for making grants or entering into contracts under this section shall be afforded to eligible entities applying for such grants or contracts under subsection (a) of this section.".

SEC. 103. (a) Section 1207(a)(1) of the Public Health Service Act (42 U.S.C. 300d–6(a)(1)) is amended by—

(1) striking out "and" after "1977",

(2) striking out "1978; and for the purpose of making payments pursuant to grants and contracts under sections 1202, 1203, and 1204, there are authorized to be appropriated" and inserting in lieu thereof "1978,", and

(3) inserting before the period at the end thereof a comma and "and $40,000,000 for the fiscal year ending September 30, 1980, and for each of the next two fiscal years".

(b) Paragraph (5)(A) of subsection (a) of section 1207 of such Act is amended by inserting "(i)" after "(A)" and inserting before the period at the end thereof a comma and "and (ii) of the sums appropriated under paragraph (1) for the fiscal year ending September 30, 1980, and for each of the two succeeding fiscal years, at least 1 per centum of such sums for each such fiscal year shall be used for grants and contracts under section 1202".

(c) Paragraph (5)(B) of subsection (a) of section 1207 of such Act is amended by striking out "two" and inserting in lieu thereof "five".

RESEARCH

SEC. 104. Section 1207(b) of the Public Health Service Act (42 U.S.C. 300d–6(b)) is amended by inserting before the period at the end thereof a comma and "and $3,000,000 for the fiscal year ending September 30, 1980, and for each of the next two fiscal years".

INTERAGENCY COMMITTEE ON EMERGENCY MEDICAL SERVICES

SEC. 105. Section 1209(c) of the Public Health Service Act (42 U.S.C. 300d–8(c)) is amended by inserting "the Federal Emergency Management Agency (established pursuant to Reorganization Plan Number 3 of June 19, 1978)," after "Commission,".

BURN, TRAUMA, OR POISON INJURIES

SEC. 106. (a)(1) Section 1221(a) of the Public Health Service Act (42 U.S.C. 300d–21(a)) is amended by inserting a comma and "trauma, or poison" after "burns" both times it appears.

(2) The title of part B of title XII and the heading for section 1221 of such Act is amended by striking out "BURN INJURIES" and "BURN INJURIES" and insert-

ing in lieu thereof "BURN, TRAUMA, OR POISON INJURIES" and "BURN, TRAUMA, OR POISON INJURIES", respectively.

(b) Section 1221(c) of the Public Health Service Act (42 U.S.C. 300d–21(c)) is amended by—

(1) striking out "and" after "1978", and

(2) inserting before the period at the end thereof a comma and "and $3,000,000 for the fiscal year ending September 30, 1980, and for each of the next two fiscal years".

TRAINING

SEC. 107. Section 789(g)(1) of the Public Health Service Act (42 U.S.C. 295g–9(g)(1)) is amended by inserting before the period at the end thereof a comma and "and $4,000,000 for the fiscal year ending September 30, 1980, and each of the next two fiscal years".

TITLE II—SUDDEN INFANT DEATH SYNDROME AMENDMENTS

SEC. 201. This title may be cited as the "Sudden Infant Death Syndrome Amendments of 1979".

SUDDEN INFANT DEATH SYNDROME PROGRAM

SEC. 202. Title XI of the Public Health Service Act (42 U.S.C. 300c–11(b)(5)) is amended by amending part B to read as follows:

"PART B—SUDDEN INFANT DEATH SYNDROME

"SUDDEN INFANT DEATH SYNDROME COUNSELING, INFORMATION, EDUCATIONAL, AND STATISTICAL PROGRAMS; PLANS AND REPORTS

"SEC. 1121. (a)(1) The Secretary, through an identifiable administrative unit under the supervision of the Assistant Secretary for Health, shall carry out a program to develop public information and professional educational materials relating to sudden infant death syndrome, and to disseminate such information and materials to persons providing health care, to public safety officials, and to the general public. The Secretary shall administer, through such unit, the functions assigned in this section, and shall provide such unit with such full-time professional and clerical staff and with the services of such consultants and of such management and supporting staff as may be necessary for it to carry out such functions effectively.

"(2) The Secretary shall—

"(A) develop and implement a system for the periodic reporting to the Department, and dissemination by the Department, of information collected under grants and contracts made under subsection (b)(1) of this section; and

"(B) carry out coordinated clearinghouse activities on sudden infant death syndrome, including the collection and dissemination to the public, health and educational institutions, professional organizations, voluntary groups with a demonstrated interest in sudden infant death syndrome, and other interested parties of information pertaining to sudden infant death syndrome and related issues such as death investigation systems, personnel training, biomedical research activities, and information on the utilization and availability of treatment or prevention procedures and techniques, such as home monitors.

The Secretary is authorized to enter into contracts with public or private entities to carry out the information and clearinghouse activities required under this subsection.

"(b)(1) The Secretary is authorized to make grants to public or nonprofit private entities, and enter into contracts with public or private entities, for projects which include both—

"A" the collection, analysis, and furnishing of information (derived from post mortem examinations and other means) relating to the causes and other appropriate aspects of sudden infant death syndrome; and

"(B) the provision of information and counseling to families affected by sudden infant death syndrome.

"(2) No grant may be made or contract entered into under this subsection unless an application therefor has been submitted to and approved by the Secre-

tary. Such application shall be in such form, submitted in such manner, and contain such information as the Secretary shall, by regulation, prescribe. Each application shall—

"(A) provide that the project for which assistance under this subsection is sought will be administered by or under the supervision of the applicant;

"(B) provide for appropriate community representation (including appropriate involvement of voluntary groups with a demonstrated interest in sudden infant death syndrome) in the development and operation of such project;

"(C) set forth such fiscal controls and fund accounting procedures as may be necessary to assure proper disbursement of and accounting for Federal funds paid to the applicant under this subsection; and

"(D) provide for making such reports in such form, at such time, and containing such information as the Secretary may reasonably require, including such reports as will assist in carrying out the provision of subsection (a) (2) of this section.

"(c) (1) Not later than February 1 of each year after 1979, the Secretary shall submit to the Committee on Labor and Human Resources of the Senate and the Committee on Interstate and Foreign Commerce of the House of Representatives a comprehensive report on the administration of this part (including funds and positions allocated for personnel) and the results obtained from activities thereunder, including the extent of allocations made to rural and urban areas. The report submitted on or before February 1, 1980, shall also set forth a plan to—

"(A) extend counseling and information services to the fifty States and the District of Columbia by July 1, 1980; and

"(B) extend counseling and information services to all possessions and territories of the United States by July 1, 1981.

"(2) The Secretary shall conduct or provide for the conduct of a study on State laws, practices, and systems relating to death investigation and their impact on sudden or unexplained infant deaths, and any appropriate means of improving the quality, frequency, and uniformity of the post mortem examinations performed under such laws, practices, and systems in the case of sudden and unexplained infant deaths. Not later than December 31, 1980, the Secretary shall report to the Congress the results of such study, including recommendations as to any appropriate actions by the Department of Health, Education, and Welfare with respect to the conduct of post mortem investigations in all cases of sudden and unexplained infant death (including the desirability and feasibility of establishing pilot projects for centralized post mortem and specimen examination systems on a statewide or regional basis).

"(d) (1) For the purpose of making grants and contracts under and otherwise carrying out this section, there are authorized to be appropriated $2,000,000 for the fiscal year ending June 30, 1975; $3,000,000 for the fiscal year ending June 30, 1976; $4,000,000 for fiscal year 1977; $3,650,000 for fiscal year 1978; $3,500,000 for fiscal year 1979; $5,000,000 for fiscal year 1980; and $7,000,000 for fiscal year 1981.

"(2) Payments under grants under this section may be made in advance or by way of reimbursement, and at such intervals and on such conditions, as the Secretary finds necessary.

"(3) Contracts under this section may be entered into without regard to sections 3648 through 3709 of the Revised Statutes (31 U.S.C., 529; 41 U.S.C. 5).

"(4) The Secretary shall seek to make equitable distribution of funds appropriated under this section among the various regions of the country and to ensure that the needs of rural and urban areas are appropriately addressed.

"SUDDEN INFANT DEATH SYNDROME RESEARCH AND RESEARCH REPORTS

"SEC. 1122. (a) From the sums appropriated to the National Institute of Child Health and Human Development under section 441, the Secretary shall assure that there are applied to research of the type described in paragraph (1) (A), (B), and (C) of subsection (b) of this section such amounts each year as will be adequate, given the leads and findings then available from such research, in order to make maximum feasible progress toward identification of infants at risk, of sudden infant death syndrome and prevention of sudden infant death syndrome.

"(b) (1) Not later than ninety days after the close of fiscal year 1979 and of each fiscal year thereafter, the Secretary shall report to the Committees on Ap-

propriations of the Senate and the House of Representatives, the Committee on Labor and Human Resources of the Senate, and the Committee on Interstate and Foreign Commerce of the House of Representatives specific information for such fiscal year on—

"(A) the (i) number of applications approved by the Secretary in the fiscal year reported on for grants and contracts under this Act for research which relates specifically to sudden death syndrome, (ii) total amount requested under such applications, (iii) number of such applications for which funds were provided in such fiscal year, and (iv) total amount of such funds;

"(B) the (i) number of applications approved by the Secretary in such fiscal year for grants and contracts under this Act for research which relates generally to sudden infant death syndrome, (ii) total amount requested under such applications, (iii) number of such applications for which funds were provided in such fiscal year, and (iv) total amount of such funds; and

"(C) the (i) number of applications approved by the Secretary in such fiscal year for grants and contracts under this Act for high-risk pregnancy and high-risk infancy research which relates to sudden infant death syndrome, specifying how these conditions relate to sudden infant death syndrome (ii) total amount requested under such applications, (iii) number of such applications for which funds were provided in such fiscal year, and (iv) total amount of such funds.

"(2) Each report submitted under paragraph (1) of this subsection shall—

"(A) contain a summary of the findings of intramural and extramural research supported by the National Institute of Child Health and Human Development relating to sudden infant death syndrome as described in clauses (A), (B), and (C) of such paragraph (1), and the plan of such Institute for taking maximum advantage of such research leads and findings;

"(B) provide information on activities underway and plans to bring about the appropriate clinical application of current research findings and the cost and implications of such applications; and

"(C) provide an estimate of the need for additional funds over each of the next five fiscal years for grants and contracts under this Act for research activities described in such clauses.

"(c) Within five days after the Budget is transmitted by the President to the Congress for each fiscal year after fiscal year 1980, the Secretary shall transit to the Committees on Appropriations of the Senate and the House of Representatives, the Committee on Labor and Human Resources of the Senate, and the Committee on Interstate and Foreign Commerce of the House of Representatives an estimate of the amounts requested for the National Institute of Child Health and Human Development and any other Institutes of the National Institutes of Health, respectively, for research relating to sudden infant death syndrome as described in paragraphs (1) (A), (B), and (C) of subsection (b) of this section, and a comparison of such amounts with the amounts requested for the preceding fiscal year.".

TITLE III—EFECTIVE DATE

SEC. 301. The provisions of this Act shall take effect on October 1, 1979.

Amend the title so as to read:

To extend the authorizations of appropriations relating to emergency medical services systems under title XII and section 789 of the Public Health Service Act; to increase the authorizations of appropriations for sudden infant death syndrome counseling and information projects and revise and improve authorities under title XI.B. of such Act; and for other purposes.

INTRODUCTION

EMERGENCY MEDICAL SERVICES

S. 497, the proposed "Emergency Medical Services Systems Amendments of 1979", was introduced on February 26, 1979, by Sen-

ator Alan Cranston. Joining as cosponsors were Senators Edward M. Kennedy, Harrison A. Williams, Jr., Jennings Randolph, and Jacob K. Javits. The Subcommittee on Health and Scientific Research held a hearing on S. 497 on February 28, 1979.

Testimony or written statements were presented by representatives of the Department of Health, Education, and Welfare, the Department of Transportation, the U.S. Fire Administration, the General Accounting Office, the American College of Emergency Physicians, the Emergency Department Nurses Association, the University Association for Emergency Medical Services, the National Association of Emergency Medical Technicians, the International Association of Fire Chiefs, other health professions and allied health professions organizations related to emergency medical services, and representatives of emergency medical services systems from throughout the United States, as well as outstanding leaders in the field of emergency medical services and related activities.

On March 21, 1979, the Subcommittee met and considered and unanimously ordered S. 497 favorably reported to the full Committee, with an amendment in the nature of a substitute. On April 11, 1979, the Committee on Labor and Human Resources met and voted to report favorably S. 497 as reported from the Subcommittee with an amendment adding a new title to the bill (with respect to Sudden Infant Death Syndrome) and an amendment to the title.

SUDDEN INFANT DEATH SYNDROME

Title II of the bill derives from S. 232 introduced by Senator Alan Cranston on January 15, 1979. Joining as cosponsors were Senators Harrison A. Williams, Jr., Donald W. Riegle, Jr., and Jacob K. Javits. S. 232 includes the basic provisions of S. 2522 with respect to sudden infant death syndrome as passed by the Senate on June 7, 1978.

At a hearing on March 1, 1978, the Subcommittee on Child and Human Development received testimony from the Department of Health, Education, and Welfare, voluntary SIDS groups, a multidisciplinary panel of service providers, representatives from several of the Federally-funded projects, and research scientists. The testimony summarized the substantial progress made during the last several years by SIDS researchers into the causes—and ultimate prevention—of SIDS through research projects carried out under the Sudden Infant Death Syndrome Act (Public Law 93-270) title XI.B. of the Public Health Service Act. Identification of various abnormalities in SIDS victims through this research has provided an information base which may lead to prevention of these deaths in the very near future. Additionally, the testimony indicated the substantial contributions made by the counseling and information programs in both educating the public and professionals as to the nature of SIDS as well as assisting the families of SIDS victims.

Suggestions made for program improvement included an increase in funding both for the services provided through the Federally-funded counseling and information projects and for the research function carried out through the NICHD; Federal stimulation for the upgrading of the death investigation systems in the United States so that post mortem examinations will be assured in all cases

of sudden and unexplained infant death and so that the quality of these examinations will be improved; increased coordination of activities between the federally-funded projects for information and counseling and the voluntary SIDS groups; mandatory reporting of information gathered at the project level to the Department; and expansion of counseling and information services to all the States, territories and possessions of the United States (presently there are 33 counseling and information projects.)

The Committee notes that a detailed discussion, including substantial interpretive matter outlining the intention underlying particular provisions, is included in the "Section-by-Section Analysis" at the end of this report.

Summary of S. 497 as Reported

BASIC PURPOSE

Emergency Medical Services Programs

The basic thrusts of S. 497 as reported with respect to the Emergency Medical Services programs are as follows:

First, to provide authorizations of appropriations for each of the four programs (services; research; burn, trauma, or poison; and training) for the next 3 years to continue building the Nation's capacity to provide comprehensive emergency medical services through a regional approach.

TABLE 1.—AUTHORIZATIONS OF APPROPRIATIONS FOR EMERGENCY MEDICAL SERVICES PROGRAMS

	1980	1981	1982	Totals
Services	$40, 000, 000	$40, 000, 000	$40, 000, 000	$120, 000, 000
Research	3, 000, 000	3, 000, 000	3, 000, 000	9, 000, 000
Burn, trauma, or poison	3, 000, 000	3, 000, 000	3, 000, 000	9, 000, 000
Training	4, 000, 000	4, 000, 000	4, 000, 000	12, 000, 000
Totals	50, 000, 000	50, 000, 000	50, 000, 000	150, 000, 000

Second, to include trauma or poison among programs eligible for support under section 1221 (Burn Injury Program).

Sudden Infant Death Syndrome Programs

The basic thrusts of S. 497 as reported with respect to the Sudden Infant Death Syndrome Program are as follows:

First, to establish within HEW an administrative unit to carry out the SIDS program in a coordinated and cohesive fashion with adequate staff and continuing accountability to the Congress with respect to activities carried out under the present law.

Second, to provide increased authorizations of appropriations for the SIDS program over the next 2 years so as to improve and expand the data collection system, to provide specifically for clearinghouse activities, to provide for the expansion of counseling and information services to all of the States and possessions and territories of the United States, with appropriate involvement of voluntary SIDS groups in the planning and carrying out of these projects, and to improve services in States

now being served; and to insure appropriate consideration is given the needs of rural and urban areas.

Third, to continue and improve various reporting requirements regarding the counseling and information projects and SIDS research.

Fourth, to seek to insure that adequate resources are made available within the National Institute of Child Health and Human Development for research into the causes—and ultimate prevention—of this tragic problem.

Fifth, to develop information and seek out possible improvements with respect to the death investigation systems in the States in the area of sudden and unexplained infant deaths.

Discussion

EMERGENCY MEDICAL SERVICES SYSTEMS PROGRAMS

Background

The Emergency Medical Services Systems Act of 1973 (Public Law 93–154), was enacted in November 1973, with strong bipartisan support. It added to the Public Health Service Act a new title XII for EMS systems and research grants and contracts and added to title VII of the Act a new section 776 for EMS training grants.

The Emergency Medical Services Amendments of 1976, Public Law 94–573, enacted October 21, 1976, amended the authorities and extended the authorizations of appropriations in title XII, added a new section 1221, authorizing a Burn Injury Program, and amended the authorities and extended the authorizations of appropriations for the EMS training grants in a redesignated section 789, previously section 776.

In 1973, Congress recognized a major deficiency in the provision of health care in many communities was the inability to respond immediately and effectively to an emergency medical crisis. These deficiencies were and still are shared in varying degrees by all communities—rich or poor, urban or rural. In the rural area, the greatest problem is undoubtedly the vast distances to be covered coupled with the lack of medical resources. In the urban area, the problem can be caused by a multiplicity of resources which, due to their maldistribution, lead in some cases to competition among neighborhood facilities to provide care to the emergency victim, and in other cases to an inability to provide that care. Urban areas suffer seriously from a lack of coordination of existing resources, a duplication in some, and, in some cases, from the lack of highly specialized resources that are essential for the provision of comprehensive emergency medical care in a community.

The number of preventable deaths and disabilities resulting from medical emergencies are grim evidence of the compelling need for action to deal with this problem.

Estimates are that 15 to 20 percent of the deaths due to traumatic injury could be saved each year by improved emergency medical services. This would result in 60,000 lives saved, based on estimates by the National Academy of Sciences. Accidental injury is the leading cause of death among all persons aged one to 38 and is the fourth highest cause of all deaths in the United States. In 1972, traumatic injury resulted in 117,000 deaths and 11,500,000 cases of disabling injury.

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Heart attack is the leading cause of death in the United States. In 1972, over 675,000 deaths were due to ischemic heart disease and myocardial insufficiencies. About one-half the heart attack deaths occurred within 2 hours of the attack and before the patient arrived at the hospital. The American Heart Association estimates that between 15 and 20 percent of prehospital coronary deaths could be prevented if proper care were administered at the scene en route to an appropriate medical facility.

According to the National Center for Health Statistics, there were approximately 68,000 deaths involving newly born infants in 1971. Many of these deaths could be prevented with an appropriate interhospital referral system to identify the newly born infant with a threatened chance of survival and to transport the infant to intensive care facilities. Recently, the National Center for Health Statistics reported that, in 1976, 100,000 accidents were the cause of deaths. Included in this figure were 46,700 deaths from automobile accidents; 14,300 from falls; 7,200 from drowning; 6,200 from fires, burns, and injuries related to fire; 4,400 from poisoning; and 21,200 from all other accidental causes. Although this number is tragically high, it does represent a decrease from the 117,000 deaths from accidents which occurred in 1972—a decrease of almost 15 percent—at the same time that the Nation's population was increasing by 3 percent.

Although no single factor can be credited with causing this decrease of 17,000 in the numbers of deaths caused by accidental injury, some credit can be attributed to improvements in the quality of emergency care in the community over that span of years. Those specific areas where fewer lives were lost in 1976 than in 1972 were heart attacks—latest estimates show a 17 percent rate of decline in deaths due to heart attacks between 1972 and 1977; poisoning—a major improvement in saving children under age 5 who are victims of an accidental poison; and infant mortality which decreased from 18.5 per 1,000 live births in 1972 to 15.1 in 1976. Victims of these circumstances are particularly dependent on good emergency care, which, in turn, is dependent on bringing skilled personnel quickly to the victim, transporting the victim as rapidly and as safely as possible to the level of care needed to treat his or her injuries, and insuring that that appropriate level of care is accessible and meets high standards of quality.

Provisions of the Present Law—Title XII and Section 789 of the Public Health Service Act

Title XII authorizes grants to communities to support the planning, establishment, development, or expansion of comprehensive EMS systems. Eligible grantees are States, local units of government, public entities administering a compact or other regional arrangement or consortium, or a public or nonprofit private entity representing the units of government in the region for which a system is proposed.

Such applicants must submit with their application a proposal indicating how the community it represents will develop a comprehensive EMS system utilizing to the best effect existing health resources, facilities, and personnel. The proposal must cite gaps in the community's ability to provide services and the steps that will be taken to overcome such deficiencies. Title XII specifies 15 basic components of a comprehensive EMS system which all applicants must provide assurances of meeting or being able to meet within a specified period of time.

These 15 components were derived from testimony received in both the Senate and House during consideration of the EMS Systems Act in the 93d Congress and represent the basic requirements for a comprehensive EMS system. These basic components include such things as well-trained personnel, adequate and centralized communications capability, adequate transportation systems, categorized and nonduplicative facilities, access to specialized medical care units, and assurances that services will be provided without regard to an individual's ability to pay, among other requirements.

In addition to grant support for development of an EMS system, title XII also provides for specific project grant and contract support for research and training programs in emergency medical services or techniques and in burn injuries programs.

Achievements Under the Emergency Medical Services Systems Act—Implementation of Regional Concept

A basic premise of the EMS program as developed in the 93d Congress was that in order for effective and comprehensive emergency medical services to be provided efficiently, a system must contain sufficient resources to meet the wide variety of demands made upon it in medical emergencies. Since the entire range of services may not be available to a small local governmental unit, title XII provides that grants and contracts may be awarded, on a priority basis, to governmental units or combinations thereof—namely (1) states, (2) political subdivisions, or (3) regional arrangements, compacts, or consortiums.

It was the Congress' view that such entities would serve a geographical area of sufficient size, population, and economic diversity to establish and maintain a system that would be able to provide emergency medical services in an economical and effective manner.

When the EMS Act was first enacted, the intent was clearly expressed by Congress that the Federal support provided each community would be a maximum of five grants. With those grants, the communities were to progress through the several stages of development of a comprehensive emergency medical services system. At the conclusion of those five grants, the community would be expected to maintain the EMS system, without further title XII support, at the level it had achieved with the Federal assistance.

The underlying concept of eventual independence from Federal grant support was reinforced in the 1976 amendments to title XII which required communities, in making applications for grants, to provide assurances of continued financial support at the conclusion of title XII support from the units of local government in the geographic area of the system and from other community sources.

In implementing the provisions of title XII, the Emergency Medical Services Division, established in the Health Services Administration pursuant to section 1208, has provided technical assistance to States and local communities in their efforts to develop regional EMS systems.

Each of the fifty states has now designated a responsible agency for coordinating EMS within the State. Throughout the Nation, 304 EMS regions have been defined. The current status of planning and development of the EMS regions is shown in the table below:

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TABLE 2.—*Cumulative title XII grant authority*

Status of EMS activity:	*Total number of regions*
No activity	22
Section 1202 planning	96
Section 1203 (1st year) establishment	50
Section 1203 (2d year) establishment	68
Section 1204 (1st year) improvement	39
Section 1204 (2d year) improvement	12
Completed eligibility	17
Total	304

The above table shows that out of the 304 EMS regions in the country, 118 regions have not entered into the active implementation phase of the program, 118 regions are in the initial establishment phase, 51 regions are in the expansion or improvement phase, and 17 have completed eligibility and are now operating independently of Federal financial support under title XII. With completion of the current grant awards which were made in June of 1978, 29 regions will have achieved total independence from Federal grant support. Another 169 regions will be in some phase of operational development, and 84 will have completed the planning stage or will be in the planning stage, leaving 22 regions which have not yet received title XII development support. The 3-year extension provided by the Committee bill would provide the basis during the next 3 fiscal years for an additional 53 regions to complete the five-grant cycle, and an additional 60 regions to move forward in their development. It is expected that at the end of that 3-year period, only an additional 3 years would be needed for the remaining regions to complete their progress through the various stages of development to reach their maximum potential.

A second basic premise of title XII, in addition to that of regionalization, was that of encouraging the most effective utilization of all health resources in the region such as health care personnel, facilities, equipment, and specialized treatment facilities, which relate to the emergency patient. It was felt that, in addition to providing services on a regional basis to meet medical emergencies, an EMS system could become a catalyst for organizing the community's health facilities and other resources in a systematic manner, so that esential services would always be available and unnecessary duplication would be avoided. The process of developing an EMS system can help a region recognize natural patterns of health care utilization and indicate how resources can best be organized to meet the EMS service demand as well as normal patient demand patterns.

The HEW guidelines for applicants are designed to enable them to ascertain the degree to which they are able to assure meeting the 15 components required for eligibility by title XII and thereby to measure the community's ability to provide essential emergency medical services.

These guidelines serve a multiple purpose. First, they serve as a guide to those communities which are in the planning stage to assess the degree to which their existing resources are capable of achieving a competent and comprehensive system. Second, they force the applicant to examine its proposal for establishing an EMS systems in terms of completeness and ultimate effectiveness. Third, they provide a mean-

ingful measure by which the application can be reviewed for acceptability by HEW.

These guidelines require the applicant to take a hypothetical set of patients, suffering from the most frequently endured and serious medical emergencies, and follow them through the process necessary to reach the most specialized level of care needed to care for the injury sustained. In this progression through an emergency medical situation, the adequacy of each of the 15 required components is tested, bringing to the surface any hidden or unsuspected gaps in the community's ability to provide services to residents or visitors in an emergency situation. Through this process the application for Federal grant support will be directed toward correcting these deficiencies and Federal funds will be directed at enabling the community to develop an effective and comprehensive system for providing emergency medical services.

The five-grant mechanism is designed to assist the EMS systems to make an orderly progression toward the most sophisticated operational level of EMS, that of advanced life support (ALS) capability. The concept is that a system will achieve basic life support (BLS) capability at the conclusion of two grants under section 1203 and will achieve advanced life support (ALS) capability at the conclusion of two grants under section 1204.

The EMS Division in HEW defines these levels of capability as follows:

"Basic life support services" or "BLS" means the implementation of the requirements of § 56a.103 [project requirements] throughout the emergency medical services system to a level of capability which provides noninvasive emergency patient care designed to optimize the patient's chances of surviving the emergency situation, such as universal access to and dispatch of national standard ambulances, with appropriate medical and communication equipment, operated by Emergency Medical Technicians-Ambulance, and availability of a hospital as defined in § 56a.103(e)(2).

"Advanced life support services" or "ALS" means implementation of the requirements of § 56a.103 [project requirements] throughout the emergency medical services system to a level of capability which provides both noninvasive and invasive emergency patient care designed to optimize the patient's chances of surviving the emergency situation, such as sophisticated transportation vehicles with advanced equipment, a communications capability (two-way voice and/or telemetry) and staffed by Emergency Medical Technician-Paramedics (EMT-P) providing onsite, prehospital and interhospital mobile intensive care.

Regions funded under section 1202 will begin preparation of plans for the development of an EMS system which will meet each of the 15 legislative components, categorization transfer agreements, and medical control.

Regions funded under section 1203 (first year) will begin the establishment and initial operation of an EMS system. This constitutes the first operational funding under title XII for these regions. They will begin the development of a BLS capability involving each of the 15 legislative requirements.

Regions funded under section 1203 (second year) will complete development of a BLS capability with this funding. Before progressing

to section 1204, these regions will be required to: (1) make satisfactory progress toward implementation of the 15 legislative components of a system, (2) complete categorization of hospitals within the region, (3) develop transfer agreements for the critical patient groups, and (4) establish medical control over paramedics in the field.

Regions funded under section 1204 will develop an ALS capability. Each of these regions must have demonstrated satisfactory progress toward the implementation of the 15 legislative components of an EMS system under section 1203.

Each of these regions will (1) complete categorization of hospitals within the region, (2) develop transfer agreements for the critical patient groups, including trauma, burn, acute cardiac, high risk infants, alcohol intoxication and drug abuse, poisoning, and psychiatric emergencies, and (3) establish medical control over paramedics in the field, including (a) treatment protocols, (b) triage protocols, (c) online physician coverage, (d) two-way voice and biomedical radio communications, and (e) medical accountability.

The following table shows a year-by-year summary of the grant activity provided under the EMS Act:

FISCAL YEAR 1974

Eighty-five grants covering 126 regions and serving a population of 88,200,000 were awarded in the amount of $17,000,000.

TABLE 3.—ANNUAL TITLE XII EMS SYSTEM FUNDING ACTIVITY

Section of act	Number of—		Amount	Population served
	Grants	Regions		
1202	53	90	$2, 250, 000	63, 000, 000
1203	21	27	10, 400, 000	18, 900, 000
1204	11	9	4, 350, 000	6, 300, 000
Total	85	126	17, 000, 000	88, 200, 000

FISCAL YEAR 1975

One hundred and sixteen grants, covering 174 regions and serving a population of 121,890,000 were awarded in the amount of $32,242,800.

Section of act	Number of—		Amount	Population served
	Grants	Regions		
1202	56	82	$4, 617, 800	57, 400, 000
1203	49	66	19, 500, 000	46, 200, 000
1204	11	26	8, 125, 000	18, 290, 000
Total	116	174	32, 242, 800	121, 890, 000

FISCAL YEAR 1976

Fifty-two grants, covering 63 regions and serving a population of 44,100,000 were awarded in the amount of $29,115,300.

Section of act	Number of— Grants	Regions	Amount	Population served
1202				
1203	41	51	$21,836,475	35,700,000
1204	11	12	7,278,825	8,400,000
Total	52	63	29,115,300	44,100,000

FISCAL YEAR 1977

Eighty-three grants, covering 99 regions and serving a population of 69,300,000 were awarded in the amount of $32,775,000.

Section of act	Number of— Grants	Regions	Amount	Population served
1202	14	21	$986,563	14,700,000
1203	44	54	21,767,304	37,800,000
1204	25	24	10,021,133	16,800,000
Total	83	99	32,775,000	69,300,000

FISCAL YEAR 1978

Ninety-four grants, covering 100 regions and serving a population of 70,000,000 were awarded in the amount of $36,027,800.

Section of act	Number of— Grants	Regions	Amount	Population served
1202	12	14	930,000	9,800,000
1203	53	61	23,589,791	42,700,000
1204	29	25	11,508,009	17,500,000
Total	94	100	36,027,800	70,000,000

The discrepancy between the number of grants and the number of regions is due to grants being made to States which in turn subcontract with regions within the State to establish systems coordinated on a statewide basis.

Title XII presently mandates that not less than 20 percent of the sums appropriated for the support of EMS systems must be used for the development of systems in rural areas. The Committee has been advised that in implementing title XII well over 50 percent of the grant support has been made available to such rural areas or to regional systems including rural areas within the system's service area.

History of the Burn Injury Program

The burn injury program was added in the 94th Congress by Public Law 94–573. That law added a new part B to title XII to authorize grants for the establishment, operation, and improvement of programs to demonstrate the treatment and rehabilitation of burn victims, and to conduct research and provide training in the treatment and rehabilitation of burn victims.

In developing that provision, the Committee recognized a need to improve the provision of burn care, the national understanding of the

magnitude of the burn problem, and the utilization of current resources. To achieve these improvements, it became apparent that information was necessary on the support and location of burn treatment programs; specialized training needs of physicians, nurses, and ancillary professional and paramedical personnel; and program needs for rehabilitation of burn patients. A need was documented to establish evaluation methodologies on a regular basis which could provide epidemiological data on burn incidence, permit the tracking of patients through the most appropriate levels of care to determine immediate and long-term treatment and rehabilitation outcomes, and provide comparative cost data for systems of burn care.

In September 1977, HEW initiated work in six areas to implement this program. These six areas are the six New England States, the Fingerlakes and Central New York region, the State of Virginia, the State of Alabama (except Mobile), Northern Texas, and San Diego and Imperial Counties, Calif. These sites, during the next 3 years, will collect census data for all burn patients requiring hospital care. Data will be collected in each of five data-gathering areas: The emergency department, the outpatient department (including rehabilitation treatment), general hospitals without specialized burn care, hospitals with specialized burn treatment facilities, and the morgue.

Patients admitted to the hospital will be tracked for a maximum of 18 months with periodic collection of data. The population included in the six sites is estimated at 28,000,000.

The data collected will be used to estimate the incidence of burn injuries, where burn patients go for care, how many severe burns are treated in specialized burn treatment facilities, and other topics which will provide a description and understanding of the nation's current burn treatment system.

Economic data will be collected to describe the spectrum of costs, charges, and reimbursements associated with burn care.

Each project area is also involved in one or more applied research tasks of national interest. These tasks range from the development of a burn severity index to the development of a burn nurse training curriculum.

The Committee is pleased that the activities of this program have been coordinated with the National Institute of General Medical Sciences, the National Center for Health Statistics, the National Center for Health Services Research, the Health Care Financing Administration, the Consumer Product Safety Commission, and the National Fire Prevention and Control Administration.

Research

A second authority in title XII provides grant support for research in emergency medical techniques, methods, devices, and delivery. Under section 1205, research has been supported in such important fields as evaluating the various emergency medical devices and related rescue and extrication equipment; studying the barriers which may arise in a large urban system in serving the needs of a small population group with limited English-speaking ability and differing cultural values; evaluating the effectiveness of emergency medical technician training; identifying the special needs of rural EMS systems; and the development of diagnostic and prognostic methods in treating critically ill emergency victims.

These areas offer real promise of yielding findings of great usefulness to the medical community in providing care to emergency patients in the future.

Research under title XII was intended to provide operating methods, technology, and management tools to assist in planning, organizing, and evaluating EMS systems. Studies of this sort require the use of techniques of various disciplines, such as systems analysis, biomedical engineering, organizational research, economic analysis, and quality assessment.

Much of the effort in the EMS research program to this point has been appropriately focused on ways to assess and improve the effectiveness of emergency care. As the Federal contribution is phased out, communities, particularly in rural and remote areas, are calling for such tools to obtain valid information on which they may base decisions about innovative, affordable, and safe system alternatives and modifications.

The National Center for Health Services Research (NCHSR) administers the program in Emergency Medical Services research authorized under section 1205. During fiscal year 1978, NCHSR has worked closely with the Division of Emergency Medical Services (DEMS), Health Services Administration, to gain greater understanding and interaction between the research community and those who use research results—EMS systems managers, advisors, and policy makers. NCHSR convened a series of workshops during this past fiscal year, tailored specifically to the needs of the system operator. These workshops have demonstrated that it may now be feasible to mount a multi-size EMS system evaluation project. Staff of NCHSR and DEMS, together with system managers and operators, are collaborating in the development of a carefully-designed study to determine how effective EMS systems are in reducing morbidity and mortality, information essential for monitoring the EMS program and for allocating resources.

Among the studies supported under section 1205 are projects developing methods to measure the performance of EMS personnel, evaluate the benefits and the costs of Advanced Life Support systems, examine the impact of categorization efforts, determine the clinical significance of response time, and explore the consequences of alternative system configurations and procedures. Other projects are formulating systems of quality assurance, designing and testing clinical algorithms, and examining the relationships between Emergency Departments and their parent hospitals (including) rural-urban differences). Results of such studies will affect decisions in all regions, but are of particular importance to those rural communities that have limited local resources.

During the first year, four high-priority areas of need for research were identified by NCHSR. They were (1) measures of effectiveness; (2) systems description and relationships; (3) policy issues, and (4) techniques and devices. Within these major program areas, individual projects are being planned to meet specified objectives. The number and dollar amount of new projects funded, by program area, from fiscal year 1974 through fiscal year 1978 are shown in the following table:

TABLE 4.—CUMULATIVE TITLE XII RESEARCH GRANT ACTIVITY

Program area	Projects		
	Number	Amount	Percent of grants
Measures of effectiveness	42	$13, 951, 300	72
Systems descriptions and relationships	10	2, 058, 600	11
Policy issues	6	995, 800	5
Techniques and devices	7	2, 300, 200	12
Total	65	19, 305, 900	

EMS Training

"Grants for Training in Emergency Medical Services" to assist in the cost of training in the techniques and methods for the provision of emergency medical services (EMS) were authorized in Public Law 93–154 as section 776 in title VII of the Public Health Service Act.

Under section 776, $6.6 million was appropriated for fiscal year 1974 and made available for obligation through the first quarter of fiscal year 1975. All the funds were obligated by September 30, 1975, and, as a result, 76 grants and two contracts were awarded which have provided support for programs in which about 25,000 emergency medical technicians, 4,000 nurses, and 1,200 physicians as well as 6,000 other types of health care personnel have been trained in EMS fields. Also included among those trained were about 100 individuals who would be capable of providing the expertise necessary to coordinate and manage an EMS system. It is expected that these individuals will be of great value in developing and administering comprehensive EMS systems in many communities.

Originally, this authorization was made for fiscal year 1974 only, so that expiration would be coterminous with the expiration of the other training authorities of the Public Health Service Act. During consideration of legislation to extend title VII of the PHS Act during the 93d Congress, provisions for extending the authority for EMS training were included in bills passed in both the House and the Senate. However, the two Houses failed to come to an agreement and the 93d session ended without section 776 being extended.

To continue EMS program momentum during this period without specific EMS training authority, grant applications were accepted under other authorities which supported the training of physicians, nurses, and associated health personnel. This cooperative effort to sustain the EMS momentum was continued by various Divisions within the Bureau of Health Manpower of the Health Resources Administration over the succeeding several years.

The provisions of title VII of the Public Health Service Act relating to emergency medical services were revised and extended under authority of Public Law 94–573. Under this Act, the "Emergency Medical Services Amendments of 1976," the authorization of appropriations for training grants was extended for 3 years through 1979. Section 776 was renumbered section 789 by Public Law 94–484, the "Health Professions Educational Assistance Act of 1976".

Under authority of section 789, $6 million was appropriated in fiscal year 1977. A total of 200 applications for training grants were received

in 1977 and 49 awards were obligated by September 30, 1977. These grants provided assistance in the training of over 21,000 individuals in the fields of Emergency Medical Technician-Ambulance and Paramedic, nursing, and physician education.

In fiscal year 1978, $6 million was again available for obligation under section 789. The level of previously recommended support for continuing programs was over $5 million; a total of 46 ongoing continuation projects received assistance. Three contracts for the training of physicians in EMS specialty workshops were developed. A fourth contract for the training of rural nursing supervisors was also negotiated. These combined grants and contracts are expected to train over 35,000 individuals including 13,279 emergency medical technicians, 11,802 nursing personnel, 3,740 physicians, and a balance of other personnel needed to make EMS systems function smoothly.

Although under the program of Grants for Training in Emergency Medical Services a total of over 92,000 individuals have been or will be trained in the provision of emergency care, the need for additional training remains. It is currently estimated that 100,000 additional trained EMTs-Ambulance are needed, along with 20,000 paramedics, 25,000 emergency nurses, and 9,000 additional emergency physicians.

As EMS Systems evolve through Basic Life Support to Advanced Life Support, the level of sophistication of training will advance. The role of the physician as a community and interdisciplinary team leader in section 789 programs will become even more important. In addition, the need for training of nurses and auxiliary EMS personnel will expand.

The major importance of manpower training in the effort to improve emergency medical services is clear. When EMS systems are in place and functioning successfully throughout the Nation, they must be operated by personnel who have been trained in the techniques and methods of providing emergency medical services.

TABLE 5.—HISTORY OF EMS AUTHORIZATIONS AND APPROPRIATIONS

Purpose	Authorized	Appropriated
Fiscal year 1974:		
Services	$30,000,000	$17,000,000
Reserach	5,000,000	3,300,000
Training	10,000,000	6,600,000
Total	45,000,000	26,900,000
Fiscal year 1975:		
Services	60,000,000	32,500,000
Research	5,000,000	4,500,000
Training		
Total	65,000,000	37,000,000
Fiscal year 1976:		
Services	35,000,000	29,700,000
	[1] 5,083,000	
Research	5,000,000	3,925,000
Training	10,000,000	
Total	55,083,000	33,625,000
Fiscal year 1977:		
Services	45,000,000	33,200,000
Research	5,000,000	3,925,000
Training	10,000,000	6,000,000
Burn program	5,000,000	3,000,000
Total	65,000,000	46,125,000

TABLE 5.—HISTORY OF EMS AUTHORIZATIONS AND APPROPRIATIONS—Continued

Purpose	Authorized	Appropriated
Fiscal year 1978:		
Services	$55,000,000	$36,625,000
Research	5,000,000	3,000,000
Training	10,000,000	6,000,000
Burn program	7,500,000	3,000,000
Total	77,500,000	48,625,000
Fiscal year 1979:		
Services	70,000,000	36,625,000
Research	5,000,000	3,000,000
Training	10,000,000	[2] 3,000,000
Burn program	10,000,000	3,000,000
Total	95,000,000	[2] 45,625,000

[1] Transition quarter.
[2] Level shown includes $3,000,000 recission made in Public Law 96–7.

The Committee Bill

Phaseout of EMS Systems Support

The Committee believes that the experience gained under the authorities established by the Emergency Medical Services Systems Act of 1973, indicates that the program has resulted in substantial improvement in the nation's ability to provide comprehensive emergency medical services in those areas where support has been made available. These programs have also served as a catalyst for community providers to work together to look at community problems and to solve them together. These providers have learned about the value of sharing specialized, costly resources that are needed to care for the critically ill emergency patient—and many times for the hospitalized, non-emergency patient as well. The approach used in developing emergency medical services systems is setting an example of the feasibility of further coordinated efforts in those regions where health resource planning is on its way to becoming a reality.

Experience under the EMS Act has also provided an opportunity for creating intergovernmental and regional approaches to medical care by establishing a program unit, which is not dependent on any single governmental unit but responsible to all of them in a neutral capacity, to offer these governmental units assistance in developing a regional resource. In turn, these governmental agencies are working together in a joint effort, in many cases for the first time, to provide a coordinated method of providing a health service.

These achievements and impacts on community health resource rationalization are a secondary benefit derived from the development of comprehensive emergency medical services systems in the communities.

The achievements under the legislation have significantly improved the quality of medical care for emergency victims. Trained personnel now respond to most accidents and victims now have assurance that they will not be further injured through improper handling by the ambulance attendant. Most heart attack victims now receive experienced and knowledgeable help within minutes of their attacks—timely help which means the difference between life and death.

These services are taken for granted now in many, many communities. When the EMS Act was first introduced in 1972, many ambulances did not have attendants who had been trained in even basic first aid. The highly trained paramedic was a rarity, and in many communities the undertaker's hearse doubled as the ambulance service. The Emergency Medical Services Systems Act has helped many communities correct these deficiencies.

The intent of the EMS Act was to assist the nation's communities to develop the capacity to respond to medical emergencies quickly and with the level of care appropriate to the emergency. One of the first activities of HEW in implementing the Act was to work with the States to designate geographic areas that are of sufficient size, population, and economic diversity to establish and maintain an EMS system that would be able to provide emergency medical services in an economical and effective manner. Under that exercise, HEW has designated 304 EMS regions in the States and territories.

A basic premise of title XII is that grants made to support the establishment of EMS systems provide the incentives that permit a community to overcome the initial most difficult obstacles hindering regionalization of emergency medical services. Once the system is in place, the legislation's intent was that the system would be fully supported both financially and substantively by public and private resources in the communities it serves. The pattern of grant awards to systems was created with a view to assisting the systems to build their capacities and expand their levels of operations on an incremental basis, with a commensurate decrease in Federal financial support so that with completion of the maximum five grants, the system would be self-sufficient and operated solely with community support.

Of the 304 designated emergency medical services regions in the United States, all but 22 have received support under title XII. With the awards made in fiscal year 1978, 29 of these regions will have completed the five-grant cycle authorized by the legislation and will be capable of providing the most advanced level of care to emergency victims. Another 169 regions are in various stages of development toward this level.

The Committee believes that Congress and the Administration have a commitment to all the 304 designated regions to help them achieve their maximum potential in providing emergency medical services. The February 1978, report of the House Appropriations Committee Surveys and Investigation Staff, on "Emergency Medical Services Systems" advised, at that time, HEW officials estimated that the program would require section 1203 and 1204 funding through fiscal year 1985 to fully develop the EMS regional systems.

However, in February 1979, the Administration proposed to phaseout the EMS program by 1982. The Committee disagrees and believes a phaseout in fiscal year 1982 would be premature, since it would enable only 25 percent of the designated 304 regions to achieve advanced life support status, whereas, if the phaseout were completed in fiscal year 1985, 85 percent of the regions would achieve advanced life support status.

The following chart indicates the levels each of the 304 designated regions would achieve under the Administration proposed phaseout in fiscal year 1982 in comparison to a phaseout in fiscal year 1985.

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TABLE 6.—STATUS OF REGIONAL EMS SYSTEM DEVELOPMENT

[Showing number of regions by operational stage]

Operational stage		A. 1982 status under administration phaseout, emphasis on BLS		B. 1982 status under committee bill		C. 6-yr period (1985) emphasis on ALS	
Section of act	Description of activity	Number	Percent	Number	Percent	Number	Percent
No activity	No funding under title XII	13	4	5	2	5	2
1202	Feasibility studies and planning (to determine the feasibility of and prepare plans for the development of a basic life support system.)	40	13	41	13	15	5
1203—1st yr	Establishing and initial operation (to begin development of a basic life support system.)	0	0	27	9	0	0
1203—2d yr	Establishing and initial operation (to complete development of a basic life support system.)	176	58	60	20	26	8
1204—1st yr	Expansion and improvement (to begin development of an advanced life support system.)	0	0	52	17	0	0
1204—2d yr	Expansion and improvement (to complete development of an advanced life support system.)	75	25	119	39	258	85
Total		304	100	304	100	304	100

Testimony presented to the Committee during hearings on S. 497 described the real advances made in communities where EMS systems had been established.

James M. Shern, Fire Chief for the City of Pasadena, California, and President of the International Association of Fire Chiefs, reported:

> The International Association of Fire Chiefs strongly supports the Emergency Medical Services System developed by the Department of Health, Education, and Welfare. We are concerned that the stated goal of 304 systems has not been reached. We would urge this committee to provide an authorization of sufficient funding and duration to enable all citizens to receive the benefits of quality emergency medical services.

Marta Prado, testifying for the Emergency Department Nurses Association reported specifically on the importance of EMS systems in rural areas:

> * * * there can be no question as to the impact which this legislation has had on the quality of life in the United States of America.
>
> Emergency nurses throughout the United States and the world have witnessed the benefits of a good pre-hospital care system. We have been there, therefore, we can supply such witness since we are in the emergency departments of those hospitals, both in the urban and rural communities, working side by side with the emergency physicians supporting the lives of those who are sick and injured and who 6 to 10 years ago may not have been fortunate enough to have fallen into our hands. Emergency nurses have been there as members of the pre-hospital emergency medical services extending their expertise and skills in emergency nursing to those in need at the scenes of trauma and illness and during their transport to

hospitals via air and ground. We are there teaching paramedics and basic emergency medical technicians the essential skills so necessary to the stabilization and transportation of an ill patient.

Communication systems have become sophisticated over the last 5 to 6 years; thanks to those funds, emergency nurses are there communicating with and directing the EMS personnel. We are in every hospital in America which provides an interface with an EMS system in its community, and let us by no means forget that we are there even in those all but forgotten rural community hospitals where we are frequently alone to care for those patients who have the same life-threatening emergency medical care needs and who have at times been neglected by the dispensing of funds. We have, in the last few years, provided education to the rural community hospital nurse to care independently for some of these patients. However, much work still needs to be done. Emergency nurses bring unimpeachable expert witness to support the progress which has been made. We have also asserted our expertise in recognizing that there is so much more that remains to be done. In 1975, President Ford proclaimed a week in November as Emergency Medical Services week. At that time, he said, "Let us affirm that this national legislation is only the beginning of our effort to upgrade and perpetuate this part of our total health care system so that no individual in this country will lack help whenever he needs it". We of the Emergency Department Nurses Association cannot support the slow growing death of a program that is just beginning to reach its potential.

Dr. George Podgorny, President of the American College of Emergency Physicians, in responding to Senator Cranston's question, "Have these systems helped you perform your duties more efficiently? replied:

> The answer is an unqualified yes. We receive ill and injured patients faster. They are receiving better pre-hospital care, and are subjected to fewer complications as a result of an improper or ill-informed handling en route to the medical care facility. There is better communication between hospitals, and there is more efficient delivery of patients to hospitals based on varying capabilities. Telemetry, better transportation equipment, and better trained emergency medical technicians have expanded my range of effectiveness beyond the walls of the emergency department. There is no question that I am a more effective physician today than I was when this program began six years ago.

Given the demonstrated benefits of the establishment of EMS systems, the Committee firmly believes that the EMS program should be supported for the next 3 fiscal years at the same financial level and that there is every expectation that in 1982 a subsequent 3 years of support will be necessary to carry the program to its fruition. The Committee bill authorizes the appropriation of $40 million for each of the next 3 fiscal years for the development of emergency medical services systems. This amount represents a slight increase

($3,375,000)—equivalent to the increase due to inflation—over the amount appropriated in fiscal year 1979. The Committee has maintained the authorizations of appropriations at the same level for each of the next 3 fiscal years in view of the need to restrain Federal spending.

Funding Allocations

The Committee carefully considered the possibility of eliminating totally the earmarking provisions in current law with respect to sections 1202, 1203, and 1204 grants and contracts. It decided to retain the system modified in 1976 which retained the original concept of mandated diversity in supporting EMS systems at different stages of development while providing HEW with sufficient flexibility to meet changing program needs.

The Committee bill provides for an earmark of a minimum of 1 percent for section 1202 planning grants in each of the next 3 fiscal years. There are 22 EMS regions which have not received a planning grant. Although it is expected that approximately 10 of these systems will be awarded a planning grant in the fiscal year 1979 grant awards, 12 systems will remain eligible for planning grant support. Given the Department's intention to phaseout the program quickly, the Committee feels it is necessary to retain the earmark to ensure that all those systems wishing to participate in the program will be given an opportunity to do so.

Title XII also authorizes second planning grants to systems which have received 1202 and 1203 support and have achieved basic life-support capability. This second stage planning support will allow a functioning system to explore the feasibility of moving their region toward an advanced life-support capability. This advanced system's level will enable the paramedic to use more sophisticated techniques of caring for the emergency victim, especially cardiac victims. These additional planning grants may also be used by States to extend EMS systems to rural and underserved areas.

The Committee bill requires that priority in awarding planning grants must be given to those eligible EMS regions which have not had a first planning grant.

The one percent the Committee bill sets aside for planning grants is based on reasonable expectations of eligible grant applications in the next 3 fiscal years.

The Committee bill retains the provision in existing law which requires that no less than 20 percent of the funds appropriated each year must be set aside for grants and contracts under section 1203 and that not less than 20 percent must be set aside for grants and contracts under section 1204. Continuation of this flexible funding allocation system will help ensure that funds are available for all the systems as they move through the various stages of development, and negate the Administration's intention to phaseout the program—which would seem to be inconsistent with making many first-year section 1203 grants.

Community Financial Support of EMS Systems

During Committee consideration of legislation to extend the EMS Act in the 94th Congress, impressive testimony was presented from the General Accounting Office which had conducted a review of 12 EMS grantees during calendar year 1975 (No. B-164031(5)). The

GAO study while concluding that, with the aid of Federal funds authorized under title XII, communities throughout the country had been able to upgrade their EMS resources, also found inconsistencies in the degree and duration of support provided the EMS system by the participating governments. Based on the GAO findings and recommendations, the Emergency Medical Services Amendments of 1976 (Public Law 94–573) added new grant application requirements to ensure that every effort is made by EMS systems to develop community-based sources of funding for the continued operation of the system at the conclusion of eligibility for title XII support for its development.

Under these new requirements, grant applicants were to submit with their applications for a first grant under section 1203 (initial development and operation of an EMS system) assurances of local government support of and cooperation with the EMS system; and were to submit with their applications for a second grant under section 1203 assurances of the local governments' continued support and cooperation with the system, and financial support of the system, in the year after the conclusion of the period of title XII support, sufficient to maintain the system at the level to be achieved during the period of the Federal grant or contract. Grant applicants for section 1204 grants (expansion and improvement of EMS systems) were to submit with their applications for a first grant under section 1204 assurances of the local units of governments' support and cooperation with the system and their endorsement and support of a specific financial plan which provides for the maintenance of the financial support of the system, after the conclusion of the period of the title XII grant or contract support, at the level required to maintain the system at the level to be achieved with Federal grant support; and were to submit with their application for a second section 1204 grant assurances of the local units of government that substantial progress is being made toward achieving the financial support to implement that financial plan.

In February 1979, Senator Edward M. Kennedy, Chairman of the Subcommittee on Health and Scientific Research, together with Senator Alan Cranston, asked the General Accounting Office to review HEW's implementation of these requirements and assess the extent to which the requirements have been instrumental in obtaining community financial support for the continued maintenance of emergency medical service systems. The GAO informally reported its findings to the Subcommittee prior to hearings held on legislation to extend the title XII authorizations and that report provided the basis for questions asked of Administration witnesses at the hearing. The GAO report (B–164031(5)) found that "EMS regional management organizations are not adequately planning for their financial self-sufficiency, nor are they obtaining firm financial commitments from local governments to continue regional systems at the conclusion of Federal funding, although plans for financial self-sufficiency and local government endorsement of these plans are required by the 1976 amendments".

The GAO also reported that, although legislation requiring these assurances was enacted in October 1976, HEW did not issue regulations implementing the changes made by the legislation until Novem-

ber 1978. As a result, no EMS grants have been awarded under those regulations, although the EMS unit had attempted to implement the amendments informally by notifying the HEW regional office EMS coordinators that grantees were responsible for meeting the requirements. The GAO reported as follows:

> However, without HEW-approved regulations the [EMS] Division was not in a position to provide detailed, consistent interpretations of the 1976 amendments.
>
> All HEW regions told grantees of the new requirements; however, regional interpretation of statutory language varied and regional enforcement of requirements during fiscal year 1978 was generally lax. Regional EMS program officials had difficulty providing guidance and enforcing the requirements without regulations and program guidelines. Although the 1978 expansion and improvement grant applications contained some financial data, these data were not as detailed as now specified in HEW's regulations.

The GAO concluded:

> We cannot determine what effect the 1976 EMS amendments might have on EMS systems' financial planning. We believe that the recently published HEW regulations are consistent with legislative intent; implementing them should improve grantee financial planning for self-sufficiency. The extent to which the 1976 amendments foster the development of community support for regional EMS systems after Federal funding stops can only be evaluated after HEW requires that grantees comply with the implementing regulations.
>
> We also believe that State legislation offering support for the regional system concept and funding for regional management organizations shows promise for continuing EMS regional services after Federal funding stops.
>
> We recommend that the HEW Secretary require the Administrator of the Health Services Administration to
>
> —implement the new EMS regulations and promptly develop and issue program guidelines,
>
> —provide technical assistance to (1) grantees in developing plans for self-sufficient EMS systems and (2) States that are developing legislation providing continuing support for regional EMS systems, and
>
> —place greater importance on the requirement for financial plans and commitments in the grant application review and ranking process.

The Committee concurs in the GAO recommendations. The Committee was also encouraged to learn, during hearings on February 28, 1979, on the extension of the EMS Act that the University of Pennsylvania has a contract with the Department to review the issue of how the systems will be maintained after the conclusion of title XII grant eligibility, with a view to developing ability in the Department to provide technical assistance to grantees. Departmental plans to discuss at a national EMS Symposium in July 1979, the importance and

the most effective approaches in obtaining State and local funds for implementing and operating regional EMS systems to enable them to be self-sufficient should also develop practical guidance to grantees in this respect. In addition, the EMS Clearinghouse is collecting information on funding to make available to grantees. The Committee urges the Clearinghouse to make a vigorous effort to collect information from EMS systems on ways they have generated funding at the local level as well as developed cost-saving mechanisms, so such information can be broadly disseminated and shared with all the systems.

The Committee is perplexed at the difference in the GAO findings and the HEW Regional Offices' findings in making estimates of the potential and the timetable for self-sufficiency for EMS systems. Although the GAO found that only 6 of 25 systems applying for grants under section 1204 had developed specific financial plans as required, the HEW Regional Offices estimated that 90 percent or better of those systems completing advanced life support capability by 1980 would achieve self-sufficiency. In answers to questions submitted for the hearing record, the Department reported "No individual region estimated lower than a 75 percent capability to achieve self-sufficiency."

The Committee urges the Department to provide all necessary technical assistance to EMS systems so that they can develop this self-sufficiency. Although Departmental witnesses testified that there was considerable optimism that States as well as local government units would be a source of continued funding for EMS systems, the Committee does not believe that EMS systems should rely too heavily on such expectations, but that they must seek alternative sources of support from the community and the residents of the community.

Dr. William F. Minogue, EMS Project Director, New Jersey Department of Health, told the Committee of that systems' success in developing community sources of funding for the system.

> The federally funded New Jersey State EMS Project has always taken quite seriously the requirement that assurances of continued support from local government and other sources be guaranteed. For that reason once we idealized and conceptualized a system we choose to use a combination of state and federal health planning authorities to designate the expensive components of the system and grant certificates of need. In addition we have built the lion's share of the operational costs of the system into the usual mechanisms for health care funding in our State, namely community funds for the pre-hospital basic life support phase, a combination of hospital and community support for advanced life-support (Mobile Intensive Care Units) and hospital reinbursement dollars for the emergency care and the specialized critical care units (burn, neonatal, neurosurgical, trauma, etc.)
>
> Unquestionably this requirement has forced us to seek alternative sources of continued funding and that is healthy. An abrupt termination of federal funding within the next few years would be premature and come at a time when the entire categorization and implementation of the system has not reached full momentum. In other words, the requirement is a legitimate and appropriate one but its application in a too

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short a time span is unrealistic and destructive to the whole process.

National Clearinghouse for EMS (NCEMS)

The Committee believes it unfortunate that the National Clearinghouse for EMS, due to vacancies caused by the departure of two staff members, has been without staff coverage since June 1978. Recently, approval was granted to fill these vacancies effective October 1, 1978, and change the status of these positions from "other than full-time" to "full-time permanent".

Accomplishments of the NCEMS during fiscal year 1978, prior to June, are summarized as follows:

1. Developed or revised and published the following guidance, management, and informational materials:
   a. Listing of Emergency Medical Services Coordinators and State Medical Directors.
   b. Listing of State and Regional Coordinators and Medical Directors for EMS systems.
   c. Brochure—"This is EMS".
   d. 1978 Grant Award List.
   e. Article—"A Systems Approaach to EMS".
2. Responded to an average of 1,000 written requests each month for professional, technical, and information materials on EMS.
3. Updated a mailing list of 8,000 persons divided into one or more of 65 categories covering groups and individuals involved in EMS development.
4. Continued collection or cataloging of approximately 100 items each month for inclusion in the information data bank. This information/data bank contains about 13,000 individual items related to EMS activities.
5. Handled about 3,000 telephone calls for information on EMS.
6. Briefed visitors from regional systems across the country on the "how to" development of a clearinghouse for their local systems.

The Committee believes that the role of the clearinghouse is crucial in providing up-to-date information helpful to the EMS systems in developing their programs and urges the Department to maintain its personnel positions at a realistic level.

The Committee was told of the difficulties paramedics have in moving from state to state, sometimes due to the differences in licensing or in other criteria defining their functions, and sometimes by physicians being unwilling to rely on paramedics not trained within their own system. The Committee urges the Department to promote more uniform licensing of paramedics and believes this is a project in which the Clearinghouse should be involved.

Technical Assistance Provided EMS Grantees

Another finding of the 1976 GAO report was that budgetary allocations to the EMS Division did not permit sufficient staff or travel capability in the regional or national offices to provide the depth of technical assistance required by many grantees. The GAO

found at that time that most contacts between regional staff and grantees were by telephone, correspondence, occasional applicant or grantee visits to the regional office, and quarterly reports from grantees. The regional staffs advised the GAO that few site visits had been made, although several regional officials said that site visits are essential to successful monitoring and assistance. As a result of this finding, section 13 of Public Law 94–573 required that, not later than 60 days after enactment of the Appropriations Act each year, the Secretary of HEW allocate sufficient funding and personnel positions to the identifiable EMS administrative unit (described in section 1208 of the PHS Act) to enable it to carry out its functions (including technical assistance) and required the Secretary to report to the appropriate Congressional Committees the amount of expenditures and the number of personnel positions allocated. The Committee is concerned that the positions have remained constant since the inception of the program and that the funding allocations have been insufficient to support even that inadequate staffing level. That this allocation is insufficient is evidenced by the fact that Division of Hospital and Clinic funds have been used every year since the inception of the program to support the current EMS staff level and its activities.

In addition, the Committee is particularly concerned that the funding for the increase of 30 positions for the EMS unit specified by the Appropriations Act for fiscal year 1979 was diverted to cover the costs of the pay raise for existing personnel in the EMS unit and other agency personnel "in keeping with the OMB directive that the programs absorb the pay raise this year", as reported to the Committee during the February 28, 1979, hearings. The Committee believes that this pattern of using appropriations made for staffing increases in order to fund pay raises for existing personnel will leave Congress little alternative to mandating staffing levels in programs.

For the EMS programs to achieve their greatest effectiveness, technical assistance should be available. The availability of this assistance apparently has not improved substantially since the GAO study of 1975. The Department reported, in answer to questions posed by Senator Cranston: "In each Regional Office, the EMS program staff have been able to meet at least once with each current grantee. In addition, the same staff have been able to make on site visits to most of the current grants."

Although these visits, which in the Committee's view do not provide sufficient technical assistance, have been supplemented by the four regional workshops and the three national symposia, the Committee believes more frequent meetings may be necessary, and that periodic site visits to each grantee are essential for the regional EMS staff to be able to provide the technical assistance and guidance necessary to permit the program to be maximally effective.

HEW has also advised the Committee that the assistance provided grantees by regional office EMS staff is supplemented to some extent by the specially trained and recruited physician technical advisors under purchase order arrangements negotiated by the regional offices. These physician technical advisors participate in site visits, assist at regional grantee meetings regarding medical issues, and review grant

applications. There appears to be a need for more coordination between the physician technical advisors and the regional office EMS staff. The Committee recognizes these experts can provide invaluable assistance to EMS systems, but believes that assistance must be provided in coordination with EMS staff in the regional office to ensure consistency and continuity of such technical assistance and that the technical assistance will be provided pursuant to uniform policies and priorities.

Periodically, grantees have indicated inconsistencies in policies enunciated by regional office EMS staff and by central office EMS staff. The Committee urges the Department to take steps to assure that uniform policies are followed by all regions and that policies governing grant awards are firmly established and understood well in advance of the deadline for submitting applications.

Paperwork Requirements of Grantees

porting requirements. In response to questions asked of EMS systems dened with paperwork in complying with grant application and reporting requirements. In response to questions asked of EMS systems representatives by Senator Cranston at the February 28 hearings, Mr. Thomas W. Pritchett, Project Director for the Western Ohio Emergency Medical Services System, reported as follows:

> * * * the financial reports are appropriate. The quarterly programmatic reports are realistic as is the annual report; however, a semi-annual workbook plus crisis reports do tax the staff resources to respond to on-going program needs, grant application initiation in mid-year and other unscheduled reports. For example, a recent report in abstract format addressing 24 areas was requested in late October 1978, due December 1, 1978. A full day was spent in Chicago and an additional half day in Omaha on instruction on how to prepare an abstract. In my opinion, better planning could have precluded these additional trips and the number of man hours required to generate this document on such a short notice. In conclusion, a semi-annual workbook or annual abstracts would appear sufficient to meet all reporting requirements.

Dr. Allen N. Koplin, First Deputy Commissioner of Health, New Jersey Department of Health, reported to the Committee:

> The manpower and time required to compile quarterly reports are not justifiable. It is clear that six months progress reports would contain more information. A half year's assessment might also be the occasion for a true evaluation of EMS system progress. The abstract writing process proved the worth of a system evaluation prior to the actual preparation of the grant. The grant itself constitutes an index of a year's progress toward systematized emergency care.

Their responses to answers regarding the grant application process again indicated that the process imposes a substantial burden on the applicants. Dr. Koplin reported:

> The time frame for the preparation of the grant is unrealistic. The new emphases in the grant process are however both logical and compelling. Additional attention to medical input is an especially useful focus for grant writing.

In addition he responded that the application requirements

> . . . are for the most part reasonable and valid. The grant application should be the logical outgrowth of a conceptualization process—such as the one undergone for the preparation of abstracts this year.

Mr. Pritchett reported that "we have no problems with the HEW guidelines and regulations. To date they have been realistic and achievable . . .," and in response to another question said:

> The grant application requirements are reasonable; however, the cycle process should be changed. The 1203–1 and 2 years should be combined into a one application grant award for two years. The same applies for 1204–1 and 2. Much of the material is basically the same except to update. An abbreviated application only reflecting changes for the 1203–2 and 1204–2 would be an improvement; or better yet would be the submission of a progress report. The manhours and supply costs for preparation and processing consistent applications annually is not very cost effective. In addition, staff time is more appropriately spent working with EMS providers and the public rather than slowing down to prepare a grant application in mid year.

Mr. Pritchett's suggestion was brought to the attention of HEW officials who were asked if the application for a second grant under either section 1203 or 1204 could be simplified through allowing the applicant to update or supplement the materials submitted for the first grant. The following HEW response indicates that steps are being taken to reduce the burdens imposed on applicants:

> HEW Regional Offices have the responsibility for reviewing all grant applications. The review mechanism that is used by each Regional Office involves submission of the applications through the Emergency Medical Services program consultant, and then review of the application by other HEW personnel within the Regional Office, together with the physician technical assistant. The problem is that HEW Regional Office personnel assigned to review applications each year is not necessarily the same personnel. In which case, applications submitted for second year grants under 1203 and 1204 may be rated lower than expected because the reviewer was not involved in reviewing the first year application for the same area.
>
> We are attempting to resolve this problem or at least to reduce the significance of this problem through the new Guidelines which should be released during fiscal year 1979. These Guidelines will deemphasize under sections 1203 and 1204, the amount of so called "boiler plate" material which is required to describe the capabilities that exist and the progress that has been made in the previous grant. Through this mechanism we hope to be able to reduce the bulk of material submitted by second year grantees under sections 1203 and 1204, but not lose the objectivity of the review.

The Committee is encouraged at the proposed reduction in the paperwork required of applicants, but urges HEW to take immediate steps to reduce the bulk required—particularly repetitiously—and the burden imposed on applicants.

Responsibility of EMS Unit in Coordinating HEW Programs Related to EMS

When the 1976 amendments to the EMS Act were enacted, the EMS unit, established pursuant to section 1208, was given the responsibility to participate fully in the development of the regulations, guidelines, funding priorities, and application forms for the research activities carried out under section 1205, the training programs carried out under section 789, and the burn injury program carried out under section 1221, as well as to participate in a consultative process in advance of the awarding of grants and contracts under those three program authorities. In addition, the unit was charged with providing technical assistance and monitoring with respect to grant and contract activities under sections 1202, 1203, 1204, and 1221, and with providing for periodic, independent evaluations of the effectiveness of, and coordination between, the EMS systems developed under title XII, the training programs carried out under section 789, and the burn injury program carried out under section 1221. The Committee bill adds two new areas of injury—trauma or poison—to section 1221, currently limited to programs relating to burn injuries, making those areas eligible for support under the section. The Committee intends that the responsibilities given to the EMS unit established pursuant to section 1208 with respect to section 1221 would pertain as well to the expanded areas of study—trauma or poison—added by the Committee bill.

The Committee has been impressed with the advances made in coordinating training programs, and the burn injury program with the emergency medical services systems programs, but is concerned at the lack of comparable movement in the research activities carried out under section 1205. Although the Department reports that the EMS unit staff were actually involved in the development of guidelines, regulations, application materials, and determining where best to commit resources for the training program, the description of the involvement with respect to the research program refers to several staff meetings to discuss priorities, applications, and progress results of the research program as well as two formal meetings to bring together EMS systems grantees and consultants with the EMS research grantees to discuss the topics, direction, and problems of EMS systems as related to the research program. The Committee believes that if there were greater involvement as mandated by law, the Department would be better able to counter complaints of the lack of applicability of EMS research to the EMS systems.

Coordination Between Federal Agency Programs Related to EMS

A major finding of the 1975 GAO study which the 1976 amendments attempted to address was the lack of coordination in administering various Federal programs supporting EMS-related activities, as well as the lack of coordination at the local level to encourage development of regional EMS systems through the grant support programs of the various Federal agencies.

Coordination of Federal programs was recognized as an important element in developing a rational approach to correcting the Nation's deficiencies in providing emergency medical services when the Emergency Medical Services Systems Act of 1973 was enacted in the 93d Congress. At that time, the Act established the Interagency Committee on Emergency Medical Services and charged it with evaluating the adequacy and soundness of Federal programs, and providing for the communication and exchange of information necessary to maintain the coordination and effectiveness of those Federal programs.

Although progress was made by the Interagency Committee to improve information exchange and to focus on technical problems associated with the delivery of emergency medical services and to provide national coordinated Federal guidance, the GAO study found real deficiencies at the local level where regional EMS systems wishing to utilize additional Federal funding sources were not made aware of the availability of additional Federal funding sources which would have enabled them to complement their program. The GAO review found that in some cases, other organizations in the same geographic area served by a regional EMS entity supported by the title XII EMS program were receiving EMS equipment which was not made available to or coordinated with the regional EMS system. To avoid this duplication and the potential for poor utilization of essential equipment, Public Law 94–573 specified certain responsibilities for the Interagency Committee, including the development of a comprehensive plan for the coordination of Federally-supported activities related to emergency medical services, as well as dissemination to all Federal grant award offices and grantees of a coordinated description of sources of Federal support for the purchase of vehicles and communications equipment and for training activities. In addition, the Interagency Committee was charged with developing recommended standards with respect to equipment and training related to emergency medical services.

The committee is very disappointed with progress to date; materials for all three of these responsibilities are still in preparation, as of the date the Committee bill was ordered reported from Committee, although the 1976 amendments required their development and publication not later than July 1, 1977. The Committee feels that the failure of the Department to comply with the majority of the reporting requirements of the law is a reflection of the inadequacy of operational funding and personnel positions provided the EMS unit and believes that if funds and positions were allocated as directed by both the authorizing and the appropriations committees, these failures would be corrected.

Despite the inability of the Interagency Committee to complete the three responsibilities mandated in the 1976 amendments, its accomplishments have been substantial. The diversity of these accomplishments is evident in a list provided by the Department:

The Interagency Committee on Emergency Medical Services (IACEMS) and its work groups play an important role in the coordination of Federal agencies' efforts in EMS. If Federal agencies are to reduce duplication, to move toward more effective funding efforts, and to promote government-wide standards, some forum must exist to accomplish these tasks. The IACEMS has fulfilled this role of

coordination and information exchange among the member Federal agencies. According to HEW, accomplishments to date include:

Reviewed and endorsed the EMS Evaluation Workbook.

Approved, published, and distributed, "Federal Program Resources Guide for Emergency Medical Services Systems".

Studied the status of primary transportation capability and future demand.

Prepared, published and distributed the Guidelines for Developing an EMS Communications Plan.

Developed EMS biomedical telemetry standards.

Made general and specific recommendations to the Federal Communications Commission on dockets up for review and consideration.

Made general and specific recommendations to the Department of Transportation on the adequacy of their dispatcher training course for EMS communicators and on the technical content of a film on EMS Communications.

Reviewed and approved the Emergency Medical Technicians-Paramedic training course and guidelines for Grants for Training in Emergency Medical Services.

Explored satellite potential and their communications capability in EMS.

Provided consultation and advice on Federal Aviation Administration criteria for air ambulances.

Made general and specific recommendations on joint funding of EMS projects utilizing multiple sources of funding from Federal agencies. Also considered implementing specific projects for combined Federal funding.

Participated in the proposed development of a pilot program with Department of Labor and other agencies in the training of Handicapped Veterans as EMS dispatchers.

Prepared "tasking statement" for an EMS Communications operations Guide Booklet.

Provided consultation and advice on inter-State and intra-State EMS communications.

Discussed the Memorandum of Understanding between the Department of Transportation and the Department of Health, Education, and Welfare.

Explored the problem of care for emergency patients in national parks and is currently developing specific guidelines to improve care.

Assisted in the Lakes area EMS (Buffalo, NY) discussion with Canada in the resolution of co-channel licensing problems with stations in Canada and those in the United States along the Canadian Border areas.

The Committee was told by the Association of State EMS Directors of their view that a State EMS Director would be a useful member of the Interagency Committee on EMS. The Committee suggests that serious consideration be given to the appointment of such a representative when the next appropriate vacancy occurs.

Coordination of Federal Programs at the Local Community Level

Coordination of Federal activities at the national level must be accompanied by coordination of those activities at the local level, and

can be achieved most effectively through EMS systems making maximum utilization of training support and ambulance and communications equipment available under the Highway Safety Act, as well as communications equipment made available under the Law Enforcement Assistance Administration legislation (title I of the Omnibus Crime Control and Safe Streets Act of 1968 (42 U.S.C. 3701 et seq.)). Major advances have been made in the past 2 years in regional systems' utilization of these sources of grant support. The Committee is reassured by the testimony presented by witnesses from EMS regional systems that they have been taking full advantage of the opportunities for complementary support from Federal sources in addition to title XII and section 789 of the Public Health Service Act.

This coordination with other Federal programs providing support for EMS-related activities, in many cases, provides a natural linkage between the EMS system and other public safety agencies in the area. One of the 15 required components of a comprehensive emergency medical services system established under title XII is the requirement that the system provide for the effective utilization of the appropriate personnel, facilities, and equipment of each public safety agency providing emergency services in the system's service area.

In many communities, the EMS system will share a communications network serving other public agencies such as fire and police. Many times the first response to a medical emergency is through the fire department emergency medical vehicle staffed by fire department personnel specially trained as emergency medical technicians or paramedics.

The Department reports as follows:

> Ninety-four of 152 abstracts received to date from regional EMS systems show involvement of Public Safety Agencies in the planning of EMS systems. Eighty-nine of these abstracts indicate actual sharing of personnel, equipment, and facilities. Sixty-two percent of reporting projects utilize the universal access number "911" which is coordinated to provide access to police, fire and EMS. Fifty-five of 152 abstracts revealed 55,733 public safety personnel completed the Crash Management Injury Course on first Responder Training Program.

The Committee is impressed with the progress this report indicates, but is concerned that the involvement is not greater and is hopeful that EMS systems will be encouraged by the HEW regional offices to pursue greater coordination and linkages with public safety agencies.

With a view to encouraging this effort, the Committee bill adds a representative of the newly established Federal Emergency Management Agency to the Interagency Committee on Emergency Medical Services. The Committee contemplates that the representative from that Agency would be from the U.S. Fire Administration. Mr. Gordon Vickery, Administrator-Designate of the United States Fire Administration, presented testimony to the Committee, clearly stating the important role fire services play in emergency medical service systems. His testimony stated in part:

> Fire services assume the leading role in emergency medical services as a natural extension of their emergency training, equipment, communications, fire station location, and experience in dealing with accidents and disasters developed for

firefighting and rescue. The fire service is one of our nation's basic emergency organizations. It represents a sizable resource and pool of manpower, operates equally well in urban and rural areas, and is naturally looked to for leadership and guidance in time of disaster or emergency. Eighty-five percent of the metropolitan fire services provide emergency medical service. Roughly half of those provide transportation and treatment; the other half provide medical services limted to treatment of victims at the scene of fires, accidents, and disasters. Seventy percent of the country's ambulances respond from fire stations.

The assumption by fire services of emergency medical service was encouraged by the National Commission on Fire Prevention and Control in its 1973 report to the President. The Commission stated that, "There are sound reasons for fire departments assuming emergency ambulance and paramedical functions." The Commission then recommended that:

> fire departments lacking emergency ambulance, paramedical, and rescue services consider providing them, especially if they are located in communities where these services are not adequately provided by other agencies.

Department of Health, Education, and Welfare (HEW) and Department of Transportation (DOT) efforts to upgrade emergency medical services have been extremely successful. Ambulance attendants and emergency medical technicians are far better trained, and the equipment they use is far more effective, than prior to this federal involvement in the provision of emergency medical services.

Chief James H. Shern, Fire Chief for the City of Pasadena, California, and President of the International Association of Fire Chiefs, testified:

> Fire fighters trained as EMTs can be certified CPR instructors to train the citizens of the community. The Seattle, Washington Fire Department has trained 156,000 individuals, more than half the city's adult population, to perform CPR.
>
> Fire stations as first aid centers are a community service a fire department with properly-trained EMTs can provide. Minor cuts and scrapes can be treated at the fire station enabling the ambulance to be ready for critical emergencies.
>
> The fire service has a major role in the initial planning and implementation of an EMS system. The availability of manpower on a 24-hour per day basis to operate centralized communications, provide rapid response, emergency care and transportation places fire services in a position to have extensive input in early systems development. Areas of involvement include:
>
> > Manpower—sufficient personnel to operate communications and emergency vehicles.
> >
> > Training-EMT, EMT—paramedic, EMS communication training.
> >
> > Communications—plan, procure, install and operate equipment and act as FCC licensee.

Transportation—develop transportation plans relative to response time and population needs; procure and operate emergency vehicles.

Public safety agencies—improved coordination with other agencies and improved "first on the scene" capabilities.

Disaster linkages—improved response during mass casualty incidents, natural disasters and similar situations.

Mutual aid agreements—initiate or improve interdepartmental mutual aid mechanism for EMS purposes.

Public information education—assure that the public is aware of the program and provide mechanisms for public education and involvement.

While we support Emergency Medical Services Systems we have encountered problems. Cooperation between the various elements of the system is essential.

In addition, the Committee is encouraged that under the HEW–DOT Memorandum of Understanding, signed on October 26, 1978, the Department of Transportation will develop uniform standards and procedures to integrate and improve utilization of all public safety personnel, facilities, and equipment and that HEW, in coordination with DOT, will develop medical standards and procedures for the initial, supportive, and definitive care phases of the integration and improved utilization of public safety agency personnel, facilities, and equipment in day-to-day provision of emergency medical services and in major disaster operating procedures.

The Committee received testimony for the hearing record pointing out the critical need for tissues and organs for transplant purposes, suggesting that systems for providing critical care should have appropriate mechanisms for alerting regional tissue and organ banks and procurement systems of the existence of such tissues and organs from donors. The Committee does not feel this is a responsibility the emergency medical services systems can feasibly add to their current responsibilities, but agrees that a system of communication with officials of regional tissue and organ banks and procurement systems would be beneficial to many critically ill individuals whose lives depend upon an organ donor, and encourages the development of such lines of communication in the communities.

The American Academy of Pediatrics testimony pointed out the high proportion of children receiving emergency care in EMS systems. The Academy said:

> The American Academy of Pediatrics is concerned that emergency medical services are primarily adult-oriented in spite of the proportion of emergencies which is pediatric. The nature of pediatric emergencies merits adequate pediatric training of the physicians and nurses who staff emergency departments in order to identify the critically ill or injured child and to develop the technical skill to stabilize the young patient. The Academy requests the opportunity to review the emergency services funded by the bill and to contribute advice and assistance in planning such services from the pediatric standpoint.

The Committee believes that such counsel would be of great value to EMS systems and encourages the EMS unit to seek the advice of such medical specialty groups as, among others, the American Academy of Pediatrics, the American College of Surgeons, the American College of Cardiology, the American College of Emergency Physicians, and the University Association for Emergency Medicine in developing policies governing EMS systems.

Research

The Committee bill extends for 3 years the authorizations of appropriations for emergency medical services research grants and contracts. The level of appropriations authorized is $3 million for each year, the same amount appropriated in fiscal year 1979. The Committee has maintained the authorizations of appropriations at the same level for each of the next 3 fiscal years in view of the need to restrain Federal spending.

Dr. C. Eugene Cayten, Director, Center for the Study of Emergency Health Services, at the University of Pennsylvania, told the Committee:

> Dollars spent in EMS research will have a large pay-off in terms of controlling health care costs for three reasons.
>
> 1. Because the termination of the Federal EMS systems program is being forecast, State and local system managers are in desperate need of methods and results to plan cost-effective systems. The combination of lack of Federal funds and local tax revolt trends mean that objective decision making tools are needed now more than ever before. . . .
>
> 2. Because the Emergency Department is both the locus for so much of the ambulatory care and the route to hospital admission for such a large proportion of patients, the appropriateness of care in this setting can have a great impact on the overall cost of medical care. . . .
>
> 3. The research in Emergency Health Services systems has application to many other aspects of the health care system; but because of the evaluation climate engendered by Division of EMS and by the fact that these systems are just being put together, the opportunities and receptivity of EMS research is greater. Though considered by some to be a categorical program the EMS system program is in fact comprehensive. It does not address a single disease entity but involves the development of a system of care that integrates citizens, public safety personnel, and many levels of health care providers into a coherent attack on sudden illnesses of all types. As these systems are being built, there is an opportunity to research issues of manpower, training, quality control, regional allocation of resources. All of these are generically important to rationale health care system design.

Dr. Ronald L. Krome, President, University Association of Emergency Medicine, testified to the importance of research programs to emergency medical services. He said:

> A corollary of both research and planning is the accumulation, interpretation and accessibility of reliable data concern-

ing Emergency Medical Services. We need to know more about the persons who use EMS systems, the providers of those services, and the outcome of the services provided. It is essential that we have information about the morbidity and mortality of patients who enter the system. We are still guessing and estimating such critical information as:

—the total number of physicians, nurses, allied health personnel involved in EMS

—the types of facilities and equipment that are available to emergency patients

—the profile of educational backgrounds and on-the-job training represented by professionals who provide emergency care.

Certainly no single organization in the private sector and, perhaps, no consortium of such organizations, can be expected to undertake such an awesome task without the financial support of the Federal Government.

Considerable testimony was presented to the Committee on the need for research activities to concentrate on developing methods of evaluating the effectiveness of EMS systems. The Committee notes that the National Center for Health Services Research has been conducting a series of workshops tailored specifically to the needs of the system operator, and that the Center reports that these workshops have demonstrated that "it may now be feasible" to mount a multi-size EMS system evaluation project. The Committee encourages the Center to pursue this possibility vigorously.

The Committee retains its special concern that research efforts be applied to the special problems of rural EMS systems. The Department, in responding to questions for the hearing record, stated:

> Only a few EMS research projects are actually being conducted in rural settings. Because a certain number of events must be observed to be certain that differences are not chance happenings, it is usually more efficient and economical to collect data in more densely populated areas. Moreover, qualified research teams able to design and conduct applied research projects are often located in metropolitan areas. Since results from well-designed study are generalizable to other settings, however, the research results are as useful to rural as to urban communities.

The Committee believes that, although such research should have applicability in rural settings, careful attention needs to be directed to designing research with direct relevance to rural settings. As research is done, the process of research blends imperceptibly into that of management. Thus, research should be encouraged that develops research tools that are ultimately useful as management tools.

To help assure that the EMS research program continues to focus on significant problems and provides results that are useful and timely, NCHSR should reinforce its close working relationships with the EMS Administrative Unit, thereby gaining greater understanding and interaction between the research community and those who use research results—EMS system managers, advisors, and policymakers.

Dr. Eugene Cayten, Director, Center for the Study of Emergency Health Services at the University of Pennsylvania, testified that the program unit having responsibility for reviewing research grant applications should include individuals with backgrounds in the development and operation of emergency medical services systems. The Committee concurs in that suggestion and encourages such representation in the grant review process.

Burn, Trauma, or Poison Injury Program

The Committee bill authorizes the appropriation of $3 million for each of the next 3 fiscal years for the burn, trauma, or poison injury programs. The Committee has maintained the authorizations of appropriations at the same level for each of the next 3 fiscal years in view of the need to restrain Federal spending. The Department is currently conducting indepth studies and demonstrations which should provide valuable guidance to the Nation on the approach to developing burn injury programs that will be appropriate to national and community needs. These findings should be made available by February 1981. Under the circumstances, the Committee does not believe that the appropriations made under section 1221 would be effectively used in further studies of burn injury programs. However, early indications from the studies underway indicate that there is a considerable need for training health care personnel in the treatment of burn patients as well as in teaching them how to develop relationships between burn centers and related community health or rehabilitation providers. Providing support of such training programs is a factor that should thus be considered in the awarding of funds appropriated under section 1221.

The Committee has added two new areas of study under the section 1221 authority—trauma and poison. Considerable testimony was received during the February 28 hearings on the need for more basic data and information on existing programs in these areas with a view to determining the most effective approaches to assuring that national needs are met.

Trauma.—Although the EMS Act has provided the greatest impetus to regionalization of trauma care, regional trauma systems are still not a reality everywhere.

A significant number of trauma deaths are preventable. The Trauma Society reports that 1 out of 5 trauma deaths need not occur, and reports that 20,000 lives can be saved each year with proper trauma care. The bulk of trauma victims are young and resilient. With appropriate care, they can be fully restored to an active and full life.

To develop a rational system of trauma care, we need to know the incidence, prevalence, treatment standards, and rehabilitation needs related to trauma under different organizational approaches to providing that care.

Dr. Thomas K. Hunt, First Vice President of the American Trauma Society, and Director of the Trauma Center at the University of California, San Francisco, reported to the Committee:

> The efficacy of the approach of the Emergency Medical Services Act has been demonstrated by improvements in burn care and the care of the cardiac problems. The systems are not yet perfect, but immense strides have been made.

Unfortunately, trauma care has not fared as well. There are good reasons for this; the complexity of the problem being the major one. Nevertheless, trauma has emerged as our fourth greatest killer. If the strides made in public education in heart disease, for instance, continue to hold, trauma will soon become the third greatest killer. The increase in the technology of modern society will ensure that the opportunities for trauma will increase in the foreseeable future. Trauma kills and disables the young, and our experience in war clearly demonstrates that this toll can be reduced by adequate organization. I should emphasize that scientific advances, though desirable, are *not* necessary to ensure improvements in trauma care. Improved organization for delivery of care will improve the problem immensely.

In order to improve the delivery system, we feel that major decisions must be made. Trauma centers of excellence have proved their worth; and now, their size, location, their division of labor (spinal cord centers, burn centers, etc.) must be determined. More surgeons willing to dedicate their lives to trauma care must be recruited and trained....

We need a few major Trauma Centers of Excellence—primary receiving areas—where the incidence, the location, the type and cause of trauma can be determined and recorded, so that response systems and preventive efforts can be designed to meet demonstrated, specific need. We need to know specifically why trauma patients die, and how they become disabled, so that priorities for biomedical research can be more clearly constructed than they have in the past. We need to know the standard of care and the outcomes that can be expected after specific injuries cared for in centers of excellence.

Through this, and the existing EMS system, the public should receive information which will allow it to design their own community health services. Whereas some communities lack any emergency services, other have costly and redundant facilities. The information from pilot centers located to allow for geographical differences, should aid the public to make those hard decisions which they must make of where to build and where to take away.

The Committee wishes to emphasize that the centers contemplated under this authority are distinctly different from the trauma centers established with support from the National Institute of General Medical Sciences, which have a substantial biomedical research responsibility. The Committee believes that the new trauma program which will be administered by the EMS unit established pursuant to section 1208 should benefit from the experience and knowledge of NIGMS and urges close coordination and cooperation between appropriate staff of both offices.

Poison.—The Committee received several recommendations to include authority to examine our current system of poison control centers. The Committee is convinced that there is a significant poison prevention and treatment problem. There are 5 million poison victims

a year, most of them children. It is estimated there are about 640 poison centers in the United States, whereas many experts suggest that no more than 60 are required. The assumption is that the Nation has too many centers which are insufficiently utilized to accumulate the needed experience in dealing with poison cases and justify the full-time highly trained staff necessary to deal effectively with poison cases. The Committee was advised that a well-staffed center can handle 85 percent of poison cases through advising on the telephone of the appropriate home measures to treat the poison victim. Experience has shown that a center with untrained staff will refer 80 percent of inquiries to an emergency department or a private physician—thereby unnecessarily adding to the costs of health care. There is a need to determine the appropriate population size and geographic area that a well-staffed poison center can serve efficiently. The studies and demonstrations authorized by the Committee bill will help develop the information necessary to guide communities to consolidate and or develop the kinds of poison information centers that will serve regions most effectively. The Committee believes that not only is a better mechanism of dealing with poison cases needed, but that the existence of a more systematized approach will result in considerable cost savings to consumers and health care providers.

Dr. George Lythcott, testifying for the Department of Health, Education, and Welfare, reported:

> One of the more exciting areas of EMS has been the area of poison care. Major emergency medical services systems are building and incorporating poison care as one of the critical patient categories. In those locales where there are designated regional poison control centers, such as Baltimore, Boston, Pittsburgh, Denver, Salt Lake City, Grand Rapids, and San Diego, there has been a 40 to 60 percent reduction of poisoning encounters in the emergency departments. This has been attributable to outreach information programs and the management of a poison episode within the home through intervention of poison control centers. This early intervention, provided by experts, prevents inappropriate use of the expensive emergency department resources, and results in the most appropriate care for those patients that do incur a life-threatening poisoning episode. This means a cost saving to the community. Inappropriate use of the emergency department is reduced and appropriate care of emergency patients is enhanced.

Mr. Jeffrey S. Harris, Executive Director for the National Association of Emergency Medical Technicians, also reported:

> Regional Poison Centers, properly organized into a system of care, can reduce mortality and morbidity. Regional centers service large populations (2 to 4 million) and provide consumer access and information about accidental ingestions of drugs and other potential hazardous agents and their prevention. Major regional poison control centers receive up to 40 to 60 thousand consumer inquiries per year. Of these poison calls, 85 percent are managed effectively at home, over

the telephone and thereby preventing inappropriate utilization of very expensive emergency department and hospital health care resources. These centers provide consultation for all physicians and other emergency medical personnel in the region so that they can provide expert care appropriate to the patient. Regional centers have developed data bases from which public education, professional training and accident prevention programs are developed.

Training

The Committee bill extends for 3 years the authorizations of appropriations for emergency medical services training grants and contracts. The level of appropriations authorized is $4 million for each year, an increase of $1 million over the amount appropriated in fiscal year 1979. The Committee has maintained the authorizations of appropriations at the same level for each of the next 3 fiscal years in view of the need to restrain Federal spending. The Committee believes that these training programs are essential to the development of EMS systems throughout the country. They are closely tied to the comprehensive emergency medical services systems established with support under title XII—according to HEW 90 percent of the grants are awarded in areas receiving support for the establishment or expansion of an emergency medical services system. This is in full accord with the provision in section 789 requiring that priority in the awarding of training grants be given to those regions with EMS systems supported under title XII.

As these systems are established throughout the Nation, more of these trained personnel can be effectively used in the lifesaving work to which they are dedicated. These training programs have enabled many communities to provide good emergency medical services utilizing a well-trained interdisciplinary team of physician, nurse, paramedic, and technician. The training programs have helped communities develop training programs which have become part of continuing training programs in hospitals and educational institutions and have formed the basis for training new personnel in the future at the community level without Federal funding.

The Committee heard testimony from a broad range of witnesses interested in emergency medical care who pointed out the need for training grants in emergency medical services. Dr. George Podgorny, President, American College of Emergency Physicians reported:

> Based on rough projections, there are at least 20,000 physicians who practice either full-time or part-time emergency medicine or who fulfill medical staff responsibilities in the emergency department. . . .
>
> Great strides have been made in introducing these physicians and others who have chosen emergency medicine as a second career to the methods and skills of dealing with emergencies. However, ACEP feels continuing medical education is not the solution. ACEP believes that the best solution is placement of residency-trained emergency physicians in strategic positions throughout the EMS system, primarily in emergency departments.
>
> It is not our intention to set as a target the placement of residency-trained physicians in every position of every

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emergency department in the country. This is impractical and, further, we believe the profession is enriched by the flow of physicians from various specialties through the emergency departments. However, the College has established some targets which we feel will assure the emergency medicine patient the most dependable and consistent quality of care that is possible within the limits of cost effectiveness.

One of the College's long range targets is the placement of residency-trained physicians in each position of the emergency departments that have or can support 24-hour physician coverage. We calculate that in 1979 this works out to 1,283 hospitals. Based on patient volume in these hospitals, a full-time physician work force of 8,366 is needed for adequate coverage. We believe that each of these positions should eventually be filled by residency-trained physicians.

Residency Program.—The HEW-supported residency programs in emergency medical services do not merely train physicians to be specialists in emergency medicine, but train those physicians as managers and developers of EMS systems in an interdisciplinary training program. Physicians completing the residency programs are prepared to serve in a new community and work with leaders in the community in developing a systems approach to emergency medical services.

Seven residency programs have been established with section 789 grant support. The locations and the number of residents each program is capable of training is shown in the following list:

Grantee:	*No. Residents*
Albert Einstein College of Medicine, Bronx, N.Y.	6
Geisinger Medical Center, Danville, Pa	12
Medical College of Pennsylvania, Philadelphia, Pa	17
Bowman Gray Medical School, Winston-Salem, N.C	12
Richland Memorial Hospital, Columbia, S.C	9
UCLA, Los Angeles, Calif	12
Charles Drew Medical Center, Los Angeles, Calif	10
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Other training programs supported by section 789 are equally as important to the effective operation of emergency medical service systems. The grants awarded for EMS training are distributed almost evenly among physicians, nurses, and paramedics, with each discipline receiving approximately one-third of the grant awards each year.

This diversity is reflected in the numbers of personnel trained under the training grant authority over the past several years—almost 9,000 physicians, 22,000 nurses, and 50,000 emergency medical technicians.

It is estimated that there is still a need for over 9,000 emergency medicine physicians, over 20,000 EMS nurses, 30,000 emergency paramedics, and over 100,000 emergency medical technicians in the United States. The Department contends that these individuals should be trained by State and local government programs. However, Dr. William F. Minogue, EMS Project Director, New Jersey Department of Health, told the Committee of the importance of Federal training funds to the local community.

> Until EMS systems are operational in a high percentage of the jurisdictions around the country the necessary local funding for education will not be forthcoming in my estimation. I do not think the Federal Government will have to remain in the EMS education business indefinitely but it certainly should be a major area of resource expenditure while the system is taking shape. I've noticed at a local, regional and State level in New Jersey that once the system becomes developed and sophisticated, communities feel a sense of ownership and then are quite willing to fund the continuation of the service. Until the EMS system has proven it's worth at the grass roots level, education dollars are hard to come by locally.

Mr. Jeffrey Harris, Executive Director of the National Association of Emergency Medical Technicians, pointed out to the Committee during hearings that there are significant start-up costs in developing training programs, and specifically for paramedics. The section 789 funds are a valuable source of support for the development of these programs in the community. The Committee believes that the section 789 funds are essential to helping these communities develop the necessary programs to train these needed personnel, and that the department's recommendation to eliminate the program would result in many of these individuals not being trained. The importance of these trained individuals to the operation of EMS systems is significant and the Committee believes that the objectives of the EMS Act would be seriously compromised by the elimination of the training grant authority.

SUDDEN INFANT DEATH SYNDROME PROGRAMS

Background

Sudden Infant Death Syndrome (SIDS) claims the lives of an estimated 6,000 to 7,000 infants annually. These children die suddenly and unexpectedly during what is considered normal sleep. The incidence rate is approximately two per 1,000 live births. It is the leading cause of death between the ages of 1 and 12 months. Of all infant deaths occurring between the ages of the first month and first year of life in this country, as much as half can be attributed to SIDS.

The Sudden Infant Death Syndrome Act of 1974 (Public Law 93–270)—embodied in title XI.B. of the PHS Act—reflected the initial expression of concern by the Committee about the SIDS problem. The Committee felt the pressing need for more research into the causes of this disorder and for a program of public and professional education, information, and counseling about SIDS.

The Act, extended in 1977, created a system of counseling and information services for the families of SIDS victims, authorized the dissemination of educational materials on crib death, and called for the establishment within the National Institute of Child Health and Human Development (NICHD) of a program of biomedical research into the causes and prevention of SIDS.

At the present time, a total of 33 projects in 29 States are being funded to provide information and counseling services, as well as to

carry out data-gathering activities. These projects provide services to a population base of approximately 126 million. Specifically, education and training is provided to those who come in contact with the families of SIDS victims to sensitize them to the special needs of family survivors. More than 2,000 educational programs have been conducted during the past year. In addition, the projects work towards improved coordination and development of community resources to deal with SIDS cases. They also assist in the development and distribution of SIDS informational and educational materials. These materials include films, TV spot announcements, and brochures.

Until recently, only a small number of infants who died suddenly and unexpectedly were autopsied to confirm the cause of death and to learn more about the conditions contributing to the tragic event. In contrast, by 1978, all of the information and counseling projects reported an autopsy rate for infants higher than the national average and 17 reported an autopsy rate of 80 percent or higher. In 10 projects, 7 of which are statewide, virtually all infants who die suddenly and unexpectedly are autopsied.

Since 1972, the National Institute of Child Health and Human Development has annually increased its research efforts into sudden infant death syndrome resulting in an expanded base of knowledge about this phenomenon. As a result of Institute-supported investigations during these 7 years, it is evident that SIDS babies are not the healthy infants before death they once were believed to be. There is increasing evidence that the syndrome is not caused by a single mechanism acting at one moment in time, as previously believed. Rather, a number of developmental, environmental, and pathologic factors are involved. Under a complex set of circumstances, these interact and rapidly set up a sequence of events producing a sudden, unexpected and unexplained infant death.

Investigators are currently studying the role of many normal and abnormal phenomena in relation to SIDS. In 1977, the Institute began a cooperative case-control study of SIDS. About 600 cases of SIDS, as defined by an autopsy protocol developed for this study, will be investigated. Case-control comparisons for each factor under study will determine the extent of SIDS risk associated with the factor. It is anticipated that as a result of this project, it will be possible to identify high-risk infants on the basis of information available at birth and in the period shortly after birth. HEW expects that, by the end of 1981, an index will have been established to assist in identifying infants at risk. At that time an assessment of the index would be begun so that data could be developed to convert the index to practical application to assist in the identification of prospective SIDS high-risk infants.

An inexpensive prototype respiratory-cardiac electronic monitor for use in the home of high-risk and near-miss infants is under development.

It is expected that the risk factor study will enable identification of SIDS high-risk infants at birth and in the early post-partum weeks. Home monitoring of heart and respiratory regulation during sleep will further delineate risk. It is the current HEW expectation that the combination of risk-factor and monitoring data will make a SIDS prevention program feasible.

TABLE 7.—HISTORY OF SIDS AUTHORIZATIONS AND APPROPRIATIONS

	Authorizations	Appropriations
Fiscal year:		
1975	$2,000,000	$2,000,000
1976	3,000,000	2,500,000
1977	4,000,000	2,000,000
1978	3,650,000	2,802,000
1979	3,500,000	2,802,000
1980	*4,000,000	----------
1981	*5,000,000	----------

*Authorization levels as per Public Law 95-613.

TABLE 8.—PROGRAM AUTHORIZATIONS IN PROPOSED SIDS AMENDMENT

	Authorizations
Fiscal year:	
1980	$5,000,000
1981	7,000,000

The Committee Bill

Identification of an Administrative Unit

Presently, the Sudden Infant Death Syndrome (SIDS) program is administered by the Office of Maternal and Child Health within the Bureau of Community Health Services of the Health Services Administration. Because of the relatively small size of the SIDS program and its limited funding, there exists a certain amount of fragmentation of personnel within the Bureau in order to provide the needed professional, consultant, and clerical support.

In an attempt to alleviate at least some of the fragmentation resulting from the division of management and support activities among several offices, the Committee bill requires that a unit within the Department be identified to administer the SIDS program. The Committee intends that this unit be the focal point for the identification and concentration of staff being funded from the SIDS appropriation. (Approximately $198,000 has been set aside from the $3 million appropriation in fiscal year 1979 for program support.) This provision should help the Committee better understand how the administrative expenses allocation is being expended and for whom.

In requiring identification of this administrative unit, the Committee is not suggesting that the SIDS program be moved out of the Office of Maternal and Child Health which has been administering it. Retention of this program in this Office would seem to be justified given the apparent relationship of SIDS to prenatal development and the occurrence of this disorder during the first year of life. Continuing the SIDS program in this Office would, in addition, aid in the coordination of prevention and infant-identification activities once findings derived from biomedical research provide the tools for carrying out such activities.

Coupled with this provision is the requirement that adequate staff must be provided to administer the SIDS program. Because there has been no central administrative unit, and because of the variety of needs of the program, there are fragmented staffing patterns within the Department with respect to this program. At the March 1, 1978,

SIDS hearing, Mrs. Nancy Lefebrve, President of the International Council for Infant Survival and herself a SIDS mother, stated:

> A commitment to erradicate SIDS and in the interim, to administer humane services of information and support, cannot be effectively administrated by part-time HEW–MCH personnel. Current staffing is inadequate if the taxpayer's money is to be cost effective in a program consistent with the high ideals of Public Law 93–270.

The adequate staffing provision would require that the Secretary provide the identifiable unit with such full-time professional and clerical staff as well as the services of such consultants and management and supporting staff as may be necessary to carry out this program. The Committee believes these personnel are particularly important as the Department enters a phase of expansion of services to all the States, territories, and possessions not presently covered. This provision further corresponds with fiscal year 1978 Senate Labor-HEW Appropriations Committee report (Senate Report 95–283) which states that "six positions are to be clearly identified for the Sudden Infant Death Syndrome program" within the Health Service Administration.

Despite this admonition, the Committee notes that these six positions have never been identified.

Mandatory Reporting System

Public Law 93–270, as enacted in 1974, required that the Federally-funded projects provide counseling and information services to families affected by SIDS, and collect, analyze, and furnish data relating to the cause of SIDS. The Committee bill provides an expanded mandate for the type of data collected by requiring that it cover other appropriate aspects of SIDS. The Committee is concerned that a uniform reporting system has not been developed for the communication to the Department of material collected at the project level. The Committee bill requires that the Secretary develop and implement such a reporting system. Such a mechanism would not only enable the Department to have a more accurate account of project activities, but would provide information by which individual projects could make comparisons of their services and effectiveness. The need of such data was suggested at the March 1978 hearing by Ms. Patricia Dorsa, project coordinator of the New Jersey SIDS Project, when she said:

> Reports of statistics to HEW should be mandatory and uniform so that the epidemiological data of each project, when collated nationally, might reveal significant trends and occurrences.

Clearinghouse Activities

One of the most fundamental reasons for the creation of the SIDS legislation was the need to provide information and education regarding SIDS to the public, as well as to the various service providers who came into contact with SIDS parents after the death of the child. At the time the legislation was enacted, little was known about the disorder, there was no method of identifying children at risk, and there was no known way to prevent the death of the child. Parents were sometimes arrested for child abuse or even murder because of a lack

of understanding by law enforcement officials. Physicians and other members of the health care community knew very little, if anything, about SIDS and could offer very little assistance or support to the bereaved parents. Biomedical research projects directed toward solving the mystery of SIDS were few.

Much has been learned since the enactment of the Sudden Infant Death Syndrome Act of 1974. Numerous epidemiological factors have been identified as peculiar to SIDS infants; medical schools as well as other health professional institutions are beginning to include SIDS in their curricula; the attitudes and understanding of the law enforcement community have vastly improved; the need for counseling of families of SIDS victims is beginning to be understood and is being given increased emphasis; research has revealed that SIDS babies are not the healthy babies they were once thought to be; instead they have been found to have distinctive physiological or anatomical disorders that previously went unnoticed.

With all these advances, however, there still remains much to learn. Research must continue so that the lesions or defects that are common to all SIDS victims can be identified and, once found, this information applied to preventing the syndrome. There needs to be an increased awareness of SIDS on the part of health professionals so that they can improve their services to families that lose their infants to SIDS. These services include counseling to such families, possible monitoring of subsequent siblings, and advising the SIDS families of the value of post mortem examination to ensure an accurate diagnosis. In order to foster increased awareness on the part of physicians-in-training, some SIDS projects are coordinating educational programs with medical schools in their vicinities. Through such coordinated efforts, medical students often have the opportunity to listen to a multi-disciplinary presentation on SIDS given by a pathologist, a pediatrician, a nurse and a SIDS parent. Such cooperative measures between federally-funded SIDS information and counseling projects and medical schools must be encouraged, along with efforts to urge medical schools to include SIDS in their basic core curricula.

The Committee heard testimony that information and educational materials must be in languages other than English and directed toward the economically disadvantaged population that so often experiences SIDS. In addition, the general public as well as service providers must continue to be educated as to the existence of this disorder. Although there has been a great improvement in understanding on the part of lay and professional communities with respect to SIDS, there are still many individuals who need to be reached.

Of basic importance in this informational and educational process, is coordination in the collection and dissemination of data. At the March 1, 1978, hearings, Ms. Dorsa also recommended:

> . . . that a stabilized and ongoing system for the dissemination of information be developed so pertinent current information can be rapidly directed to those who need to use it on the grass roots level to insure implementation of current knowledge at the hospital's infant and pediatric

units, as well as local pediatrician, family physician and obstetrician offices.

In order to improve the awareness of the public and provide timely information to those who need it regarding the various aspects of SIDS, the Committee bill would require the Secretary to carry out coordinated clearinghouse activities. These activities will include the collection, analysis, and dissemination to the public, health, and educational institutions, professional organization, voluntary groups with a demonstrated interest in sudden infant death syndrome, and other interested parties, of information pertaining to SIDS and related issues such as death investigation systems, personnel training, biomedical research activities, and information on the utilization and availability of treatment or prevention procedures and techniques, such as the advisability surrounding the use of cardiopulmonary home monitors and the conditions and required training associated with the use of such new technology. The Committee takes note of the position of the Task Force on Prolonged Apnea of the American Academy of Pediatrics regarding the use of home monitors:

> Electronic or other monitors of the heart or respiratory rate may be useful adjuncts to 24-hour surveillance, but should be used only under medical supervision.

It is the Committee's intent that, under this new clearinghouse authority, the contract mechanism would be used to engage public and private entities (including for-profit entities) in performing functions associated with the national efforts to develop and disseminate public information and professional education materials and in the collection, analysis, and furnishing of information relating to SIDS and other appropriate activities which relate to SIDS research and information and counseling activities.

The Committee notes that in continuing the authority for grants and contracts under section 1121(b)(1) for public and private entities to carry out information and counseling programs as well as the collection, analysis, and furnishing of information about SIDS, it is anticipated that the funding mechanism for such programs will be grants with public or nonprofit private entities wherever feasible and, where grants are not feasible, then contracts will be used with public or nonprofit private entities. It is the committee's view that the collection, analysis, and furnishing of information about SIDS is a necessary part of every information and counseling program. The Committee has not authorized carrying out information and counseling programs through contracts with private, for-profit entities.

Involvement of Appropriate Voluntary Groups with a Demonstrated Interest in SIDS

Because the Committee recognizes the valuable contributions that may be made to projects by voluntary SIDS organizations, such as the International Council for Infant Survival and the National Sudden Infant Death Syndrome Foundation, as well as other individuals who have experienced the tragedy of SIDS, a provision has been included in the Committee bill which states that, where appropriate, voluntary SIDS groups should be included in the development and the operation of federally-funded counseling and information programs. The pro-

vision responds to the March 1978 testimony of Mr. Saul Goldberg of the International Council for Infant Survival, who testified as follows:

> It would seem logical that that part of the community that is the people most willing to help and most likely to contribute through their own experiences would be from the very organizations of SIDS parents who initiated the fight against Sudden Infant Death Syndrome and brought it to congressional attention. I speak of the National Sudden Infant Death Syndrome Foundation as well as the Guilds for Infant Survival. Yet the degree of participation in the development and operation of projects varies widely, and in some instances, does not exist by ignoring or bypassing this available resource. It may be given token recognition in ineffective community councils which are merely advisory and do not oversee project operations. Thus the term "appropriate community representation" is not specific enough. I suggest this phrase be changed to spell out SIDS parents groups.

In discussions and correspondence subsequent to the March 1978 hearing, the National Sudden Infant Death Syndrome Foundation has also voiced its concern regarding the role of the voluntary SIDS organizations in the planning for SIDS counseling and information services at the national level and in the planning for and operation of SIDS counseling and information services at the local level.

The Department utilizes an ad-hoc review committee made up of a majority of individuals outside the funding agency. Included on this committee are representatives from the National Sudden Infant Death Syndrome Foundation, and the International Council for Infant Survival, as well as professionals such as medical examiners, pediatricians, and psychologists. Currently, the panel consists of 13 individuals, of whom 4 are HEW staff.

Equitable Distribution of Funds and Needs of Rural and Urban Areas

The Committee bill would require that the Secretary of HEW carry out an equitable distribution of funds for SIDS programs among the various regions of the Nation, considering carefully the needs of both rural and urban populations so as to insure that every State has an equal opportunity to be considered for SIDS services support.

The Committee recognizes that many factors need to be considered in the awarding of SIDS information and counseling grants, such as the extent of the estimated SIDS problem in a State, the availability of appropriate resources to insure a coordinated, comprehensive, program of services for families within the State, and the availability of Federal funds. It is the Committee's hope that the comprehensive SIDS services will be available in all States by July 1, 1980. However, as funds are made available to reach this objective, the Committee anticipates that not just the number of estimated SIDS deaths in a State, but these various other factors of need, will be considered in determining award priorities.

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Expansion and Extension of Authorizations of Appropriations

At the March 1978 hearing, Ms. Carolyn Szybist, R.N., Executive Director of the National SIDS Foundation, offered the following recommendation:

> We recommend that Public Law 93–270 be reauthorized for a period of the next 5 years. That the next 3 years of that reauthorization address itself to the maintenance of the good programs, the redevelopment of the less effective programs, and the establishment of programs where none currently exist. With that recommendation comes the mandate for maintenance services for communities not funded as grant projects under the law. We ask that programs be available and maintained for all families, not just some. We recommend that the last 2 years of the 5-year period address itself to the administrative task within HEW of the orderly transition of those programs into whatever mechanism is deemed appropriate for their maintenance.

In addition, Dr. Julius Richmond, Assistant Secretary for Health, testified:

> Eventually we [HEW] hope to implement a nationwide program so that services comparable to those provided in the current projects areas are available for any family affected by a sudden and unexpected infant death.

With the testimony of these and other witnesses in mind, authorizations of appropriations would be increased to $5 million for fiscal year 1980, and $7 million for fiscal year 1981. Current funding levels of $2,802,000 provide for the funding of counseling and information services in only about half the States and territories, serving only about half the population. The increase in the first year would provide funding for the expansion of services to all States as called for in the Committee bill, for some expansion within States, and for the expenses of the studies and reports required under the Committee bill.

Project Plans and Reports

The Committee bill requires that the Secretary submit to Congress an annual report regarding the activities and administration of the SIDS counseling and information projects. This requirement is an extension of the reporting requirement which was enacted (for a January 1, 1976 report) as part of the initial legislation. The Committee believes that annual reports will serve to keep Congress informed as to (1) the advances in SIDS projects' counseling and informational activities; (2) what the state of the art is with respect to the clinical application of SIDS research activities, including information with respect to followup services that SIDS families or families of high-risk infants might be provided for their children, such as sleep evaluation, physical examination, monitoring, and other forms of physical assessment and treatment; and (3) whether or not projects are moving toward finding community funding sources.

The report due on or before February 1, 1980, also would be required to set forth a plan for extension of counseling and information services

to all States by July 1, 1980, and to all territories and possessions by July 1, 1981. Such expansion is needed to provide services to the approximately 21 States and the 7 territories which are presently without these services.

Study of State Death Investigation Systems

The Committee bill requires the Secretary to conduct a study of the death investigation laws and systems in effect within the States, territories, and possessions of the United States, and how these laws and systems impact on sudden and unexplained infant deaths. The report of the study would also focus on any appropriate means for improving such laws and systems.

The diagnosis of sudden infant death syndrome is one of exclusion—only after other disease entities are ruled out is a SIDS diagnosis established. An autopsy is the only way to rule out other diseases, disorders, or causes of death.

Whether or not a post mortem examination is performed is often dependent upon many factors such as the system used (medical examiner or coroner) and parental consent; State laws (which may or may not mandate post-mortem examinations in the cases of sudden and unexplained infant death); and the quality of the personnel used both to investigate the death scene and to perform the actual autopsy.

The systems generally used are based on either the coroner or the medical examiner models. The latter utilizes a network of physicians who are usually appointed to their positions by virtue of their expertise in the death investigation area and who are accountable to one central authority within the State—the chief medical examiner—who is generally a forensic pathologist. The coroner system uses individuals who are from varying disciplines (undertakers, physicians, and others) who are generally elected to their positions and usually function autonomously within the State.

By ruling out other disease-entities and establishing the diagnosis of SIDS, the post mortem examination is vital in alleviating the guilt feelings of most SIDS parents. Parents need to be reassured that the diagnosis was indeed SIDS and that there was nothing they could possibly have done to save their baby. Testimony received at the March 1, 1978, hearing indicated that there were a variety of difficulties across the country in obtaining these vital post-mortem examinations. In her testimony, Ms. Zoe Smialek, R.N., project coordinator of the Michigan SIDS Information and Counseling Project, described some of the impediments to obtaining autopsies on infants who die suddenly and unexpectedly. These included reports of physicians, even pathologists, recommending against autopsy and making inaccurate statements such as "What good will it do now?" or "You won't be able to have an open casket" and of medical examiners sometimes not informing the parents of the availability of the autopsy under State law.

Although efforts are being made under the SIDS program to change the attitudes of the physicians and health care providers who come into contact with families following the death of their infant, a comprehensive analysis of death investigation laws and practices and their impact on sudden and unexplained infant deaths should provide

information as to what appropriate action, if any, can be taken to rectify some of these problems. The Committee believes that the study required should both look at the practicability of establishing pilot projects for centralized post-mortem and specimen examination systems on a statewide or regional basis, as well as examine the benefits and feasibility of a system for achieving the rapid reporting of autopsy results to the parents of infants who have died suddenly and unexpectedly.

Once this study has been completed, the Department should provide a copy of the report submitted to Congress to the appropriate authority within each of the States, territories, and possessions of the United States.

Sudden Infant Death Syndrome Research and Reports

The Committee bill would provide for increased emphasis on the all important area of SIDS research and specifies that this includes research specifically related to SIDS, research generally related to SIDS, and research in the area of high-risk pregnancy and high-risk infancy which relates to SIDS.

The Committee bill would require that the Secretary assure that adequate sums are allocated from the appropriation to the National Institute of Child Health and Human Development to carry out SIDS research given the leads and findings available from such scientific investigation in order to make maximum feasible progress toward identification and prevention of SIDS.

The annual reports previously required under Public Law 93-270 would be made a permanent requirement of the NICHD, and, in addition, the Committee bill would require that information be included in these reports to describe research activities in the area of high-risk pregnancy and high-risk infancy relating to SIDS. Information regarding this additional type of investigation is included to ensure that reports on activities aready being funded by NICHD in this area are specifically included and because it is felt that studying this field will not only provide us with clues as to the cause of SIDS, but will help us to identify infants at risks so that their deaths might be prevented.

The Committee bill does not now include a specific dollar authorization for SIDS research which is authorized under section 301 of the PHS Act to be appropriated as part of the general appropriation to NICHD, the authority for which includes, in section 441(b), a specific reference to SIDS research. The Committee intends to watch carefully the SIDS research program and urge substantially increased funding for it. Should the level of funding of SIDS research not prove satisfactory, the Committee will consider what other legislative methods may be necessary to secure the needed level of funding.

In addition to maintaining active support for biomedical investigation, there is a need to increase activities in the area of behavioral research. At the March 1978 hearing, Dr. Alfred Steinschneider professor in the Department of Pediatrics at the University of Maryland School of Medicine, testified:

> Unfortunately relatively little scientific progress has been made in our understanding of the psychological and biologi-

cal consequences of a SIDS death on the surviving parents and siblings. I am aware of very few research studies which have focused directly on this very important problem area. The improvement of helping services to family survivors will require the accumulation of a considerably increased amount of objective data. Furthermore, research studies will have to be initiated and adequate funds made available to assess the effectiveness of proposed psychologically oriented intervention programs.

The need for such research was further suggested in the following testimony of Dr. Albert C. Cain, Professor in the Department of Psychology at the University of Michigan:

> As a private citizen, clinician, and behavioral scientist, I urge that you look unblinkingly at the nightmare of this unique human tragedy and its enduring effects, weigh carefully the human misery and social costs involved on your scale of values and priorities. I hope and trust that you will then not only extend the authorities of the legislative Act under consideration, but increase the funding authorized and broaden its mandate to include study of the behavioral aspects of SIDS losses—with the preventive intent of ultimately diminishing the tragic suffering of these families, and simultaneously accruing knowledge of likely benefit to the still larger number of bereaved families devastated by other forms of infant and child death.

According to testimony presented by Dr. Julius Richmond, Assistant Secretary of Health, at this same hearing, one of the objectives of the SIDS research program being carried out by NICHD is "to elucidate the impact of a sudden and unexpected infant death on parents, siblings and the extended family". The required research report would thus also include summaries of projects and activities being carried out in the area of studying the impact of SIDS on surviving family members.

The research report would also include summaries of findings, their possible clinical applicability, and the cost and implications of such applications. Within a few years, it is expected that information gathered from the research carried on through NICHD will be available for application in the clinical sector. Such information will assist in the identification of infants-at-risk and the prevention of the death of the potential victim. The annual reports on these activities should then assist the projects in disseminating timely information to health professionals and others within the community, and in expanding their focus to include prevention as well as information and counseling.

This reporting provision is designed to allow for thorough examination of new procedures prior to the time they are adopted for general use by the medical community and, thereby, to protect against the premature application of "breakthrough technology" and the subsequent waste and danger that might result.

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Cost Estimate

The Committee adopts the following cost estimate from the Congressional Budget Office as its own:

CONGRESSIONAL BUDGET OFFICE—COST ESTIMATE, APRIL 23, 1979

1. Bill number: S. 497.
2. Bill title: Emergency Medical Services Amendments of 1979.
3. Bill status: As ordered reported out by the Senate Committee on Labor and Human Resources on April 11, 1979.
4. Bill purpose: To extend authorizations of appropriations for emergency medical services systems, emergency medical services training, and grants for Sudden Infant Death Syndrome projects.
5. Cost estimate:

[By fiscal years; in millions of dollars]

	1980	1981	1982	1983	1984
Authorization level:					
Emergency medical systems:					
Services	40.0	40.0	40.0	----	----
Research	3.0	3.0	3.0	----	----
Burn, trauma, and poison	3.0	3.0	3.0	----	----
Training	4.0	4.0	4.0	----	----
Sudden infant death syndrome	5.0	7.0	----	----	----
Total	55.0	57.0	50.0	----	----
Estimated outlays:					
Emergency medical systems:					
Services	2.0	24.0	40.0	38.0	15.2
Research	.2	1.9	3.0	2.9	1.1
Burn, trauma, and poison	.2	1.9	3.0	2.9	1.1
Training	----	2.0	4.0	4.0	2.0
Sudden infant death syndrome	1.0	5.4	5.6	----	----
Total	3.4	35.2	55.6	47.8	19.4

The costs of this bill fall within budget function 550.

6. Basis of estimate: All authorization levels are as stated in the bill. Outlays are based on specific program spendout rates provided by HEW. In each case outlays are calculated assuming that authorizations will be fully appropriated at the beginning of each fiscal year.
7. Estimate comparison: None.
8. Previous CBO estimate: None.
9. Estimated prepared by: Eric Wedum.
10. Estimate approved by:

C. G. Nuckols
(For James L. Blum,
Assistant Director for Budget Analysis).

Regulatory Impact Statement

In compliance with paragraph 5 of rule XXIX of the Standing Rules of the Senate, the Committee on Labor and Human Resources

has made an evaluation of the anticipated regulatory impact which would be incurred in carrying out S. 497, as reported. The results of that evaluation are described below.

A. *Estimated Number of Individuals and Businesses Who Would Be Regulated and Their Groups or Classifications:*

Title I of S. 497, as reported, would extend the appropriations authorizations for the Emergency Medical Services (EMS) Program for an additional 3 years and make certain improvements in the basic authorities. The authorizations provide for grant and contract support for emergency medical services systems, research in emergency medical services, demonstration projects in burn injury treatment (modified to include trauma and poison also), and training in emergency medical services. Title II of S. 497, as reported, would increase the appropriations authorizations for fiscal years 1980 and 1981 for the existing Sudden Infant Death Syndrome (SIDS) program and make certain improvements in the basic authorities.

No new classification of individuals or businesses in the private sector would become subject to regulation as the result of this legislation.

B. *Economic Impact of Such Regulations on Individuals or Businesses:*

The economic impact of regulations under S. 497, as reported, on individuals or businesses is expected to be minimal.

C. *Impact on Personal Privacy of Individuals:*

The provisions contained in S. 497, as reported, would make no significant changes in the existing privacy aspects of either the EMS program or the SIDS program.

D. *Additional Paperwork, Time, and Costs:*

No significant additional paperwork will result from regulations to be promulgated under the bill. Regulations to be promulgated as the result of S. 497, as reported, would be in the nature of minor modifications to existing regulations.

Title I of S. 497, as reported, requires the continued submission of the following reports to Congress:

(1) Annual report on the administration of the EMS Program.

(2) Annual report on the roles, resources, and responsibilities of all Federal activities relating to EMS.

(3) Annual report on the amount of expenditures and numbers of positions allocated to the EMS program.

Title II of S. 497, as reported, mandates the submission of several new reports to Congress:

(1) Annual report on administration of the SIDS Program—the first such report to include a detailed plan for extending SIDS services to cover the entire Nation and its territories and possessions.

(2) The results of a study to be conducted with regard to the adequacy of State laws and practices related to SIDS activities.

(3) Annual report on SIDS research activities, including the number of grant applications received, approved, etc.

(4) Annual report on the President's budget request for SIDS research.

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Tabulation of Votes Cast in Committee

Pursuant to section 133(b) of the Legislative Reorganization Act of 1946, as amended, the following is a tabulation of votes in Committee:

There were no rollcall votes cast in the Committee. Mr. Cranston's motion to favorably report the bill as amended to the Senate carried unanimously by voice vote.

Mr. Cranston's motion to amend S. 497 by adding a title II—the Sudden Infant Death Syndrome Amendments of 1979—was accepted by a unanimous voice vote.

Section-by-Section Analysis of S. 497 as Reported

TITLE I—EMERGENCY MEDICAL SERVICES SYSTEMS AMENDMENTS

Section 101 establishes a short title for the bill.

Section 102 would amend the present subsection (f) of section 1202, by deleting the requirement that no more than 50 percent of the funds appropriated for planning grants or contracts may be used for second-time planning grants or contracts, and by adding a new provision giving priority in the award of planning grants or contracts to applicants for first-time planning grants or contracts.

The 50-percent limitation on second planning grants was intended to retain a fair division of grant support between those areas desiring to plan for the establishment of an emergency medical services system and both those areas desiring to plan for the advanced life support level and those States needing to update EMS plans to improve such care in rural and medically underserved areas. In view of the expectation that by the end of the fiscal year 1979 grant awards only 12 emergency medical service regions will not have received a first planning grant, retaining 50 percent of the sums appropriated for such planning grants may be excessive. Instead, the Committee bill requires that priority in awarding planning grants be given to those EMS regions which have not had a first planning grant.

Section 103(a) would amend present section 1207(a)(1) to extend the authorizations of appropriations for grants or contracts for planning, initial development, and expansion of emergency medical services systems for fiscal years 1980, 1981, and 1982 at levels of $40,000,000, for each fiscal year. The fiscal year 1979 appropriation was $36,625,000. The fiscal year 1979 authorization level is $70,000,000.

Section 103(b) would add a new clause to present paragraph (5)(A) of section 1207(a) mandating a 1-percent earmark of funds appropriated in fiscal years 1980, 1981, and 1982 for planning grants or contracts rather than the 2½- to 5-percent levels presently provided.

Only 22 of the 304 designated emergency medical services systems areas in the United States have not yet received a first planning grant. HEW estimates that 10 new systems will receive planning grants in fiscal year 1979, leaving 12 systems still eligible in subsequent years. Given the Administration's announced intention of not funding planning grants, it is necessary to mandate that funds be set aside for those remaining systems that make application as well as for those systems needing modest planning grants to plan for advanced life support as well as those States needing to update plans.

Section 103(c) would continue through the next 3 fiscal years the requirement in present section 1207(a)(5)(B) that not less than 20

percent of the sums appropriated for systems development must be used for grants or contracts for the initial operation of an EMS system (sec. 1203), and that not less than 20 percent must be used for grants for expansion of an EMS system (sec. 1204).

Again, in order to ensure that the Administration awards grants to eligible grantees at all levels of development, this earmark in existing law would be retained for the next 3 fiscal years. The Administration has proposed to phaseout the EMS program over the next 3 years, and, without the earmark, would fund only the applications which contribute to this policy. The earmark will help assure that each of the designated 304 EMS regions in the United States will be given a fair opportunity to develop EMS systems to their maximum potential.

Section 104 would amend present section 1207(b) to extend the authorizations of appropriations for grants and contracts for research in emergency medical services (sec. 1205) for fiscal years 1980, 1981, and 1982 at levels of $3,000,000 for each fiscal year.

The appropriation for fiscal year 1979 was $3,000,000, and the fiscal year 1979 authorization level is $5,000,000.

Section 105 would amend present section 1209(c) by adding a representative of the Federal Emergency Management Agency (established by Executive Order No. 12127 on March 31, 1979, pursuant to Reorganization Plan No. 3 of 1978) as a member of the Interagency Committee on Emergency Medical Services. It is anticipated that the representative would be from the U.S. Fire Administration in this new Agency.

Section 106(a) would amend present section 1221(a), currently limited to programs relating to burn injuries, to include trauma or poison among programs eligible for support thereunder, and would amend the part B title and section heading accordingly.

Section 106(b) would amend present section 1221(b) to extend the authorizations of appropriations for part B for fiscal years 1980, 1981, and 1982 at levels of $3,000,000 for each fiscal year.

The appropriation for fiscal year 1979 was $3,000,000 for the burn injury program, and the fiscal year 1979 authorization level is $10,000,000.

Section 107 would amend section 789(g)(1) to extend the authorizations of appropriations for training in emergency medical services for fiscal years 1980, 1981, and 1982 at levels of $4,000,000 for each fiscal year.

The appropriation for fiscal year 1978 was $6,000,000, and the fiscal year 1979 authorization level is $10,000,000. Six million dollars was appropriated for fiscal year 1979, but $3,000,000 was later rescinded by Public Law 96-7.

TITLE II—SUDDEN INFANT DEATH SYNDROME AMENDMENTS

Section 202 would revise present part B of title XI of the Public Health Service Act by inserting a totally rewritten part B with the following provisions:

Sudden Infant Death Syndrome Counseling, Information, Educational, and Statistical Programs; Plans and Reports

Subsection (a)(1) of new section 1121 requires the Secretary, through an identifiable administrative unit under the supervision of

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the Assistant Secretary for Health, to carry out a program to develop public information and professional educational materials relating to sudden infant death syndrome and to disseminate such information and materials to persons providing health care, to public safety officials, and to the general public. This subsection further requires the Secretary to administer, through the identifiable unit, the functions assigned in section 1121, and to provide the unit with such full-time professional and clerical staff and with the services of such consultants and of such management and supporting staff as may be necessary for the unit to carry out its functions effectively.

This provision is designed to increase the accountability of the Department for the administration of the SIDS information and counseling program and to alleviate some of the fragmentation that derives from the division of management and support activities among several offices. Personnel with primary responsibility for the SIDS program would be located in this unit.

New subsection (*a*)(*2*)(*A*) requires the Secretary to develop and implement a system for the periodic reporting to the Department, and dissemination by the Department, of information collected under grants and contracts made under subsection (b)(1) of this section.

The collection of information by grantees and contractors was first provided for in Public Law 93–270; however, a uniform, systematic reporting mechanism has never been established. This provision would require the development of such a mechanism so that the Department would acquire a more accurate picture of project activities, and projects would be able to make relative comparisons of their respective services and activities.

New subsection (*a*)(*2*)(*B*) requires the Secretary to carry out coordinated clearinghouse activities on sudden infant death syndrome, including the collection (and dissemination to the public, health and educational institutions, professional organizations, voluntary groups with a demonstrated interest in SIDS, and other interested parties) of information pertaining to sudden infant death syndrome and related issues such as death investigation systems, personnel training, biomedical research activities, and information on the utilization and availability of treatment or prevention procedures and techniques, such as home monitors.

The clearinghouse function would facilitate the timely dissemination of information to the public, health and welfare professionals, law enforcement officials, and other service personnel who come in contact with the families of SIDS victims.

This provision authorizes the Secretary to enter into contracts to carry out the information and clearinghouse activities required under subsection (a).

New subsection (*b*)(*1*) authorizes the Secretary to make grants to public or nonprofit private entities, and enter into contracts with public or private entities, for projects which include both the collection, analysis, and furnishing of information (derived from post mortem examinations and other means) relating to the causes and other appropriate aspects of sudden infant death syndrome; and the provision of information and counseling to families affected by sudden infant death syndrome.

This provision continues the project grant mechanism in existing law and broadens the scope of information to be collected at the project level to include other appropriate aspects of SIDS in addition to information relating to the causes of SIDS.

New subsection (b)(2) provides that no grant may be made or contract entered into under subsection (b) unless an application therefor has been submitted to and approved by the Secretary; requires applications to be in such form, submitted in such manner, and contain such information as the Secretary prescribes by regulation; and requires each application to—

(A) provide that the project for which assistance under the subsection is sought will be administered by or under the supervision of the applicant;

(B) provide for appropriate community representation (including appropriate involvement of voluntary groups with a demonstrated interest in SIDS) in the development and operation of the project;

(C) set forth such fiscal controls and fund accounting procedures as may be necessary to assure proper disbursement of and accounting for Federal funds paid to applicants under subsection (b); and

(D) provide for making reports in such form, and frequency, and with such information as the Secretary reasonably requires, including reports that will assist in carrying out the provisions of subsection (a)(2) of section 1121 relating to periodic reporting and clearinghouse activities.

The provisions of section 1121(b)(2) are essentially identical to existing law except that clause (B) is amended to specify that appropriate community representation shall include appropriate involvement of voluntary groups with a demonstrated interest in SIDS and clause (D) is amended to require project reports to include reports that will assist the Secretary in carrying out his periodic reporting and clearinghouse activities required by section 1121(a)(2).

Subsection (c)(1) of new section 1121 requires that not later than February 1 of each year after 1979, the Secretary shall submit to the Senate Committee on Labor and Human Resources and the House Committee on Interstate and Foreign Commerce a comprehensive report on the administration of the SIDS program (including funds and positions allocated for personnel) and the results obtained from activities thereunder, including the extent of allocations made to rural and urban areas. The report submitted on or before February 1, 1980; is also required to set forth a plan to extend counseling and information services to the 50 States and the District of Columbia by July 1, 1980, and extend counseling and information services to all possessions and territories of the United States by July 1, 1981.

This provision will help keep Congress informed as to (1) the advances in SIDS projects' counseling and informational activities; (2) the state of the art with respect to the clinical application of SIDS research activities; and (3) whether or not projects are moving toward finding community support. It will also ensure the development of a plan for expansion of the needed counseling and information services to all the States, territories, and possessions of the United States not presently served.

Subsection (c) (2) of section 1121 requires the Secretary to conduct or provide for the conduct of a study on State laws and practices relating to death investigation systems and their impact on sudden and unexplained infant deaths, any appropriate means for improving the quality, frequency, and uniformity of the post mortem examinations performed under such laws, practices, and systems in the case of sudden and unexplained infant deaths; and requires the Secretary not later than December 31, 1980, to report to the Congress the results of such study, including recommendations as to appropriate actions by HEW with respect to post mortem investigations in all cases of sudden and unexplained infant death (including the desirability and feasibility of establishing pilot projects for centralized post mortem and specimen examination systems on a statewide or regional basis).

The performance of a post mortem examination (autopsy) is vital in making a diagnosis of sudden infant death syndrome because such a determination is made only after other causes of death have been ruled out. Whether or not such an examination is performed, and whether or not that examination is of high quality is dependent upon the death investigation laws and systems within the State. A comprehensive analysis of these laws and systems and their impact on sudden and unexplained infant death will provide information as to what appropriate action, if any, should be taken by HEW. The Committee believes consideration should be given to the feasibility and value of establishing projects for centralized post mortem and specimen examination systems on a statewide or regional basis, and expects consideration by the Department of this possibility and an interim report prior to the date on which the entire report is due.

New subsection (d) (1) provides the authorization of appropriations of $5,000,000 for fiscal year 1980 and $7,000,000 for fiscal year 1981. This increase in authorizations over the present authorizations level of $3.5 million will allow for 2 years of continued project expansion and improvement. Currently, $2,802,000 is appropriated. It would also provide some funding for the establishment of counseling and information services in all the States, territories, and possessions of the United States not presently served.

New subsection (d) (2) provides that payments under grants under subsection (b) may be made in advance or by way of reimbursement, and at such intervals and on such conditions, as the Secretary finds necessary—a provision identical to existing law.

New subsection (d) (3) provides that contracts under subsection (b) may be entered into without regard to sections 3648 through 3709 of the revised statutes (31 U.S.C. 529; 41 U.S.C. 5), which require certain advertising and bid procedures, a provision identical to existing law.

New subsection (d) (4) requires the Secretary to seek to make equitable distribution of funds appropriated under part B among the various regions of the country and to insure that the needs of rural and urban areas are appropriately addressed.

This provision is not intended to change the character of the SIDS program from a project grant program to a formula grant program, but would require the Secretary to consider carefully the needs and problems peculiar to rural and urban areas, such as transportation difficulties, and lack of access to specialized services, among other problems.

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Sudden Infant Death Syndrome Research and Research Reports

Subsection (a) of new section 1122 requires the Secretary, from the sums appropriated to the National Institute of Child Health and Human Development under section 441 of the PHS Act, to assure that there are applied to research of the type described in paragraph (1) (A), (B), and (C) of subsection (b) of section 1122 such amounts each year as will be adequate, given the leads and findings then available from such research, in order to make maximum feasible progress toward identification of infants at risk of sudden infant death syndrome and prevention of sudden infant death syndrome. This provision highlights the importance of the SIDS research program and the need for increased support for this rapidly advancing area of investigation over the next several years.

New subsection (b) (1) requires the Secretary, not later than 90 days after the close of fiscal year 1979 and each fiscal year thereafter, to report to the Senate and the House Committees on Appropriations, the Senate Committee on Labor and Human Resources and the House Committee on Interstate and Foreign Commerce the information for such fiscal year on—

(A) the (i) number of applications approved by the Secretary in the fiscal year reported on for grants and contracts under the PHS Act for research which relates specifically to SIDS, (ii) total number requested under such applications, (iii) number of such applications for which funds were provided in that fiscal year, and (iv) total amount of such funds;

(B) the (i) number of applications approved by the Secretary in such fiscal year for grants and contracts under the PHS Act for research which relates generally to sudden infant death syndrome, (ii) total amount requested under such applications, (iii) number of such applications for which funds were provided in that fiscal year, and (iv) total amount of such funds; and

(C) the (i) number of applications approved by the Secretary in such fiscal year for grants and contracts under this Act for high-risk pregnancy and high-risk infancy research which relates to sudden infant death syndrome, specifying how these conditions relate to SIDS, (ii) total amount requested under such applications, (iii) number of such applications for which funds were provided in that fiscal year, and (iv) total amount of such funds.

Clauses (A) and (B) are identical to the existing law requirements in Public Law 93–270 which last applied to a report due for fiscal year 1976. Clause (C) is new and is an area already being studied by researchers interested in the SIDS phenomenon. The findings from studies in the area of high-risk pregnancy and high-risk infancy are considered to have significant applicability in the eventual solution to the problem of SIDS.

New Subsection (b) (2) (A) requires that each report submitted under paragraph (1) of subsection (b) shall—

(A) contain a summary of the findings of intramural and extramural research supported by NICHD relating to SIDS as described in clauses (A), (B), and (C) of paragraph (1), and the Institute's plan for taking maximum advantage of those research leads and findings;

(B) provide information on activities underway and plans to bring about the appropriate clinical application of current research findings and the cost and implications of those applications; and

(C) provide an estimate of the need for additional funds over each of the next 5 fiscal years for grants and contracts under the PHS Act for research activities described in clauses (A), (B), and (C) of this paragraph.

Significant advances have been made in research since the enactment of Public Law 93–270 in 1974. Within the next few years information gathered from the research carried on through NICHD will be available for clinical application. This subsection is thus intended to provide for careful analysis and appropriate application and dissemination of research findings, and to provide sound data on levels of funding required so that research may be continued at an adequate level.

New subsection (*c*) requires the Secretary, within 5 days after the budget is transmitted by the President to the Congress for each fiscal year after fiscal year 1980, to transmit to the Senate and House Committees on Appropriations, the Senate Committee on Labor and Human Resources, and the House Committee on Interstate and Foreign Commerce, an estimate of the amounts requested for the NICHD and any other Institutes of the National Institutes of Health, respectively, for research relating to SIDS as described in paragraphs (1) (A), (B), and (C) of this subsection, and a comparison of those amounts with the amounts requested for the preceding fiscal year. This reimposes on an annual basis the reporting requirements required previously by Public Law 93–270 and, in addition, for annual reporting of research activities in the areas of high-risk pregnancy and high-risk infancy related to SIDS.

TITLE III—EFFECTIVE DATE

Section 301 provides that the provisions of the Committee bill shall take effect on October 1, 1979.

Agency Reports

The Committee requested reports from the Department of Health, Education, and Welfare, the General Accounting Office, and the Office of Management and Budget. As of the date of filing of this report, none of these departments had submitted a report to the Committee. However, a representative of the Department of Health, Education, and Welfare testified at hearings held on February 28, 1979, on S. 497, and on March 13, 1979, the Department of Health, Education, and Welfare transmitted to Congress a draft bill to extend expiring appropriation authorizations for emergency medical services systems and health information and promotion, and for other purposes. Testimony was presented to the Committee by the United States Fire Administration.

A representative of the Department of Health, Education, and Welfare testified at hearings held March 1, 1978, on legislation to extend the Sudden Infant Death Syndrome legislation.

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Testimony presented the Committee at these hearings is printed below.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
Washington, D.C., March 13, 1979.

Hon. WALTER F. MONDALE,
President of the Senate,
U.S. Senate,
Washington, D.C.

DEAR MR. PRESIDENT: Enclosed for consideration by the Congress is a draft bill "To extend expiring appropriation authorizations for emergency medical services systems and health information and promotion, and for other purposes".

The draft bill would extend through fiscal year 1982 this Department's program in the areas of emergency medical services systems and health information and promotion. The appropriation authorizations of the draft bill are set out at Tab A; the draft bill appears at Tab B.

The Emergency Medical Services (EMS) Systems Program has, since 1973, provided assistance to 282 of the nation's 304 EMS regions. The program has improved the effectiveness and timely delivery of quality services for emergency patients, and has contributed to the reduction in deaths resulting from accidents and other injuries. As a result, States and local communities have shown increased interest in supporting EMS operations. Accordingly, the draft bill would provide for a gradual phaseout of Federal support for the program through fiscal year 1982, by which time fully 82 percent of the regions will have completed either initial development or expansion activities.

Activities under the proposed extension of our health information and promotion authority—including studies in smoking and health, research and demonstrations to identify environmental or other factors affecting health, and the formulation of national goals for health information, health promotion, and preventive health services—would be a major focal point in the Department's prevention program. The proposed 3-year postponement of the matching requirement would permit full Federal financing for projects initiated in fiscal years 1979 through 1981, the first 3 years of funding under this authority, and yet would maintain the original congressional intent of encouraging greater non-Federal participation during subsequent funding periods.

The draft bill would also authorize additional funding for preventive health services to provide clear statutory authority for the Department's support of community and school-based fluoridation programs.

In addition, the draft bill woulld assist in the effective implementation of the National Health Services Corps Program by permitting the Secretary to defer the beginning of service for scholarship recipients for an additional year beyond the 3 years currently granted for advanced clinical training. The draft bill would also eliminate the requirement that at least 10 percent of funds appropriated for training in family medicine and the general practice of dentistry be used for dental training.

We urge that the Congress give the draft bill its prompt and favorable consideration.

The Office of Management and Budget advises that enactment of the draft bill would be in accord with the President's program.

Sincerely,

JOSEPH A. CALIFANO, Jr.,
Secretary.

Enclosure.

DRAFT BILL—APPROPRIATION AUTHORIZATIONS

[By fiscal years; in thousands of dollars]

	1980	1981	1982
Emergency medical services systems—feasibility, planning, establishment, initial operation, expansion, and improvement	36,625	26,500	13,200
Emergency medical services systems—research	3,000	----------	----------
Health information and health promotion	18,300	"such sums as may be necessary"	
Preventive health service programs [1]	5,000	"such sums as may be necessary"	

[1] These authorizations would replace current authorizations of $1,000,000 for each of the fiscal years 1980 and 1981.

A BILL To extend expiring appropriation authorizations for emergency medical services systems and health information and promotion, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Emergency Medical Services Systems and Health Information and Promotion Extensions of 1979".

EMERGENCY MEDICAL SERVICES SYSTEMS

SEC. 2. (a) Section 1207(a)(1) of the Public Health Service Act is amended (1) by striking out "and" after "1977,", and (2) by striking out everything after "1978" and inserting instead ", $70,000,000 for the fiscal year ending September 30, 1979, $36,625,000 for the fiscal year ending September 30, 1980, $26,500,000 for the fiscal year ending September 30, 1981, and $13,200,000 for the fiscal year ending September 30, 1982.".

(b) Section 1207(b) of that Act is amended by inserting ", and $3,000,000 for the fiscal year ending September 30, 1980" before the period.

HEALTH INFORMATION AND HEALTH PROMOTION

SEC. 3. (a) Section 1701(b) of that Act is amended (1) by striking out "and" after "1978,", and (2) by inserting ", $18,300,000 for the fiscal year ending September 30, 1980, and such sums as may be necessary for the two succeeding fiscal years" before the period.

(b) The second sentence of section 1703(c) of that Act is amended by striking out "1978" and inserting instead "1981".

PREVENTIVE HEALTH SERVICE PROGRAMS

SEC. 4. The first sentence of section 317(j)(4) of that Act (as amended by the Health Services Extension Act of 1978) is amended

by striking everything after "1979," and inserting instead the following: "$5,000,000 for the fiscal year ending September 30, 1980, and such sums as may be necessary for the two succeeding fiscal years.".

DEFERMENT OF NATIONAL HEALTH SERVICE CORPS SERVICE

SEC. 5. The first sentence of section 752(b)(5)(A) of that Act is amended by inserting ", unless the Secretary chooses to permit not more than an additional year" after "three years".

ELIMINATION OF SET-ASIDE FOR DENTISTRY TRAINING

SEC. 6. Section 786(c) of that Act is repealed.

MINOR AND TECHNICAL AMENDMENTS

SEC. 7. (a)(1) Section 2(f) of that Act is amended by striking out "sections 314(g)(4)(B), 318(c)(1), 331(h)(3), 355(5), 361(d), 701(9), 1002(c), 1201(2), 1401(13), 1531(1), and 1633(1)" and inserting instead "sections 355(5), 361(d), and 1531(1)".

(2) Sections 331(h)(3), 701(9), 1002(c), 1201(2), 1401(13), and 1633(1) of that Act are repealed.

(3)(A) Paragraph (10) of section 701 of that Act is renumbered as paragraph (9).

(B) Subsection (d) of section 1002 of that Act is redesignated as subsection (c).

(C) Paragraphs (3) through (5) of section 1201 of that Act are redesignated as paragraphs (2) through (4), respectively.

(D) Paragraph (16) of section 1633 of that Act is renumbered as paragraph (1) and is inserted immediately before paragraph (2).

(b)(1) Section 311(c)(1) of that Act is amended by striking out "referred to in section 317(f)" each place it occurs.

(2) The first sentence of section 311(c)(1) of that Act is amended by striking out "such".

(c)(1) Subsections (a) through (c) of section 314 of that Act are repealed.

(2) Subsection (g) of that section is redesignated as subsection (a) and is inserted before subsection (d).

(3) Effective October 1, 1979, subsection (d) of that section is redesignated as subsection (b).

(4) The heading to that section is amended to read as follows: "Grants for Mental Health Programs and Comprehensive Public Health Services".

(5) Section 1511(c) of that Act is repealed.

(d) The heading to subpart IV of part D of title III of that Act is amended by adding "and Technical Assistance Demonstration Grants and Contracts" at the end.

(e) Sections 726(b) and 805(b) of that Act are each amended by inserting "agree to" after "subsection (f),".

(f)(1) Title IX of that Act is repealed.

(2) Section 1511(b)(2) of that Act is amended by striking out everything after "State" the first place it occurs and inserting instead a period.

(3) Section 1514 of that Act is amended by striking out "(including entities presently receiving financial assistance under section 314(b) or title IX or as experimental health service delivery systems under section 304)".

(4) Section 1515(b)(4) of that Act is amended by striking out the last sentence.

(5) Section 1515(c)(2) of that Act is amended by striking out the last sentence.

(g)(1) Section 1301(b) of that Act is amended by adding after paragraph (5) the following: "A health maintenance organization which has members who are entitled to benefits under title XVIII of the Social Security Act or under a State plan approved under title XIX of that Act shall provide health services to those members in the manner prescribed in those titles, to the extent that the applicable provisions of those titles explicitly differ from the provisions of this subsection. A health maintenance organization which has members who are enrolled under the health benefits program authorized by chapter 89 of title 5, United States Code, shall not be required to provide to those members health services in a manner other than as in accordance with that chapter.".

(2) Section 1301(c) of that Act is amended by adding after paragraph (11) the following: "A health maintenance organization which has members who are entitled to benefits under title XVIII of the Social Security Act or under a State plan approved under title XIX of that Act shall be organized and operated with respect to those members in the manner prescribed in those titles to the extent that the applicable provisions of those titles explicitly differ from the provisions of this subsection. A health maintenance organization which has members who are enrolled under the health benefits program authorized by chapter 85 of title 5, United States Code, shall not be required, with respect to those members, to be organized and operated in a manner other than as in accordance with that chapter.".

(3) Section 1307(d) of that Act is repealed.

(h) Section 1604(b)(1)(I) of that Act is amended by inserting "medical" after "outpatient".

(i) The first sentence of section 1620(b)(2) of that Act is amended by striking out the comma after "pay".

(j)(1) Section 1707(f) of that Act is amended by striking out "503(d)" and inserting instead "1708(c)".

(2) Subsection (d) of section 1708 of that Act is redesignated as subsection (c).

(k)(1) Section 202 of the Health Services and Centers Amendments of 1978 is amended by striking out "Effective October 1, 1979" and inserting instead "Effective October 1, 1978".

(2) Effective November 10, 1978, Section 204(b)(2) of that Act is amended (1) by striking out paragraph (2), and (2) by striking out the paragraph designation "(1)".

(l)(1) Title VI of the Health Services and Centers Amendments of 1978 is amended by striking out "Act" each place it occurs, except in paragraphs (14), (15), (16), and (18) of section 606(a), and inserting instead "title".

(2) The first sentence of section 701(c) of that Act is amended (A) by striking out "this Act" the first place it occurs and inserting instead

"section 607", and (B) by striking out "this Act" the second place it occurs and inserting instead "title VI".

(m) Effective November 1, 1978, section 11(a) of the Health Maintenance Organization Amendments of 1978 is amended by striking out "section 1310(b)" and inserting instead "section 1301(b)".

(n) Effective November 9, 1978, section 3(d) of the Health Services Research, Health Statistics, and Health Care Technology Act of 1978 is amended by striking out "section 304(d)(3)" and inserting instead "section 304(b)(3)".

(o) Section 111 of the Community Mental Health Centers Extension Act of 1978 is amended by inserting ", and shall also apply with respect to a fourth grant under section 203(e)(1)(A)(i) of the Community Mental Health Centers Act made from appropriations for the fiscal year ending September 30, 1978" before the period.

STATEMENT BY GEORGE I. LYTHCOTT, M.D., ADMINISTRATOR, HEALTH SERVICES ADMINISTRATION, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, FEBRUARY 28, 1979

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE: My name is Dr. George Lythcott. I am the Administrator of the Health Services Administration which administers a number of health services programs, one of which is the subject of today's hearing: Emergency Medical Services. I am accompanied today by Dr. David Boyd, the Director of the Division of Emergency Medical Services of our Bureau of Medical Services; Dr. Kenneth Moritsugu, Director of the Division of Medicine, Bureau of Health Manpower, Health Resources Administration; and Dr. Larry Rose, Senior Research Manager, National Center for Health Services Research.

I am pleased to appear before you this morning to discuss the EMS program and our position on extension of the EMS authorities contained in Title XII of the PHS Act. I am familiar with your important contributions to the development of this program.

As you know, the Emergency Medical Services Systems Program has provided the mechanism and funds for States and communities to develop regional systems of emergency care throughout the Nation. This program was enacted by the Congress in 1973 and has provided the incentive for other Federal programs, States, and local agencies to undertake a nationwide effort to improve the care to our sick and injured citizens.

In the EMSS Act, some 15 components are identified to assist planners, coordinators, and operators of emergency medical services systems in the development of comprehensive areawide regional programs. The Health Services Administration, through the Division of Emergency Medical Services, has been the responsible administrative unit for implementing this program.

The central theme and intent of the EMSS Act was to develop systems of emergency medical care that could significantly decrease rates of death and disability. The goal of the national EMS Program has been to initiate regional planning and integration of the 15 component systems so that communities can provide essential and appropriate EMS care to all emergency patients.

The current EMS problem confronting the Nation is compounded by the 75 million encounters of patients to hospital emergency depart-

ments each year. Approximately 80 percent of these patients cannot be considered true medical emergencies. These patients are those seeking primary care and using emergency facilities to access the health system. Another 15 percent of encounters are real, but not life-threatening, emergencies which require urgent care for minor trauma, infectious diseases and other acute general medical and surgical problems. The remaining 5 percent of encounters are for the critically-ill and injured patients who are in a life-threatening or near life-threatening situation. The emphasis of the EMS Program has been to develop a regional system of care directed at this 5 percent of critically-ill and injured patients, and to develop adequate resources, procedures and implementation techniques which can save the lives of this 5 percent of the total emergency workload. Through this system, improved care can be provided to the other less urgent patients who also require emergency services.

Program accomplishments

Mr. Chairman, I would like to discuss what has been accomplished, thus far, and what impact these emergency medical services systems have had in reducing injury and death, which was the original purpose of the program.

As a result of the interest of Congress in this program and the administration support, $184,000,000 have been appropriated through fiscal year 1979 to provide grants to plan, establish and improve emergency medical services systems. About $22,000,000 have been appropriated to undertake an EMS research program. These activities have tended to explore applied research problems related to many of the regional concerns of emerging emergency medical services systems.

As you know, the current EMS law provides for three distinct levels of activity. The first funding year is directed toward developing a program plan for a regional system. The following 2 years are the operational or establishment years which will produce a basic life support system. This system meets the national criteria by an integration of prehospital emergency medical personnel (to include emergency medical technicans), ambulances meeting national specifications, two-way voice communications, and equipment recommended by the American College of Surgeons. Effective basic life support can provide patient stabilization, airway management, hemorrhage control, shock management with initial wound care, fracture stabilization and, under medical control, specific noninvasive treatment. Transportation of the patient is provided to the closest most appropriate hospital that has been preselected through a categorization program. The patient is received in the hospital emergency department staffed by physicians, and, if required, admitted to a critical care unit specific to his disease or injury.

The current EMS law provides for two additional funding years during which the regional community may improve or expand the regional system to upgrade services to advanced life support. At the advanced life support level, mobile prehospital units are equipped with intervenous fluids, drugs, some form of bioelectrical communications, and they are staffed with paramedics with proper physician backup to perform expert diagnoses, treatment and triage of critical conditions.

With the award of grants in fiscal year 1979, it is estimated that 291 of the 304 National EMS Regions will have received funding under the

EMS Program. It is further estimated that 66 regions will have completed the funding process, another 140 will be in the developmental phase and 85 regions will have completed the planning process. This will leave 13 regions that have not participated in the program. Within the 140 regions that are in the development phase, 131 will be in the basic life support portion of the program and 9 will be just instituting the advanced life support program.

The program has been in existence since fiscal year 1974. The results, through fiscal year 1978, have continued to support the contention that emergency medical services can be a major contributing factor to saving lives. For example, 51 projects in the EMS program, within metropolitan communities with populations of over 100,000 are providing prehospital advanced support for cardiac care. Various projects have reported in the literature describing 20 to 60 percent field conversion of ventricular fibrillation. This is a lethal condition when it occurs outside the medical system. With the advent, however, of advanced life support in EMS systems, it is coming under medical control. We have had projects reporting as high as 33 percent long-term survival rate for this patient group. This means that the patient was alive at the time of hospital discharge. The advent of CPR, or cardiopulmonary resuscitation, by citizens has also been a major contributing factor to saving many of these heart attack patients until the emergency medical service arrives on the scene.

One of the more exciting areas of EMS has been the area of poison care. Major emergency medical services systems are building and incorporating poison care as one of the critical patient categories. In those locales where there are designated regional poison control centers, such as Baltimore, Boston, Pittsburgh, Denver, Salt Lake City, Grand Rapids, and San Diego, there has been a 40 to 60 percent reduction of poisoning encounters in the emergency departments. This has been attributable to outreach information programs and the management of a poison episode within the home through intervention of poison control centers. This early intervention, provided by experts, prevents inappropriate use of the expensive emergency department resources, and results in the most appropriate care for those patients that do incur a life-threatening poisoning episode. This means a cost saving to the community. Inappropriate use of the emergency department is reduced and appropriate care of emergency patients is enhanced.

Program coordination

The emergency medical services program of the Department of Health, Education, and Welfare has worked exceedingly well with other components of the total health care delivery system and other programs that are related to emergency medical services. These include some of the activities of the Health Resources Administration's Bureau of Health Manpower; the National Center for Health Services Research, OASH; the National Institutes of Health; the Food and Drug Administration; the Indian Health Service, and the Bureau of Community Health Services both of the Health Services Administration.

EMS research

The National Center for Health Services Research (NCHSR) administers the program in Emergency Medical Services (EMS) research authorized under section 1205 of the Public Health Service Act.

Since fiscal year 1974, $22.4 million has been appropriated for EMS research, supporting 66 grants and 19 contracts. Twenty-five projects are presently being funded under section 1205, and 18 additional EMS-related studies are being supported under the NCHSR general research authority (sec. 305). The Federal program to establish EMS systems has been implemented vigorously with emphasis on compliance with required systems configurations. The applied research program is focused on ways to obtain credible evidence about the effectiveness and efficiency of this mandated model, and on appropriate and economical alternatives.

NCHSR has been working very closely with the Division of Emergency Medical Services (DEMS), Health Services Administration, to gain greater understanding and interaction between the research community and those who use research results—EMS system managers, advisors, and policymakers.

NCHSR's EMS research program has been developing and testing methods to evaluate system performance, such as measures of EMT performance, protocols for diagnosing and treating medical emergencies, and ways to audit the quality of care in Emergency Departments. Our research indicates that, even in communities with "mature systems," serious dangers are not being detected due to inadequate monitoring of systems performance.

As the Federal contribution is phased out, communities, particularly in rural and remote areas, will need, more than ever, valid information on which to base decisions about safe alternatives. One alternative demonstrated by a NCHSR-supported project to be *safe* and *cost effective*, is the substitution of properly trained EMTs for Paramedics in resuscitating many heart attack victims. A study now being designed by NCHSR and DEMS to use survival rates from critical medical emergencies to evaluate the effectiveness of mature systems will help EMS systems after Federal funding has been discontinued.

Six research projects have been completed during this fiscal year providing insight into: Strengths and weaknesses of central dispatcher performance, including guidance on training needs; methods to identify patients who seem to benefit more from rapid transportation than from elaborate prehospital care; advantages and problems with using public safety personnel, such as police officers, in the delivery of EMS; use of specially-trained assistants guided by protocols to improve handling of pediatric emergency telephone calls to an emergency room; evaluation of the effectiveness of burn treatment protocols as an educational device to improve the quality of care delivered to burn patients; and problems with development and use of an injury/illness severity index to classify emergency patients and evaluate the effectiveness of their care.

EMS research can help policymakers to make sound decisions about allocating scarce health resources. Measures now being developed will permit accurate assessment of system costs, benefits, and alternatives.

While the primary mission of the National Institutes of Health is basic biomedical research, much of this research is indirectly related to emergency medical services (EMS). The National Heart, Lung, and Blood Institute (NHLBI), the National Institute of Neurological and Communicative Disorders and Stroke (NINCDS), and the National Institute of General Medical Sciences (NIGMS) each fund research

programs in their program areas related to EMS. These Institutes and other coordinate closely with the Health Services Administration through such efforts as the Interagency Technical Committee, research center grants in EMS, NIH contract review of applications for HSA burn demonstration programs, and regional burn care systems whose research grants are supported by NIH and demonstration contracts by HSA. Still broader based transfer activities related to EMS were sponsored by NIGMS in 1978 when the Institute sponsored a Consensus Development Conference on Supportive Therapy in Burn Care. In attendance were burn specialists from 33 States and 7 foreign countries, representatives from 10 Federal agencies, and the news media. Consensus was reached and the results widely published on a number of critical issues, including the amount and type of fluid resuscitation, the use of steroids in the treatment of smoke inhalation, the use of antibiotics to curb infections, and nutritional support following burn injuries.

EMS training

The Emergency Medical Training program, authorized under section 789 of the Public Health Service Act, provides grants and contracts to appropriate schools and other entities to assist training programs in the techniques and methods of providing emergency medical services. In addition to institutional grants, financial assistance is provided to medical students who plan to practice or specialize in emergency medicine. Of the amounts appropriated, at least 30 percent is used to train physicians in emergency medicine. Since 1974, $18,700,000 has supported the training of approximately 92,600 emergency care providers.

The Emergency Medical Training program has been successful in providing support for expanding emergency medical care. However, continued financial assistance for the training of allied health professions in EMS should continue to be financed at the local level to coordinate the supply of providers with the local need. Also, medical schools now recognize the need to educate physicians in EMS training and are offering training experience in EMS, primarily at the residency level. Emergency medicine is a growing physician specialty. For all of these reasons, there is no need to continue Federal financial support for EMS training.

Administration proposal

Mr. Chairman, as I indicated earlier, at the completion of fiscal year 1979 funding, 95.7 percent of the emergency medical services regions will have received assistance under title XII of the Public Health Service Act. Eighty-five regions will have completed the planning phase covering a population of 59,500,000; 140 regions will be in some phase of operational development, serving a population of 98,000,000; and 66 emergency medical services regions serving a population of 52,100,000 will have completed their eligibility under title XII.

Within the next few days, we will be submitting to the Congress proposed legislation for continuation of the EMS Program for another 3 years. We propose that this be the final extension of the EMS legislation with a planned phaseout of the program in 1982. For the period 1980 through 1982, the program priority will be placed upon completing those regional systems that are currently (fiscal year 1979) in the

process of developing an advanced life support system. The major emphasis will be given to completing the greatest number of EMS systems through the basic life support capability. For the period 1980 to 1982, no planning will be initiated and no new systems previously not involved in the program will enter into the program. Through this approach, we anticipate that approximately 83 percent of the total 304 regions will be able to achieve either a basic life support or advanced life support capability by the completion of the program in 1982. Approximately 17 percent of the regions will have received no support or only planning support.

Essentially, we believe that the provision of care in emergencies is a local and State responsibility. The basis for funding for ongoing emergency services should come primarily from medical care reimbursement systems, that is, insurance programs, Medicare and Medicaid, and other financing programs. There has been a need, however, to stimulate the establishment of systems, the installation of equipment and the coordination of the multiple agencies which must participate. The Federal Government has appropriately financed a major share of assistance during this capacity-building period. It is not appropriate, however, for the Federal Government, in our view, to indefinitely finance the operation of these systems or to bear the cost of the complete development of all the systems across the country. As noted, State and local responsibility is primary.

As you know, Mr. Chairman, both the Administration and the Congress are currently confronting the difficult choices required to slow the inflationary impact of Federal spending. Clearly, every valid social objective cannot be addressed at an optimal level. The EMS program has, we believe, reached that point of development where States and local communities have an appreciation of the importance of the program. We believe that the EMS Program has accomplished the objective of increasing State and local awareness of the need to improve emergency medical services, and that the systems' approach has been shown to be successful. We believe that it is most appropriate, in view of continuation of State and local efforts and in terms of the Federal health priorities, that this program be extended only for a period of 3 years with a planned phaseout in 1982. This phaseout period will provide an interval of transition for States and local communities to pick up their responsibility. It will also provide a period of alert for States and local communities to complete that portion of the Federal program which will be funded through 1982.

In summary, Mr. Chairman, we have been able to collect information from our EMS systems' grantees which indicates that EMS has, directly and indirectly, contributed to the reduction of death and serious injury. We feel that there is an improved awareness by citizens of the need for emergency medical services. There is an improved awareness by government officials of this need, and there has been an increase in local and State spending to support the development and continuation of emergency medical services. We therefore feel that this is an appropriate Federal program to complete in the immediate future, so that we can devote our existing resources to other health initiatives having a greater need for Federal support.

Thank you Mr. Chairman for your time. I will be happy to answer questions.

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Statement by Gordon Vickery, Administrator-Designate, United States Fire Administration

In 1970, as Fire Chief of Seattle, I founded, together with Dr. Leonard Cobb, the highly acclaimed Emergency Medical Services (EMS) system in Seattle, Wash. There is no doubt that the system has saved lives. Since 1970, Seattle has reported lower cardiac death rates directly attributable to a rapid response system and community involvement. From what was previously a uniformly fatal event, about half of all patients found in ventricular fibrillation are now being resuscitated. In addition, 25 percent of those are discharged home as long-term survivors.

Since the system in great part utilized the existing resources of the fire service, we in essence, increased the benefits to the taxpayers of Seattle from the investment in the city's fire stations, fire equipment, and manpower. With the increase in benefit from the taxpayers' investment in the fire service, we saw a corresponding increase in morale in the fire department and increased public support for the fire service.

Fire services and EMS: Status

Fire services assume the leading role in emergency medical services as a natural extension of their emergency training, equipment, communications, fire station location, and experience in dealing with accidents and disasters developed for firefighting and rescue. The fire service is one of our nation's basic emergency organizations. It represents a sizable resource and pool of manpower, operates equally well in urban and rural areas, and is naturally looked to for leadership and guidance in time of disaster or emergency. Eighty-five percent of the metropolitan fire services provide emergency medical service. Roughly half of those provide transportation and treatment; the other half provide medical services limited to treatment of victims at the scene of fires, accidents, and disasters. Seventy percent of the country's ambulances respond from fire stations.

The assumption by fire services of emergency medical service was encouraged by the National Commission on Fire Prevention and Control in its 1973 report to the President. The Commission stated that, "There are sound reasons for fire departments assuming emergency ambulance and paramedical functions." The Commission then recommended that:

> fire departments lacking emergency ambulance, paramedical, and rescue services consider providing them, especially if they are located in communities where these services are not adequately provided by other agencies.

Department of Health, Education, and Welfare (HEW) and Department of Transportation (DOT) efforts to upgrade emergency medical services have been extremely successful. Ambulance attendants and emergency medical technicians are far better trained, and the equipment they use is far more effective, than prior to this Federal involvement in the provision of emergency medical services.

Fire services and EMS: Problems

The training of Emergency Medical Technicians (EMTs), the development of specifications for vehicles, and the establishment of

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regional emergency medical service systems have been assisted by HEW and DOT. Under the Administration's proposed phaseout of the Federal EMS program by 1982, regional EMS systems will—as intended under EMS legislation—complete for funding at State and local levels. Even now, training and equipment are only a portion of the particular requirements of emergency medical services. Fire service experience with emergency medicine has shown that unique planning, personnel, and administrative problems are involved in providing emergency medical services.

Fire services and EMS: USFA

The U.S. Fire Administration (USFA) was created by the Federal Fire Prevention and Control Act of 1974 [Public Law 93–498, 88 Stat. 1535, is USC 2201 *et seq.*, 278f. 42 U.S.C. 290(a)] to help improve the effectiveness of the nation's fire services. Increasingly, an important aspect of this mission of the fire services, and hence of this agency, is the effective provision of emergency medical services. Sections 7, 8, and 9 of the Federal Fire Prevention and Control Act of 1974 authorize USFA programs on EMS. The U.S. Fire Administration has a history of involvement with EMS systems through development of Medic I and Medic II programs, USFA burn treatment programs, the development of EMS Master Planning, emergency response communications, and plans in medical emergency and disaster situations

Emergency medical services require a large investment of money for equipment, communications, training, and manpower, a large portion of which the Federal Government has provided or supported. The unique management problems this additional service creates for the fire services continues to be addressed. The U.S. Fire Administration's National Fire Academy is developing the course described below on fire department administration of emergency medical services. The course is authorized by existing legislation: Section 7 (d)(1) (c) and (e) of the Federal Fire Prevention and Control Act of 1974, as amended.

Phase I: Executive management overview of EMS

This phase is to serve as an introduction to the chief of the department and his EMS operations officer in understanding the past and present state of EMS. The purpose of having both attend is (1) respect due the chief of the department as the primary administrator of EMS in the first department, (1) the opportunity for the chief to select his EMS operations officer, should the department not have one, and (3) an opportunity for the two primary EMS administrators in the fire department to jointly examine their overall role. The suggested time allotment for this part of the course is 16 hours and is to focus on the following areas:

* A definition of an EMS system as part of the total health care system
* The history of EMS in our society with special emphasis on the role of the fire service through this historical period
* An examination of the goals and objectives of a modern EMS system
* An examination of the rationale for fire service involvement in the field of emergency medical care, with special emphasis

on the management and administrative concerns in such a rationale

* An examination of the realm of planning, specifically management designed, as it relates to the fire service and EMS
* An evaluation of the interpersonnel skills and techniques relating to EMS management and system design in a public service institution
* A review of the legal aspects and implications of emergency medical services as provided by a public protection organization such as the fire department

For the fire chief beginning EMS delivery, this phase is an important orientation. For the chief already providing EMS, it sets some criteria for comparing, in broad management and planning terms, the effectiveness or lack of it in his own delivery system.

Phase II: EMS Program Management

Phase II is for the EMS operations officer of the department, usually ranging in rank from lieutenant to district chief. The EMS operations officer will remain after the 2-day executive overview to study in more depth the technical subsystems involved in the general planning and administration of daily EMS operations. These will touch upon all technical topics that must be integral components of operations planning and implementation.

1. Funding needs and sources;
2. Training;
3. Manning considerations: fire versus EMS;
4. Independent versus dual role personnel;
5. Paramedic burnout;
6. Citizen abuse problems;
7. Volunteer system design;
8. Ambulance response time;
9. Career ladders for EMS;
10. Emergency call screening;
11. Police response for EMT protection and safety;
12. Public versus private service for transport from the emergency scene;
13. Public relations;
14. Fire service/physician-nurse coordination and relationships;
15. Fire service/hospital administration coordination and relationships;
16. EMS evaluation;
17. Communications;
18. Quality Control; and
19. Labor/management issues in EMS.

The above training provided by the academy course would fill a significant gap by assisting fire services in managing the complex equipment and highly-trained personnel of an EMS system.

The U.S. Fire Administration might well be included on the Interagency Committee on Emergency Medical Systems (IACEMS) created by title XII (Emergency Medical Services Systems) of the Public Health Service Act. IACEMS involves 23 Federal agencies and 5 public members to "coordinate and provide for the communication and exchange of information among all Federal programs and activities relating to emergency medical services." Although the Depart-

ment of Defense and the Department of Agriculture are represented on the Committee, no one is there to represent the fire services of the nation, which are so tightly bound to the EMS picture.

As a component of the new Federal Emergency Management Agency (FEMA), the U.S. Fire Administration will have even broader responsibility for aiding local fire services. FEMA will be the Federal agency responsible for disaster preparedness and response. Fire services are invariably involved in responding to disasters and in providing rescue, emergency medicine, and firefighting services to victims. FEMA's programs will be needed by fire services to assist them in planning for, responding to, and rebuilding after disasters.

In summary, the U.S. Fire Administration has a signficant role in resolving the important issues of EMS in the future. To prepare for advising and assisting fire services in their emergency medical service responsibilities, the U.S. Fire Administration, through its National Fire Academy, is developing the course described above. The U.S. Fire Administration could be in a position to assist fire service administration and personnel by undertaking coordination, education, and research responsibilities, pursuant to section 7(d)(1) (c), (e), 8(a) and 8(c)(1)(2)(3)(4) of the Federal Fire Prevention and Control Act of 1974.

STATEMENT BY JULIUS B. RICHMOND, M.D., ASSISTANT SECRETARY FOR HEALTH, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE (MARCH 21, 1978)

Mr. Chairman, members of the subcommittee: I welcome the opportunity to appear here this evening. My earlier research work involved study of the Sudden Infant Death Syndrome (SIDS)—the problem has long been of interest to me. In my years as a practicing pediatrician, I don't think I have observed any other experience which is as shattering a personal tragedy for those families, who without warning, lose their seemingly healthy babies.

I want to introduce the other Department officials with me: Dr. Joyce Lashof, Deputy Assistant Secretary for Health-Programs and Population Affairs; Dr. Norman Kretchmer, Director of the National Institute of Child Health and Human Development, National Institutes of Health; and Dr John Marshall, Deputy Director of the Bureau of Community Health Services, Health Services Administration.

Each year in the United States, the sudden infant death syndrome claims the lives of an estimated 6,000 to 7,000 infants who die suddenly, quietly, and unexpectedly in their cribs, during what has been considered to be normal sleep. This is an incidence rate of about 2 per 1,000 live births. It is the leading cause of death between the ages of 1 and 12 months—as much as 50 percent of infant deaths occurring between the first month and first year of life in this country can be attributed to the sudden infant death syndrome.

Characteristics of SIDS

Although the cause of death for these babies remains a mystery, we have documented well the characteristics of the SIDS baby, the mother of the SIDS victim, and their environments. We consistently find that the peak incidence of SIDS— and this is true in other countries as well—is between the second and fourth months of life. We know that the risk is higher in males than in females, in black babies

than in white babies, in one of twins as compared to single born babies, in low-birth-weight infants and particularly in infants whose gestational ages at time of birth were between 34 and 35 weeks, and in babies who have had recent upper respiratory infections.

Research has demonstrated that the highest rate of SIDS is among mothers less than 20 years old; the older the mother the lower the risk of sudden death for her baby. Moreover, the risk for crib death is more than four times as great for those infants whose mothers received no prenatal care in comparison to mothers beginning their prenatal care early in pregnancy.

The incidence of SIDS is highest in families of low socio-economic status. In addition, a higher rate of SIDS occurrence has been observed among infants of mothers who smoke than among infants of mothers who do not smoke. Most infants die at home in their cribs or carriages. The frequency of SIDS deaths in the United States is greatest during the cold-weather months, and between 12 midnight and 8 a.m. than during other time periods.

Public Law 93–270 authorized a Sudden Infant Death Syndrome program which includes research, development and dissemination of educational materials, counseling to families, and collection, analysis and furnishing of information relating to the causes of SIDS. I would like to describe the Department's activities in all of these areas.

Research Advances

With its emphasis on research for mothers and children, the National Institute of Child Health and Human Development has provided an ideal milieu for advances in understanding the phenomenon of the sudden infant death syndrome—a problem which it is now evident relates to the broader areas of high risk pregnancy, fetal development, the birth process, and early infancy.

The objectives of our SIDS research program are:

> to increase the understanding of the causes and underlying mechanisms of the syndrome; to identify the infants at risk of becoming victims; to explore preventive approaches; to elucidate the impact of a sudden and unexpected infant death on the parents, siblings and the extended family; and to inform the scientific and general community about SIDS.

The research emphasis areas include developmental neurophysiology autonomic disturbances, and sleep state; respiratory, laryngeal, cardiac functions and responses to stimuli; metabolic, endocrine, and genetic factors; immunology and infection; epidemiology, anatomic pathology; and the behavioral facets of the problem.

Since 1972, the National Institute of Child Health and Human Development has annually increased its research efforts in the sudden infant death syndrome resulting in an expanded base of knowledge about this phenomenon. As a result of Institute-supported investigations during these 6 years, it is evident that SIDS babies are not the healthy infants before death they were once believed to be. These infants appear to have subtle anatomic and physiologic defects—which may originate in-utero—of a neurologic, cardiorespiratory, or metabolic nature.

There is increasing evidence that the syndrome is not caused by a single mechanism acting at one moment in time, as previously believed. Rather, a number of developmental, environmental, and pathologic

factors are involved. Under a complex set of circumstances, these interact and rapidly set up a sequence of events producing a sudden, unexpected and unexplained infant death.

Evidence that these infants have preexisting difficulties includes anatomic pathologic findings suggestive of chronic stress and hypoxia; abnormalities in sleep state, cardiorespiratory function, and tissue oxygen utilization; postnatal growth retardation; and the infant's temperament and behavioral patterns between birth and death.

Investigators are currently studying the role of many normal and abnormal phenomena to SIDS, such as development of sleep state, and cardiopulmonary regulation during sleep; interrelationships among heart rate variability, respiratory rate variability, and sleep state; the infants' ventilatory response to carbon dioxide; cardiac arrhythmias; sleep deprivation; hypoglycemia, larynogospasm; anemia in potentiating apnea; effects of acute metabolic conditions on central nervous system (CNS) development, organization, and function; CNS dysfunction above the brain stem; abnormalities of the carotid body; inability to metabolize free fatty acids; deficiencies in vitamin E of selenium; lack of secretory component of broncho-pulmonary mucosa; nasal obstruction; cardio-vascular instability; the biogenic anime metabolism.

In 1977, the Institute began a cooperative case-control study of SIDS. About 600 cases of SIDS, as defined by an autopsy protocol developed for this study, will be investigated. Case-control comparisons for each factor under study will determine the extent of SIDS risk associated with the factor. It is anticipated that as a result of this project it will be possible to identify high-risk infants on the basis of information available of birth and in the period shortly after birth.

We have contracted for the development of an inexpensive prototype respiratory-cardiac electronic monitor for use in the home on high-risk and near-miss infants.

We expect the risk factor study to enable identification of SIDS high-risk infants at birth and in the early weeks postpartum. Home monitoring of heart and respiratory regulation during sleep will further delineate risk. The combination of risk-factor and monitoring data will make a SIDS prevention program feasible.

The 1978 budget provides funds to support research (1) to better define the time and type of developmental insult that results in SIDS, with particular attention to antecedents in fetal life, (2) to unravel the complexities of the pathophysiologic events being observed in subsequent siblings of SIDS and "near-miss" infants as clues to SIDS, and (3) to focus on the effects of infant death on parents and siblings with a beginning emphasis on the grief-guilt reaction.

The President's fiscal year 1979 budget requests $10.4 million to continue to approach the problem of SIDS through its seven identified SIDS emphasis areas, as well as through a broader research approach involving studies of high-risk pregnancy, investigations of fetal development and maturation of specific systems and research into the process of adaptation of the newborn to the extrauterine environment and subsequent health problems.

Service Projects

We are currently providing support to 32 sudden infant death syndrome informational and counseling service projects located in 27

States. Of these, 29 are continuing projects and three are receiving support for their first year of operation. They provide services which are accessible to a population base of approximately 126 million. It is estimated that 54 percent of the sudden infant death syndrome deaths for 1978 will occur in geographic areas for which these projects are responsible and approximately 3,500 families will be offered assistance which includes early and periodic counseling.

Until recently only a small number of infants who die suddenly and unexpectedly were autopsied to confirm the cause of death and to learn more about the conditions contributing to the tragic event. In contrast, seventeen of our projects report an autopsy rate of 80 percent or higher. In ten projects, seven of which are statewide, virtually all infants who die suddenly and unexpectedly are autopsied.

Informational and Educational Activities

Informational and educational activities are directed at health professionals, public safety officials and others to help acquaint them with the problems faced by SIDS families as well as to educate the general public and those who may come in contact with the problem.

The three motion picture films produced in the early years of the sudden infant death syndrome program continue to be internationally used and well received. "After Our Baby Died" sensitizes health professionals to their responsibilities to sudden infant death syndrome families. "You Are Not Alone" was prepared for the survivors of this crisis and the public in general. Copies of these films are being used by the projects, community mental health centers, institutions of higher learning, and voluntary organizations. The film entitled "A Call For Help" instructs law enforcement officers and others who respond to emergencies in how to interact with families at the time of their crisis in a sensitive and nonaccusatory manner. This film, which was distributed by the International Association of Chiefs of Police, was booked for 459 showings in 51 States with an estimated audience in 1977 of 13,700. We have also used the television media to sensitize the public to the sudden infant death syndrome. Two brief public service telecasts were distributed in September 1977 to 300 major television stations in the United States. A report on the use of these telecasts by 200 stations indicates they were viewed in 42 States by an audience of approximately 122 million and a contributed time value of $61,604.

The publication and distribution of printed materials related to sudden infant death syndrome continues to be an important means of communicating the most recent information about this problem, its significance, causes, effects, and approaches to care. Approximately 500,000 pieces of 20 publications were distributed to a broad circle of concerned health service organizations, institutions of higher learning, health and emergency care providers, voluntary organizations and the public.

In the past year, the federally funded sudden infant death syndrome projects have conducted more than 2,000 educational programs. The interdisciplinary approach is basic to the success of the sudden infant death syndrome program. The projects also are conducting in-depth and on-going training seminars with those groups most involved with providing sudden infant death syndrome services. We think it is

important to note that the topic of sudden infant death syndrome and its associated effects is becoming increasingly evident in the curricula of numerous health disciplines, emergency service providers, and law enforcement programs.

I want to mention that our contract activities have been a vital adjunct to the program. These include:

a recently completed review and analysis of State statutes affecting the medico-legal investigations of sudden, unexplained deaths in infants. Findings have been published and distributed in a publication entitled "Death Investigation: An Analysis of Laws and Policies of the United States, Each State and Jurisdiction";

a currently funded study which will provide recommendations for toxicological studies in cases of sudden infant deaths and will define the protocols for conducting the toxicological analysis;

completion of a 2-year effort to mobilize the necessary resources of sudden infant death syndrome programs in areas not presently providing these services with Federal assistance;

development of a training module suitable for basic training or in service programs for law enforcement and emergency service providers; and

design and testing of a methodology for evaluation of the sudden infant death syndrome projects; the second phase of this effort will implement the evaluation study and analyze the findings.

During fiscal year 1979, with our budget request of $2,802,000 the program will continue to support information and counseling projects which will enable 4,000 families to receive early and periodic counseling—500 more families than received services this year. Eventually we hope to implement a nationwide program so that services comparable to those provided in the current project areas are available for any family affected by a sudden and unexpected infant death. The need to continually assess and improve the quality of services remains a major program objective—utilizing the outcomes and recommendations of the evaluation and toxicology studies, program monitoring activities, and research findings.

A longer range objective is to apply research findings in an orderly and timely manner so that ultimately sudden infant death syndrome deaths may be prevented. We anticipate that as the causes associated with or responsible for these deaths are identified, then prevention, screening, identification and medical management will become a reality.

Conclusion

Mr. Chairman, you have introduced a bill, S. 2523, which proposes to extend the Sudden Infant Death Syndrome Act. We support a 3-year extension of this authority at the appropriation levels previously mentioned. We are committed to continued improvements in the quality and effectiveness of our research efforts and program activities.

Thank you for inviting me to present the Department's concerns regarding this program. My colleagues and I welcome any questions you may have.

CHANGES IN EXISTING LAW (PUBLIC LAW 93–154, AS AMENDED AND PUBLIC LAW 93–270) MADE BY S. 497 AS REPORTED

In accordance with paragraph 4 of rule XXIX of the Standing Rules of the Senate, changes in existing law (Public Law 93–154, as amended and Public Law 93–270) made by S. 497 as reported are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

PUBLIC HEALTH SERVICE ACT, AS AMENDED

Public Law 93–154

93rd Congress, S. 2410

November 16, 1973

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TITLE VII—HEALTH RESEARCH AND TEACHING FACILITIES AND TRAINING OF PROFESSIONAL HEALTH PERSONNEL

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PART F—GRANTS AND CONTRACTS FOR PROGRAMS AND PROJECTS

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TRAINING IN EMERGENCY MEDICAL SERVICES

SEC. 789. (a)(1) * * *

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(g)(1) For the purpose of making payments pursuant to grants and contracts under this section, there are authorized to be appropriated $10,000,000 for the fiscal year ending June 30, 1974, and each of the next five fiscal years, *and $4,000,000 for the fiscal year ending September 30, 1980, and each of the next two fiscal years.*

(2) Not less than 30 percent of the funds appropriated under paragraph (1) for any fiscal year shall be used in that fiscal year to assist in meeting the cost of training, and of establishment of programs for the training of physicians in emergency medicine.

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TITLE XI—GENETIC DISEASES, HEMOPHILIA PROGRAMS, AND SUDDEN INFANT DEATH SYNDROME

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PART B—SUDDEN INFANT DEATH SYNDROME

SUDDEN INFANT DEATH SYNDROME COUNSELING, INFORMATION, EDUCATIONAL, AND STATISTICAL PROGRAMS; PLANS AND REPORTS

SEC. 1121. (a) (*1*) The Secretary, through *an identifiable administrative unit under the supervision of* the Assistant Secretary for Health, shall carry out a program to develop public information and professional educational materials relating to sudden infant death syndrome, and to disseminate such information and materials to persons providing health care, to public safety officials, and to the [public generally.] *general public. The Secretary shall administer, through such unit, the functions assigned in this section, and shall provide such unit with such full-time professional and clerical staff and with the services of such consultants and of such management and supporting staff as may be necessary for it to carry out such functions effectively.*

(2) The Secretary shall—

(A) develop and implement a system for the periodic reporting to the Department, and dissemination by the Department, of information collected under grants and contracts made under subsection (b) (1) of this section; and

(B) carry out coordinated clearinghouse activities on sudden infant death syndrome, including the collection and dissemination to the public, health and educational institutions, professional organizations, voluntary groups with a demonstrated interest in sudden infant death syndrome, and other interested parties of information pertaining to sudden infant death syndrome and related issues such as death investigation systems, personnel training, biomedical research activities, and information on the utilization and availability of treatment or prevention procedures and techniques, such as home monitors.

The Secretary is authorized to enter into contracts with public or private entities to carry out the information and clearinghouse activities required under this subsection.

(b) (1) The Secretary [may] *is authorized to* make grants to public [and] *or* nonprofit private entities, and enter into contracts with public [and] *or* private entities, for projects which include both—

(A) the collection, analysis, and furnishing of information (derived from post mortem examinations and other means) relating to the causes *and other appropriate aspects* of sudden infant death syndrome; and

(B) the provision of information and counseling to families affected by sudden infant death syndrome.

(2) No grant may be made or contract entered into under this subsection unless an application therefor has been submitted to and approved by the Secretary. Such application shall be in such form, submitted in such manner, and contain such information as the Secretary shall, by regulation, prescribe. Each application shall—

(A) provide that the project for which assistance under this subsection is sought will be administered by or under *the* supervision of the applicant;

(B) provide for appropriate community representation (*including appropriate involvement of voluntary groups with a*

demonstrated interest in sudden infant death syndrome) in the development and operation of such project;

(C) set forth such fiscal controls and fund accounting procedures as may be necessary to assure proper disbursement of and accounting for Federal funds paid to the applicant under this subsection; and

(D) provide for making such reports in such form, *at such times*, and containing such information as the Secretary may reasonably [require.] *require, including such reports as will assist in carrying out the provisions of subsection (a)(2) of this section.*

[(3) Payments under grants under this subsection may be made in advance or by way of reimbursement, and at such intervals and on such conditions, as the Secretary finds necessary.

[(4) Contracts under this subsection may be entered into without regard to sections 3648 through 3709 of the Revised Statutes (31 U.S.C. 529; 44 U.S.C. 5).

[(5) For the purpose of making payments pursuant to grants and contracts under this subsection, there are authorized to be appropriated $2,000,000 for the fiscal year ending 1975, $3,000,000 for the fiscal year ending 1976, $4,000,000 for the fiscal year ending September 30, 1977, $3,650,000 for the fiscal year ending September 30, 1978, $3,500,000 for the fiscal year ending September 30, 1979, $4,000,000 for the fiscal year ending September 30, 1980, and $5,000,000 for the fiscal year ending September 30, 1981.

[(c) The Secretary shall submit, not later than January 1, 1976, a comprehensive report to the Committee on Labor and Public Welfare of the Senate and the Committee on Interstate and Foreign Commerce of the House of Representatives respecting the administration of this section and the results obtained from the programs authorized by it.]

(c)(1) Not later than February 1 of each year after 1979, the Secretary shall submit to the Committee on Labor and Human Resources of the Senate and the Committee on Interstate and Foreign Commerce of the House of Representatives a comprehensive report on the administration of this part (including funds and positions allocated for personnel) and the results obtained from activities thereunder, including the extent of allocations made to rural and urban areas. The report submitted on or before February 1, 1980, shall also set forth a plan to—

(A) extend counseling and information services to the fifty States and the District of Columbia by July 1, 1980; and

(B) extend counseling and information services to all possessions and territories of the United States by July 1, 1981.

(2) The Secretary shall conduct or provide for the conduct of a study on State laws, practices, and systems relating to death investigation and their impact on sudden and unexplained infant deaths, and any appropriate means for improving the quality, frequency, and uniformity of the post mortem examinations performed under such laws, practices, and systems in the case of sudden and unexplained infant deaths. Not later than December 31, 1980, the Secretary shall report to the Congress the results of such study, including recommendations as to any appropriate actions by the Department of Health, Education, and Welfare with respect to the conduct of post mortem

investigations in all cases of sudden and unexplained infant death (including the desirability and feasibility of establishing pilot projects for centralized post mortem and specimen examination systems on a statewide or regional basis).

(d) (1) For the purpose of making grants and contracts under and otherwise carrying out this section, there are authorized to be appropriated $2,000,000 for the fiscal year ending June 30, 1975; $3,000,000 for the fiscal year ending June 30, 1976; $4,000,000 for fiscal year 1977; $3,650,000 for fiscal year 1978; $3,500,000 for fiscal year 1979; $5,000,000 for fiscal year 1980; and $7,000,000 for fiscal year 1981.

(2) Payments under grants under this section may be made in advance or by way of reimbursement, and at such intervals and on such conditions, as the Secretary finds necessary.

(3) Contracts under this section may be entered into without regard to sections 3648 through 3709 of the Revised Statutes (31 U.S.C., 529; 41 U.S.C. 5).

(4) The Secretary shall seek to make equitable distribution of funds appropriated under this section among the various regions of the country and to ensure that the needs of rural and urban areas are appropriately addressed.

SUDDEN INFANT DEATH SYNDROME RESEARCH AND RESEARCH REPORTS

SEC. 1122. (a) From the sums appropriated to the National Institute of Child Health and Human Development under section 441, the Secretary shall assure that there are applied to research of the type described in paragraph (1)(A), (B), and (C) of subsection (b) of this section such amounts each year as will be adequate, given the leads and findings then available from such research, in order to make maximum feasible progress toward identification of infants at risk of sudden infant death syndrome and prevention of sudden infant death syndrome.

(b) (1) Not later than ninety days after the close of fiscal year 1979 and of each fiscal year thereafter, the Secretary shall report to the Committees on Appropriations of the Senate and the House of Representatives, the Committee on Labor and Human Resources of the Senate, and the Committee on Interstate and Foreign Commerce of the House of Representatives specific information for such fiscal year on—

(A) the (i) number of applications approved by the Secretary in the fiscal year reported on for grants and contracts under this Act for research which relates specifically to sudden infant death syndrome, (ii) total amount requested under such applications, (iii) number of such applications for which funds were provided in such fiscal year, and (iv) total amount of such funds;

(B) the (i) number of applications approved by the Secretary in such fiscal year for grants and contracts under this Act for research which relates generally to sudden infant death syndrome, (ii) total amount requested under such applications, (iii) number of such applications for which funds were provided in such fiscal year, and (iv) total amount of such funds; and

(C) the (i) number of applications approved by the Secretary in such fiscal year for grants and contracts under this Act for

high-risk pregnancy and high-risk infancy research which relates to sudden infant death syndrome, specifying how these conditions relate to sudden infant death syndrome, (ii) total amount requested under such applications, (iii) number of such applications for which funds were provided in such fiscal year, and (iv) total amount of such funds.

(2) Each report submitted under paragraph (1) of this subsection shall—

(A) contain a summary of the findings of intramural and extramural research supported by the National Institute of Child Health and Human Development relating to sudden infant death syndrome as described in clauses (A), (B), and (C) of such paragraph (1), and the plan of such Institute for taking maximum advantage of such research leads and findings;

(B) provide information on activities underway and plans to bring about the appropriate clinical application of current research findings and the cost and implications of such applications; and

(C) provide an estimate of the need for additional funds over each of the next five fiscal years for grants and contracts under this Act for research activities described in such clauses.

(c) Within five days after the Budget is transmitted by the President to the Congress for each fiscal year after fiscal year 1980, the Secretary shall transmit to the Committees on Appropriations of the Senate and the House of Representatives, the Committee on Labor and Human Resources of the Senate, and the Committee on Interstate and Foreign Commerce of the House of Representatives an estimate of the amounts requested for the National Institute of Child Health and Human Development and any other Institutes of the National Institutes of Health, respectively, for research relating to sudden infant death syndrome as described in paragraph (1) (A), (B), and (C) of subsection (b) of this section, and a comparison of such amounts with the amounts requested for the preceding fiscal year.

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TITLE XII—EMERGENCY MEDICAL SERVICES SYSTEMS

PART A—ASSISTANCE FOR EMERGENCY MEDICAL SERVICES SYSTEMS

DEFINITIONS

SEC. 1201. For purposes of this part:

(1) * * *

* * * * * * *

GRANTS AND CONTRACTS FOR FEASIBILITY STUDIES AND PLANNING

SEC. 1202. (a)(1) * * *

* * * * * * *

(f) [The Secretary may not obligate or expend in any fiscal year] *Priority* for *making* grants [and contracts made] or [entered] *entering* into [under subsection (b)(1) an amount greater than 50 per cen-

tum of the sums appropriated in such year for grants and contracts made or entered into] *contracts* under this section *shall be afforded to eligible entities applying for such grants or contracts under subsection (a) of this section.*

* * * * * * *

AUTHORIZATION OF APPROPRIATIONS

SEC. 1207. (a) (1) For the purpose of making payments pursuant to grants and contracts under sections 1202, 1203, and 1204, there are authorized to be appropriated $30,000,000 for the fiscal year ending June 30, 1974, $60,000,000 for the fiscal year ending June 30, 1975, $35,000,000 for the fiscal year ending June 30, 1976, $5,083,000 for the period beginning July 1, 1976, and ending September 30, 1976, $45,000,000 for the fiscal year ending September 30, 1977, [and] $55,000,000 for the fiscal year ending September 30, [1978; and for the purpose of making payments pursuant to grants and contracts under sections 1202, 1203, and 1204, there are authorized to be appropriated] *1978*, $70,000,000 for the fiscal year ending September 30, 1979, *and $40,000,000 for the fiscal year ending September 30, 1980, and for each of the next two fiscal years.*

* * * * * * *

(5) (A) (*i*) Of the sums appropriated under paragraph (1) for the fiscal year ending September 30, 1977, and for each of the two succeeding fiscal years at least 2½ per centum but not more than 5 per centum of such sums for each such fiscal year shall be used for grants and contracts under section 1202, *and* (*ii*) *of the sums appropriated under paragraph (1) for the fiscal year ending September 30, 1980, and for each of the two succeeding fiscal years, at least 1 per centum of such sums for each such fiscal year shall be used for grants and contracts under section 1202.*

(B) Of the sums appropriated under paragraph (1) for the fiscal year ending September 30, 1977, and for each of the [two] *five* succeeding fiscal years, (i) not less than 20 per centum of such sums for each such fiscal years shall be used for grants and contracts under section 1203, and (ii) not less than 20 per centum of such sums for each such fiscal year shall be used for grants and contracts under section 1204.

(b) For the purpose of making payments pursuant to grants and contracts under section 1205 (relating to research), there are authorized to be appropriated $5,000,000 for the fiscal year ending June 30, 1974, and for each of the next five fiscal years, *and $3,000,000 for the fiscal year ending September 30, 1980, and for each of the next two fiscal years.*

* * * * * * *

INTERAGENCY COMMITTEE ON EMERGENCY MEDICAL SERVICES

SEC. 1209. (a) * * *

* * * * * * *

(c) The Secretary or his designee shall serve as Chairman of the Committee, the membership of which shall include (1) appropriate

scientific, medical, or technical representation from the Department of Transportation, the Department of Justice, the Department of Defense, the Veterans' Administration, the National Science Foundation, the Federal Communications Commission, *the Federal Emergency Management Agency (established pursuant to Reorganization Plan Number 3 of June 19, 1978)*, and such other Federal agencies and offices (including appropriate agencies and offices of the Department of Health, Education, and Welfare) and from the National Academy of Sciences, as the Secretary determines administer programs directly affecting the functions or responsibilities of emergency medical services systems, and (2) five individuals from the general public appointed by the President from individuals who by virtue of their training or experience are particularly qualified to participate in the performance of the Committee's functions. The Committee shall meet at the call of the Chairman, but not less often than four times a year.

* * * * * * *

PART B—BURN, *TRAUMA*, *OR POISON* INJURIES

PROGRAMS RELATING TO BURN, *TRAUMA*, *OR POISON* INJURIES

SEC. 1221. (a) (1) The Secretary may make grants to, and enter into contracts with, public or private nonprofit entities for the support of, and may conduct, programs for the establishment, operation, and improvement of activities to (A) demonstrate the effectiveness of different methods for the treatment and rehabilitation of individuals injured by burns, *trauma, or poison*, (B) conduct research in the treatment and rehabilitation of such individuals, and (C) provide training in such treatment and rehabilitation and in such research.

(2) The Secretary may enter into contracts with entities and individuals for the support of research in the treatment and rehabilitation of individuals injured by burns, *trauma, or poison.*

(b) No grant or contract may be made or entered into under subsection (a) unless an application therefor has been submitted to, and approved by, the Secretary. Such application shall be submitted in such form and manner and contain such information as the Secretary may require. In considering applications under this section, the Secretary shall give priority to applications for programs which (1) will provide services within a geographical area in which services are not currently being adequately provided, and (2) are in or accessible to the service area of an emergency medical services system (as defined in section 1201(1)).

(c) For purposes of carrying out subsection (a), there are authorized to be appropriated $5,000,000 for the fiscal year ending September 30, 1977, $7,500,000 for the fiscal year ending September 30, 1978, [and] $10,000,000 for the fiscal year ending September 30, 1979, *and $3,000,000 for the fiscal year ending September 30, 1980, and for each of the next two fiscal years.*

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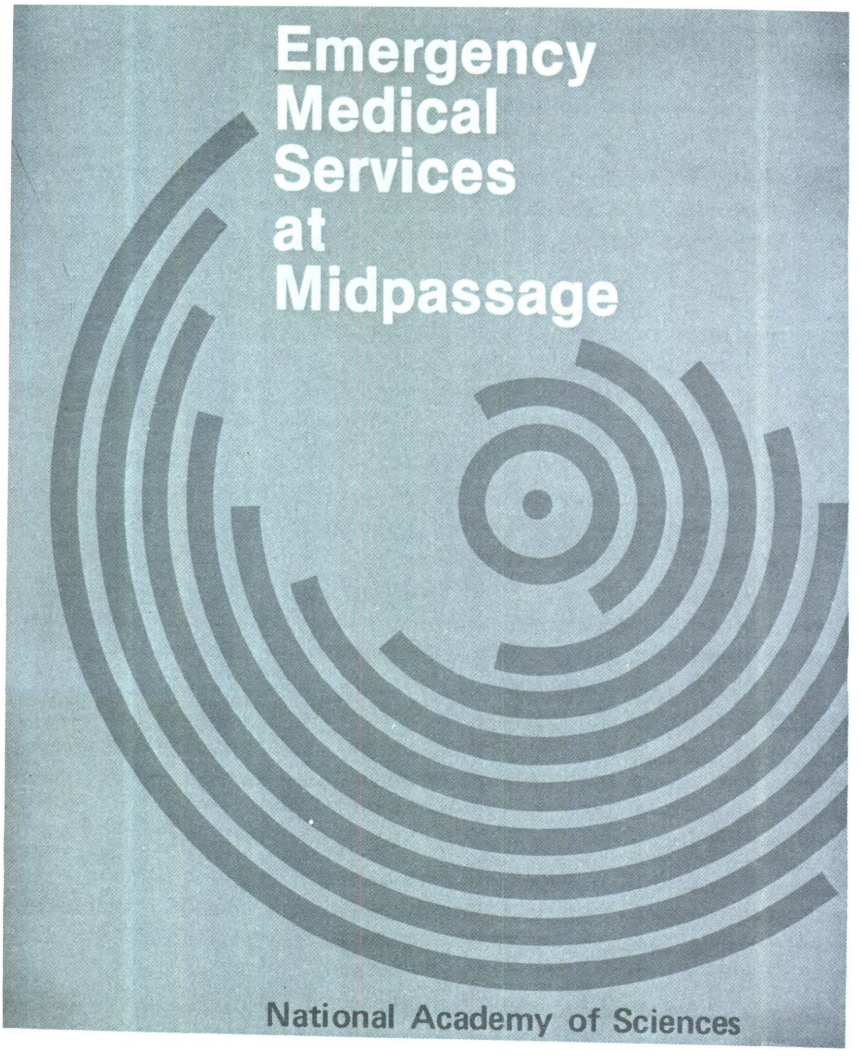

Emergency Medical Services At Midpassage

A Report of the
Committee on Emergency Medical Services
Assembly of Life Sciences
National Research Council

NATIONAL ACADEMY OF SCIENCES
Washington, D.C. 1978

48-284 O - 79 - 38

NOTICE: The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the Councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The members of the committee responsible for the report were chosen for their special competences and with regard for appropriate balance.

This report has been reviewed by a group other than the authors according to procedures approved by a Report Review Committee consisting of Members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

The work presented in this report was supported by a grant from the Robert Wood Johnson Foundation.

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Contents

Summary

Much of the current attention to the improvement of emergency medical care in the United States can be traced to the report, *Accidental Death and Disability: The Neglected Disease of Modern Society*, prepared by the Committees on Trauma and Shock of the Division of Medical Sciences of the National Academy of Sciences—National Research Council (NAS-NRC) in 1966. That report identified trauma as the leading cause of prolonged disability and as the fourth major cause of death in the United States, (it was shown subsequently that, for persons under 45, trauma was the leading cause of death) and called for sweeping changes in public awareness, in training of ambulance personnel, in staffing of hospital emergency departments and intensive care units, in the identification of hospitals by their emergency care capability, and in funding for research in trauma. The report and later efforts by other agencies* increased awareness, not only among the public but within the federal government as well.

Some of the recommendations of the 1966 report and of a 1973 NAS-NRC report *Roles and Resources of Federal Agencies in Support of Comprehensive Emergency Medical Services* have been implemented as recommended, some have been modified and implemented, and others have evolved into programs not clearly contemplated at the time of the reports. Some of the issues raised are still the subject of debate. Noting this, the Committee on Emergency Medical Services has attempted to examine the present status of emergency medical services (EMS) in the United States. This examination took into account the substantial efforts at implementation of advanced EMS systems through programs of the Department of Transportation (DOT), the Department of Health, Education, and Welfare (DHEW), and the Robert Wood Johnson Foundation, as well as of various regions acting independently.

*American Heart Association, Committee on Trauma of the American College of Surgeons, National Safety Council, American National Red Cross, American College of Emergency Physicians, University Association for Emergency Medicine, Emergency Department Nurses Association, the American Academy of Orthopedic Surgeons, the American Association for the Surgery of Trauma, the AMA Commission on Emergency Medical Services, and American Trauma Society.

It also noted the promulgation of a variety of standards for emergency care by concerned federal agencies as well as by the American Hospital Association, the American National Red Cross, the American Medical Association, and the American Heart Association.

Progress

The past decade has seen substantial progress in the development of EMS. By the end of 1977, some 116,000 emergency medical technicians (EMTs), about 65% of the total number of persons trained as EMTs, had been certified by the National Registry of Emergency Medical Technicians, and the number of registrants is increasing by about 2,000 per month. EMS systems continue to proliferate: federal plans envision a network of 300 contiguous EMS systems spanning the United States; the 300 areas have been designated, and developmental funding has been provided for 278 of them. Nearly all the states have enacted legislation setting standards for EMS vehicles and personnel, and most states have established EMS offices. Well-designed ambulances have largely replaced hearses and station wagons as emergency vehicles. There is also a growing body of books, articles, and research reports relating to EMS systems.

The diversity of forms that EMS systems have taken has been as striking as their growth. They range in size from citywide to statewide; some include portions of two or more states. Management of an EMS system may rest with a state, county, or city health department, with a fire department or other local agency, with a private ambulance company, with a hospital or hospital association, with an EMS committee, with a civil defense office, with a council of governments, or with any other body that has the will, drive, and resources to carry the work forward. Some systems are supported by local taxes, others by voluntary contributions, by cost-sharing arrangements among providers and users, by fees, by subsidies, by subscriptions, or by some combination of these; many still rely heavily on federal grants.

There has been a clear demonstration that EMTs can be trained to deliver effective prehospital care and to provide safe transportation to the hospital. The design of ambulances has been modified to permit basic (non-invasive) and in some cases advanced (invasive) emergency care to be carried out. The development of radio communication and in some cases, of remote reading of electrocardiograms, etc. (telemetry), permits medical guidance to be given to EMTs in the field. Improvements in the training of physicians, nurses and paramedical personnel in emergency medicine have resulted in beneficial changes in the com-

petence and staffing patterns of many hospital emergency departments. Trauma research centers have been founded, the American Trauma Society has been formed, and many communities have EMS councils. Finally, with the Emergency Medical Services Systems (EMSS) Act of 1973, a set of standards for EMS systems has been established.

The existence of such standards could lead to the assumption that merely meeting them would ensure that a region has an adequate EMS system. Thus, it might appear that the problem in 1978 is only to distribute sufficient funds to ensure that every region within the country can be served by an EMS system that includes the 15 components* specified in the EMSS Act of 1973. That would be an oversimplification. In spite of the gratifying progress in some elements of this previously neglected health field, there remain geographical areas and system components in which progress has been very uneven. In many regions patient access to emergency care remains limited; few systems have realized the full potential of system evaluation or of central emergency medical dispatch (CMED).

Unresolved Problems

Standards EMS standards vary widely in source, object, and legal force. Those promulgated by federal agencies, such as DOT's standards for ambulances and for EMT training or HEW's for system design are, of course, requirements only for those seeking federal funding, except as they have been incorporated into the EMS laws of various states. Some states have no EMS standards; others stipulate in detail the advanced life support (ALS) measures that paramedics may or may not use. Standards for first aid and cardiopulmonary resuscitation (CPR) have been promulgated by the American National Red Cross and the American Heart Association, and for ambulance equipment by the American Academy of Orthopedic Surgeons.

As will be pointed out, reliance solely on currently established standards is not likely to provide an optimal system for every community. The required components specified in the EMSS Act of 1973 appropriately embodied the wisdom of the time. However, the availability of

*The EMSS Act of 1973 required applicants for grants to demonstrate adequacy in the following areas: health personnel, training, communications, vehicles, medical facilities, specialized critical care units, use of other public safety personnel and equipment, public participation in policy making, service without prior determination of ability to pay, transfer agreements, standardized record keeping, public education, evaluation, disaster planning, and links to adjacent EMS systems.

funds authorized under this Act exclusively to communities that could conform to the requirements specified, established an orthodoxy based on the 15 components. It is not widely recognized that these are interim standards to be modified and replaced as a result of experience and research in emergency medical care. Some of the standards, by their nature, are not adaptable to the wide variety of demographic, geographic, economic, and other characteristics of many communities, and their application has in some instances actually reduced the accessibility of emergency care to the public. Under these circumstances, it should be recognized that current standards must be applied with sufficient flexibility to permit variation in consideration of unique local factors. This flexibility is particularly important while we are seeking to validate standards or revise them on the basis of credible evidence. The pluralism of EMS systems offers an opportunity to assess standards and, perhaps more importantly, an opportunity to investigate new approaches that may have broad application.

Regionalization Early EMS systems usually served single counties or metropolitan areas. These systems rarely included all the resources necessary for optimal emergency care, nor did they make efficient use of the resources they had. It seemed obvious that regional arrangements for the pooling and centralization of resources and for patient transfer and referral, outside of the region when necessary, would improve patient care and system efficiency.

Thus, it has been assumed that managerial coordination of the emergency medical resources of a region is necessary if these resources are to be used to improve the quality of care at reasonable cost. But it is not clear what should constitute a region or who should determine its dimensions and configuration. We do not yet know whether a region should be delineated on the basis of population, of availability of various medical care resources, or of political boundaries. Certainly, the size of an EMS region will depend on these and other factors, such as the kind of service to be provided and the sources of financial support. A region of optimal size for prompt delivery of emergency care may not include within its boundaries all the specialized medical services that may sometimes be needed, but system design should include referral protocols and agreements for such services outside the region. Valid criteria by which the success of "regionalization" can be gauged need to be established. Should they include the size of the area served, the degree of centralization of resource management, the utilization of hospital categorization, the frequency with which patients are delivered to appropriate hospitals, system response times, and the extent of local financial support? It must be kept in mind that of all health services, EMS systems

are the most intensely local, by virtue of their requirement for prompt action.

Planning The overall design of EMS systems has generally been modular. Thus, systems have been specified in terms of components, rather than in terms of functions aimed at meeting overall goals. A rational design for an EMS system requires that form follow function in a planned allocation of resources, related to both the development and the operation of the system. Management considerations need to be built into such planning. It is insufficient to hope that mutual aid agreements among independent components will provide an adequate substitute for management. Rather, it must be recognized early that there inevitably will be political and economic obstacles to the development of any well-designed EMS system. The identification and resolution of these obstacles can be facilitated by the early involvement of all providers and of representatives of the potential consumer public in system planning.

The geographic boundaries of an EMS system must be clearly defined, and arrangements made for use of specialized medical services not available within those boundaries. One system must be designed to interact with others. To provide for service in major disasters, the emergency operations centers of the civil defense program must be properly tied in to the EMS communications system.

The responsibility for medical, as opposed to administrative, management needs to be defined and fixed clearly. It is necessary to determine the level of competence desired in the emergency department staffs and to clarify their accountability. The qualifications of physicians involved in providing advice on prehospital care and in reviewing prehospital treatment must also be determined. The extent to which physician-prepared treatment outlines (protocols) in the hands of an EMT can substitute for direct physician supervision or management over the telephone or radio needs to be investigated.

The 1966 report, *Accidental Death and Disability*..., stated that "the patient must be transported to the emergency department best prepared for his particular problem.... A categorization of emergency departments would serve to indicate the level of care that a patient might reasonably expect." There appear to be continuing political and economic obstacles to the categorization of emergency departments, despite the demonstrated inadequacy of the care often given trauma patients. Hospitals with limited capabilities often fear loss of patients, and thus of income, as well as inability to attract competent house staff. To deal with the political and economic obstacles to categorization, it is necessary to explore its implications for the quality of emer-

gency care, for the costs involved, and for the adequacy of access to that care. Although the capabilities of hospitals are so important that they have a bearing on plans for the prehospital management of patients, the determination of those capabilities is often limited to whether specific equipment and supporting services are available and a skilled physician is on hand 24 hours a day.

Finally, planners must recognize that EMS systems inevitably deal with large numbers of non-emergency patients, and the systems must be designed to do so without diminishing their capacity to deal effectively with emergency patients.

Evaluation Management of an EMS system ideally entails a flow of verifiable data on input, process, and outcome and a means of analyzing those data. At present, most systems still measure performance only in terms of compliance with standards. This approach should be replaced by a data feedback mechanism that would permit midcourse correction through redesign aimed at improving medical outcome and cost-effectiveness. Such a change will require research to establish valid criteria of quality in nearly every aspect of system performance, including cost and accessibility to the public. As a minimum, limited studies should be undertaken to correlate present input and process standards with outcome and to demonstrate the relative merits of alternative approaches to the provision of quality care.

Funding Some economic aspects of system design and operation deserve attention. The question of the relative responsibilities of the federal or state government and of private citizens for emergency care needs to be addressed. Federal and foundation EMS-funding programs tend to assume that the continuing operational costs, such as those associated with central dispatching, maintenance of radio equipment, and training must and should be borne locally. Is there, perhaps, a per capita income level at which this assumption is not valid and at which the provision of prehospital emergency medical care must be supported by outside funds? Given the diversity of economic and social priorities in this country, equality of access to high quality emergency care may be unattainable.

The mechanisms by which EMS systems are funded may affect their structure. Responsibilities and interactions of funding sources should be made explicit, particularly today when federal funding of health services in general is under consideration. For example, plans for the development of an EMS system often neglect to specify how the system will be funded once it becomes operational, and this omission often leads to unfulfilled promises. A solution might be worked out with third party

payers that will provide for the system to be reimbursed for some of the specific costs of prehospital care and ambulance service and for a portion of the overall costs of system operation.

Training In the training of EMTs and paramedics it is generally assumed that "more is better"—from the standpoint of numbers trained, as well as extent of training. This assumption needs to be examined for at least two reasons: the hazard of leading large numbers of people into a career in which employment and advancement opportunities are limited, and the difficulty and cost, in rural areas, of assembling and training sufficient candidates. Each area should try to determine how many EMTs and paramedics it needs. There may well be a point in the development of an EMS system at which expenditures for additional training and recruitment may be less cost-effective than expenditures, for instances, for public education in first aid and accident prevention.

Training courses for EMTs and paramedics require constant validation in the field, to ensure that course content is appropriate to the systems that will use the graduates. Furthermore, the extent of training of EMS personnel should be evaluated not in terms of hours of instruction completed but in terms of knowledge and skills acquired and retained.

Given the great variety of EMS systems, the identification of an appropriate level of training for central medical dispatchers is a problem.

Early reports indicate that widespread training of the public in first aid—as "first responders"—can achieve significant results in reducing mortality. This approach requires an extensive public education effort.

Legal Considerations With the widespread growth of paramedic programs throughout the country, numerous questions have arisen about the potential liability of the physicians, nurses, paramedics, and hospitals involved in such programs. However, there has not been a rash of litigation involving emergency personnel, nor does it appear likely that there will be. Judges and juries will probably continue to appreciate the enormous pressures placed on emergency personnel working under crisis conditions. As long as paramedics are well trained, are acting within the scope of their training, and are supervised by physicians and nurses under previously developed protocols, and as long as patient care is subject to physician review there is not likely to be a significant expansion of legal risk. In the light of experience to date, the possibility of legal liability should not be a significant barrier to the development of paramedic programs.

The increasing use of nonphysicians in emergency care has raised

additional questions about the appropriate credentialing approach to assure a minimum level of quality of such personnel. A national certifying examination should be developed for paramedics similar to that developed by the National Board of Medical Examiners for the "assistant to the primary care physician." Once validated, this examination could be used by states and localities in lieu of separate licensure requirements.

Access The progress detailed earlier has been aimed at increasing the availability of appropriate emergency care. The extent to which those in need have access to that care and avail themselves of it still leaves something to be desired. Even in some areas with good EMS systems, there are still segments of the population that do not have ready access to the services. This may have a variety of causes. Excessive distance from a hospital or from ambulance service is an obvious factor. Inadequate communication is another. In rural areas and on highways the lack of telephones or adequately distributed call-boxes might be overcome by the establishment of a citizen's band (CB) radio network. Within inner cities the only alternative appears to be the toll-free public telephone access. Certainly, public attention should be directed to the establishment, where feasible, of 911 as the single emergency access number. Another aspect of communications is the frequently overlooked inability of the non-English speaking members of the community to express their circumstances or comprehend instructions. The deaf and the disabled require special access facilities. Unfortunately, there are also areas in which constraints on the providers limit public access to emergency care. Ambulance personnel are often reluctant to enter high-crime areas of a city, and, in some systems, ambulance services and hospitals are reluctant to undertake the care of those known to be unable to pay for services rendered. Special provisions for addressing these problems should be included in the design of any EMS system.

Conclusions

It seems clear that the simple addition of dollars for implementation of EMS systems around the country will not necessarily result in satisfactory quality of care, and access to that care, at reasonable cost. The attitude toward EMS has changed since 1967 from a lack of awareness, which our predecessors appropriately called "neglect," to a lack of knowledge with which to deal with the complexities and pitfalls that have arisen. Thus, the Committee finds EMS in the United States in midpassage, urgently in need of midcourse corrections, but uncertain as to the best direction and degree. Accordingly, the Committee strongly

recommends increased expenditure on research and evaluation directed both to questions of immediate importance to EMS system development and to long-range questions. Without such investment, there can be no reasonable assurance that implementation dollars will be well spent or even that overall goals will be properly identified and met. However, the progress already made suggests that with the answers to these questions, we may well achieve appropriate levels of emergency care for the population at large. The question of withholding further federal support for EMS development pending evaluation of the effects of past investments, was raised in an investigative report to the Committee on Appropriations of the U.S. House of Representatives.* The report also questioned the responsiveness of EMS research to the needs of EMS systems. These are critical concerns, but the actions they imply must be very carefully considered.

It is of utmost importance to continue the orderly development of emergency medical care in the United States, while information is being sought to optimize the investments aimed at the specific needs of a great variety of local and regional EMS systems. This will require continuation of federal assistance. However, the requisite information cannot be obtained without carefully designed systems research and evaluation.

It is misleading to say that federally-sponsored research to date has been "unresponsive" to EMS needs.† Actually, the findings of such research have only recently begun to appear and there has been little opportunity to explore their applicability to EMS system needs. Many of the EMS systems are so new and so seized by the pangs of growth and conformity to federal requirements that they have had little time to examine the potential value of the research findings on EMS. It would be unfortunate to proceed in EMS development without adequate investment in both short-term research, to address specific questions raised by system managers and emergency personnel, and long-term research to address basic problems of medical and social decision-making. The short-term research is that targeted at first-order effects, i.e., the immediate impacts of alternative methods of operation on the efficiency and effectiveness of the emergency system. The long-term research explores such problems as opportunity costs and the overall evaluation of the effects of changes in EMS on the health of the community.

*Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives, Ninety-Fifth Congress Second Session, Part 2. *Report to the Committee on Appropriations, U.S. House of Representatives, on Emergency Medical Services in the United States.* Surveys and Investigation Staff. February, 1978, p. 277.
†*Ibid,* p. 250.

Without adequate investment in both types of research, EMS in the United States will be in the same position of uncertainty a generation hence as it is today.

Recommendations

System Design

The design process should begin with a definition of system goals, given the political and geographical limitations within which the system must operate and the resources available for system development. The second step is to determine how the system should interrelate providers, physicians, political entities, and the public. System components can then be selected with a view to facilitating these relationships and achieving the specified goals. No recommendation to adopt a system component should be made without reference to its interconnections with other components of the system.

The design process should envision a continuing cycle of reassessment and adjustment, based on a flow of information from system components to management.

The EMS community should accept as legitimate the participation of the political processes in the system design cycle; it should be aware that it is, in fact, providing another social service, albeit a dramatic and highly technical one.

Quality Assurance and Assessment

Individual EMS facilities and providers, as well as the lay community, should be involved in the setting of quality assessment standards that are specific to local conditions.

Design for EMS evaluation should permit detection of the effects of individual components and activities on the quality of service.

Quality-control data should be collected on a continuing basis and should reflect an integrated sampling of information from all elements of the system.

Highest priority should be given to the establishment of a feedback mechanism that will identify the best ways to improve system performance.

Quality control responsibility should be placed with a regional body that is able to effect system improvements.

System Management

Whatever its structure, the management organization must have a secure financial base, if it is to provide those system elements—such as administration, dispatching, communications, and training—that are not usually covered by user charges; it must have the authority to control the use of emergency ambulances in its service area; and it must have the ability to effect improvements in system components.

Economics

Initial planning for EMS systems must recognize and deal with the need for funding beyond the developmental state.

An effort should be made, locally and nationally, to update third party insurance coverage to include all the costs of EMS.

Legal Aspects

To protect the public, all states should enact comprehensive legislation assuring the basic quality of ambulance services, and this should apply equally to all ambulance providers, no matter how organized, managed, or financed. Such legislation should include the designation of a lead agency (such as the state health department) as having authority to set standards and adopt regulations, the provision for statewide and regional EMS advisory councils, and the appropriation of adequate funds to enforce such standards.

The development of advanced life support programs should be facilitated through the enactment of flexible legislation that permits paramedics to function under remote supervision by physicians (or specially trained nurses) as part of carefully monitored and evaluated programs.

Regionalization and Categorization

Regional EMS planning should include the establishment of acute care registries, of uniform ambulance and hospital records for patient tracking to allow for assessing the impact of regionalization on health outcomes, and of arrangements with hospitals outside the EMS service area for specialized services not available in the area.

Studies are urgently needed on the impact of hospital categorization both on health-care delivery and outcomes and on hospital economics.

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State and regional health authorities should seek to develop service tradeoffs among hospitals to offset the perceived economic threat of categorization. Authoritative criteria and methods of categorization need to be established.

Communications

The universal emergency telephone number, 911, should be installed wherever possible—lacking that, a single EMS number should be established, identified on public telephones, and widely publicized.

Central medical emergency dispatching (CMED) should be seriously considered, but the dispatching facility should be designed to meet the specific requirements of its region.

Greater effort should be expended on the coordination of EMS communications on an areawide basis; this would be enhanced by technical assistance from state or federal sources.

The communication system should provide for the collection of data that will allow linkage of patient records that are essential to continuing evaluation of the effectiveness of the service.

A handbook, setting forth telecommunication requirements and guidelines for the staffing and operation of emergency communication centers, is needed.

Transportation

The operational effectiveness of design criteria for EMS vehicles should be reexamined every 3–5 years.

Until vehicle design criteria and standards have been validated, they should be applied with a measure of flexibility.

Manpower and Training

Efficient distribution of EMTs and paramedics in a given system should be determined on the basis of the expected frequency of life-threatening emergencies that require advanced care, the assumed capabilities of EMTs with various levels of training, and relative costs of teaching and maintaining the skills and knowledge involved.

Well-designed coordinated studies, using adequate samples of patients in comparable settings, should be undertaken to determine the relative effectiveness of advanced emergency care provided under a set of es-

tablished procedures (protocols) *vs.* that provided under direct physician guidance by voice communication and telemetry.

The competence of individual EMS personnel should be evaluated on the basis of observed performance in actual or simulated circumstances, rather than in terms of hours of formal training completed.

Greater effort should be devoted to public information and education programs aimed at increasing the number of lay persons in the community who are competent in first aid and emergency care.

Public Education and Information

Public information and education programs should be considered essential parts of the planning and operation of an EMS system. These programs should be keyed initially to the development of understanding of the service, and of support for it; once an EMS system is established, to assessment of public understanding of and participation in the activity; and, in older systems, to the maintenance of interest and enthusiasm.

EMS System Design

EMS, like other services, is concerned with questions of who gets what, how, at what cost and under what auspice. This section attempts to impose some order on these questions by assuming a system design hierarchy that includes the design of system components, their interrelations, and the goals of the system. It stresses the interdependence of the three levels of system design, and the importance of proceeding in a "closed loop" or self-correcting fashion. The system design process should be one of successive approximations to an ideal, one which does not end with initial planning but is continuous and evolutionary.

A number of system design questions confront EMS planners today. Should advanced or basic life support be the major element of prehospital care? Which hospitals should be designated to receive the most critically ill patients? Under what circumstances should air ambulances be purchased? How can information on system performance be fed back effectively to those providing services? Can telephone screening be made to substitute safely for expansion of ambulance fleets in the face of rising demand? Should EMS be provided at public expense, or should user charges be levied?

In a real sense, these questions and others form an agenda created by the progress in EMS made since the 1966 report was issued. The major public and private initiatives in EMS in the last decade have exposed uncertainties about the best way to provide emergency medical care at the same time that they have stimulated and channeled our energies and resources. Responding to the urgency of the problem of reform of EMS, the nation moved to establish and upgrade EMS systems on the basis of the best clinical, technical and organizational judgments. Having established this momentum, it is proper now to review these judgments in the light of recent experience. We should capitalize on the movement in the EMS field, being careful to avoid uncritical allegiance to our first cuts at EMS system design. Our initiatives have left us more certain of some aspects of system design and less certain of others; this report attempts to consolidate both our new knowledge and our new uncertainties.

The word "system" has been used and misused so often that it stands in danger of losing a precise meaning. We present below both a definition of "system" and a way of organizing the major issues in EMS system design. This perspective on EMS system design is by no means the only one possible, but it may help us to avoid thinking of systems in terms of component checklists and show us how our questions of system design are related to each other.

A system consists of a set of *elements*, and the *relationships* among them by which they are assembled to achieve certain *goals*. The critical elements of an EMS system are its people, its technology, and its knowledge base. "People" includes patients, clinical providers, and support personnel (in administration, planning and research). "Technology" includes facilities, communication and transportation equipment, and clinical apparatus. "Knowledge base" consists of diagnostic and therapeutic protocols, their scientific underpinnings, and management expertise. The critical relationships in an EMS system concern flow of patients, coordination with other emergency services, information and funds. The goal of an EMS system is to reduce death, disability and discomfort in time-critical emergency illnesses and injuries.

In recent years, these three aspects of EMS systems have been the subject of critical scrutiny. The concern has had a natural progression over time. First, the elements of EMS were criticized. Inadequate training and inadequate equipment were highlighted as targets for reform. Standards for training and vehicles followed. Then it was recognized that the anticipated improvements attendant on the use of higher quality elements would be minimal if their relationships were not carefully coordinated and controlled. Communication and categorization strategies followed. Finally, as national activities under the EMSS Act were assessed and renewal was at issue, there was concern that the goals of EMS systems be assessed with reference to relative costs and relative priorities among social programs. We are left today with a backlog of unanswered questions about the design of EMS systems.

How these questions are to be answered depends on the most basic concepts of "system." Some involve choices among possible elements of a system. For instance, system planners should not seek to resolve the question of whether to use very high frequency (VHF), ultra high frequency (UHF), or a combination of the two solely on the technical merits of each, but should deal with them in terms of expediting patient care and delivery, facilitating communication with other emergency resources, coordinating with neighboring systems, and maintaining compatibility with state planning. In an ongoing system, it should eventually become possible, through analysis of data from component evaluations, to reach rational decisions on, for instance, the relative merits

of additional funding for public education or for a more sophisticated address locater. This assumes the existence of a body which can analyze data from system components and implement appropriate system modifications.

Such analysis focuses on the relationships among elements. These relationships distinguish system design from component design and may usefully be approached by the tools of systems analysis, provided that the design problem is properly framed, with agreement on the boundaries of the problem and on the goals by which alternative system designs can be evaluated.

Optimization of component relationships presumes a set of goals that give form to the problem of system design. The goal-setting activity carries the problem of EMS system design farthest from the EMS community itself; with each level of design activity, the participation of "outsiders" becomes more useful and more legitimate. It is at the level of problem framing and goal setting that fundamental decisions are made to determine "how much is enough" in EMS care, where the boundary lies between public and individual responsibility for the prevention of and response to emergencies, and whether rural populations are entitled to equal access or only to equal funding—and in general to confront the nontechnical issues of judgment that form the basis for later design activity. Just as components of systems cannot be properly evaluated without reference to their intended interconnection, neither can the dynamics of system operation be assessed without reference to the boundaries and goals that fundamentally govern design.

We have described three levels of a hierarchy of system design activities: evaluation of components, analysis of relationships among components, and problem-framing and goal-setting. We have noted that the recent history of EMS in the United States has been marked by critical inquiry that has progressed upward in this hierarchy, until today the EMS community is confronted with a number of major questions, which range from evaluation of specific emergency care techniques to the relative value of investments in EMS or in other social services.

There is some value in addressing these questions within a general framework of the design of any service delivery system. For any such system, the designer must determine *who gets what, how,* at what *cost,* and under what *auspices*. The major issue in the question of who receives service concerns the treatment on nonemergency patients, who constitute the majority of those treated in an EMS system. Questions of what is provided to the clients of the system concern the timing, intensity and standardization of service, and such questions as whether to provide basic or advanced life support. How the service should be provided concerns such issues as the use of nonphysicians in emergency

departments and the establishment of hospital categorization schemes. Issues of cost include not only the absolute amount of resources to be committed to EMS, but also their distribution: What is a fair contribution from local, state and federal sources? Does equity require equal expenditures per capita for various subpopulations, such as rural and urban, or does equity require equal access, which implies unequal expenditures per capita to overcome inherent disadvantages (such as travel time in rural areas)? Questions of auspice include those of the proper role of voluntary activity in EMS, of the role of superspecialized centers of definitive care, of dedicated *versus* general purpose (police, fire) services, of separate departments of emergency medicine *versus* the inclusion of emergency rooms within general departments of outpatient care, of locally-controlled block grants *versus* categorical federal funding, and of loose municipal confederations *versus* strong regional authorities.

Asking "who gets what, how, at what cost and under what auspices" helps to organize the major concerns of EMS system design, as it does for many other social-service delivery systems. Most of the questions about what treatments to provide and some of the questions about how to provide them tend to be questions of the first level of the hierarchy of design activities: i.e., they involve comparisons of system components. The question of *how* to provide service tends to be a question of the second level of the hierarchy—i.e., how to relate components. And questions of who gets care at what cost and under what auspice tend to be questions of the third level of the hierarchy—problem-framing and goal-setting.

The relation of these questions to the heirarchy of system design activities is intended to clarify the process by which they might be answered. An answer to a question of component comparison must be interpreted in the light of system relationships; an answer to a question of component relationships must be interpreted in light of systems boundaries and goals, identified by the political processes that define societal concerns and commitments. This implies that, in the initial design of an EMS system, political participation is essential; basic decisions regarding the geographic, financial, qualitative, and administrative dimensions of the system are essentially political decisions. Only with political participation and defined commitment can EMS planners guard against starting something that they may be unable to finish.

Any strategy for responding to one of the questions confronting the EMS community should locate that question in the hierarchy of design decisions, and then range across the hierarchy of design decisions in assembling an answer. A good process of system design should have the following properties, which are often lacking in current practice:

- The design process should demand high standards of evaluation of system components.
- The available tools of systems analysis should become commonplace in the system design process. No recommendation to adopt a system component should be made without reference to its connection with other components in a system. However, no systems analysis should be regarded as a unique, definitive solution to the design problem.
- The EMS community should accept as legitimate the participation of political processes in the system design cycle. The EMS community would do well to remember the similarities of its problems to those of other social service delivery systems. Indeed, those providing EMS should be aware that they are, in fact, providing a social service, albeit a dramatic and highly technical one.
- The design process should begin with definition of the goals of the system, given the resources available. Once these are established, it is possible to address the relationships among providers, physicians, political entities, and the public that are necessary if the system is to succeed. With this groundwork laid, planners can determine which kinds of system components will best facilitate the chosen relationship and achieve the chosen goals.

One final argument should be presented about the nature of the design process in EMS. The process should recognize the critical role of organizational intention in good design and should be alert to the signs of organizational commitment to improving the delivery of services. Just as we know that EMS cannot eliminate mortality from accident and illness, so we know that EMS system design cannot eliminate imperfection in the structure and functioning of the system itself. We should recognize the inevitability of error in prediction of performance and adopt "closed-loop" strategies that accept—even insist upon—a continuing cycle of assessment and adjustment. To design better EMS systems, we must be willing to change systems, rejecting rigid notions of orthodoxy in system design and cultivating an openness to reform. Institutions which resist continual inquiry into their effectiveness will inevitably resist experiment and analysis. Conversely, institutions that intend reform for themselves will inevitably provide fertile ground for experimental and analytic activities: they will spontaneously develop information systems, however crude, to track their own performance; they will spontaneously alter, however haphazardly, the manner in which they provide services to improve their own performance; they will be self-aware and self-confident; they will benefit from systematic attempts at design; they will even develop a systemic consciousness,

which permits them to empathize with institutions elsewhere in the EMS system. A good deal of work remains to perfect the techniques of experimental design, evaluation, and system analysis, but it should be recognized that efforts should be made to learn how to help EMS institutions reach this level of commitment to continual reform.

Conclusions and Recommendations

We are left today with a backlog of unanswered questions about the design of EMS systems. If these questions are to be answered correctly they must be answered within the context of the system concept—and the answers must be based on valid data.

The design process should begin with definition of system goals, of the limitations within which the system must operate, and of the resources available for system development. One should then determine the appropriate relationships among providers, physicians, political entities, and the public. System components should then be selected with a view to facilitating these relationships and achieving the specified goals.

The EMS community should accept as legitimate the participation of political processes in the system design cycle; it should be aware that it is, in fact, providing another social service, albeit a dramatic and highly technical one.

No recommendation to adopt a system component should be made without reference to its interconnection with other components of the system—this can be facilitated by the use of systems analysis techniques.

The design process should demand high standards for evaluation of system components—not relying on anecdotal and nonexperimental evidence.

The inevitability of error in prediction of performance should be recognized, and system designers must contemplate a continuing cycle of assessment and adjustment.

Quality Assessment and Assurance In EMS Systems

The mechanism for self-correcting evolution is one of quality assessment and assurance. This section reviews the status of quality assessment and assurance in EMS and notes serious deficiencies in both concept and execution. The deficiencies lead to recommendations of four kinds. First, "standards for standards" are offered, to improve the quality of guidelines. Second, particular research designs are advocated to improve the quality of evaluation studies. Third, routine but selective data collection is urged to sustain quality assessment and assurance as a continuing activity. Fourth, because it is recognized that the choice of institutional auspice for quality assessment and assurance programs is crucial but that the best choice is not obvious, it is recommended that attention be devoted to this issue.

Quality assessment asks whether a given system component, medical technique, or system modification is beneficial in terms of medical outcomes, and can lead to the setting or the reevaluation of standards. Quality assurance asks whether these things are being used properly, comparing their use with some predetermined standard. Quality assurance may include the management function of ensuring that performance meets standards. An NAS report, *Assessing Quality in Health Care: An Evaluation* (November 1976), delineated the following characteristics of an ideal quality assurance system.

> ... the existence of an organizational entity created for assessing quality, the establishment of standards or criteria against which quality is assessed, a routine system for gathering information, assurance that such information is based on the total population or representative sample of patients or potential patients, a process for providing the results of review to patients, the public, providers, and sponsoring organization, and for instituting corrective actions.

Taken together, quality assessment and quality assurance constitute powerful tools for planning and managing EMS systems and individual

facilities, not merely retrospective mechanisms for assessing effectiveness. Thus, quality assessment can be regarded as a continuing survey to identify the kinds of service needed in a community. It can also serve as a consensus-producing process whereby localities determine their program expectations and whether they are being met. Quality assurance provides routine and significant feedback for the system and facility so that needed corrective actions can be taken.

Because quality assessment and assurance are normative activities, it is well to review the categories of performance norms before addressing the key issues in quality assessment and assurance.

The evaluative norms, like all program standards, may refer to input, process, or outcome criteria. Input standards deal with the presence in the EMS system of resources specified by expert groups as necessary, such as ambulances with 54 in. headroom, a burn center, and the use of 911 or a single EMS access telephone number. Input standards are readily available, precisely defined, and easily and inexpensively measurable. Many input standards are incorporated in and therefore mandated by state laws and local ordinances. Compliance with input standards is not, in itself, a valid indication of effectiveness in an EMS system. Input standards relate only to the availability of a resource item, not to its affect on a patient's clinical course.

Process standards deal with the use of resources and the appropriateness of that use. Thus, emergency departments may be characterized by patient waiting time, ambulance systems by response time, and entire EMS systems by the proportion of patients in need of a service who actually receive it. Process standards are expensive and time consuming to use, because they require data not only on the existence of a resource but on its use. Although process standards focus specifically on particular aspects of the EMS system (in contrast with some outcome measures that are aggregate indicators of the entire system), compliance with them does not necessarily correlate with improved clinical course. Process standards are based on degrees of utilization established as appropriate for given circumstances; but they are exceedingly hard to establish with any degree of consensus. For example, is 10 minutes an appropriate ambulance response time in urban areas? Should trauma patients go only to trauma centers? Does a centrally dispatched ambulance system produce better outcomes than a multiple-dispatch system? Process standards, however, are more useful than either input or outcome standards for identifying what is wrong and what needs to be changed.

Outcome standards deal with changes in the health status of a patient or population that are attributable to a change in the provision of emergency care. It is important to note that outcome evaluation is more

than merely measuring health status at some point after the patient's encounter with the EMS system. It is the attribution of a known and measurable change in outcome to a change in the quality of EMS by controlling for and excluding all other influences on outcome. This, of course, calls for an ability (not now available in all diagnostic groups) to measure one factor independently and to control for other factors that affect outcome. These factors include such environmental variables as speed limits and automotive and highway safety design and such patient characteristics as age, comorbidity, general health status, and, most importantly, the severity of the illness or injury in question. Although outcome measures are ultimately the most important test of effectiveness, grave difficulties are associated with their use. The data are expensive to collect and hazardous to interpret. Baseline data may be unobtainable. Nonfatal outcomes are not easily conceptualized and are even less easily defined and measured, and fatal outcomes are often insensitive to program changes. In most EMS systems, injury classification by type and severity will result in numbers too small to be statistically significant. Also, because the EMS system is less a single input-process-outcome sequence than a sequential set of such patterns in which the outcome of one EMS subsystem (ambulance) is the input to another (hospital emergency department), it is difficult to think of a single outcome attributable to the entire system. Therefore outcome evaluation runs the danger of being unable to specify causality with any precision in the sense of identifying the subsystem interaction responsible for the outcome. This is not to say that outcome assessment should not be undertaken, but rather that outcome measures, if not carefully dealt with, might lead to a conclusion of "no change" only because the subsystem effects are canceling each other out. There are situations, nevertheless, in which a net effect can be reasonably interpreted on the basis of detailed knowledge of the subsystems and the use of well-structured hypotheses.

One approach to data analysis might be as follows:

- Study the outcome effect of a process in a controlled sample. For instance, in King County, Washington, it has been found that bystander-initiated CPR has significantly increased the survival rate in heart attacks.
- The results of such a study can be used as a standard: e.g., it can be determined that training of X% of the population in CPR results in Y% reduction in mortality from heart attacks.
- It is then possible to study and define the input—training, equipment, and strategies—that made the output possible.
- Thereafter, a process measure (the proportion of the population trained in CPR), weighed against a determined optimum, can serve as a

rough index of program success, rather than the more difficult and costly outcome measure.

Other approaches are possible, but this one has the advantages of economy, applicability, control, and exportability.

Key Issues

1 Standards for Quality Assessment and Assurance

Given the importance of evaluative standards to the evaluation process, it is clear that the standards to be used should themselves meet some criteria. The following eight criteria are offered for this purpose.

- Standards should be precisely defined and measurable. It is insufficient to say that a hospital emergency department or a critical care unit should have "an adequate number of appropriate personnel" without defining the terms "adequate" and "appropriate." However, the specification that an adequate response time for an ambulance system is one in which "95% of cases are responded to within 10 minutes in urban areas and 30 minutes in rural areas" is precise and measurable.
- Standards should represent an expert consensus, systematically arrived at, on a preferred, reasonably attainable state of affairs. Thus, a program evaluator should avoid imposing his or her own standard or a standard arbitrarily arrived at or plucked out of the literature on an evaluative design. Similarly, ex cathedra pronouncements by single individuals, however eminent, should not be regarded as acceptable standards until there has been consensual validation.
- Evaluative standards should refer to variables that have a strong presumptive relationship to health-status outcomes.
- Standards should pertain to relevant and controllable system variables so that the information that an EMS system does not comply with a particular standard can be used to effect program changes.
- Standards should be sufficient in number and diversity to constitute a comprehensive and representative evaluation of the EMS system under review. Many evaluative standards suffer from the assumption that what is true for one standard or tracer is true of all, by extension rather than by actual measurement.
- Standards should be usable to assess needs, to tell an EMS system what improvements should be made, and to provide a baseline set of measures, in addition to their evaluative use in determining what changes have resulted from which program interventions.

• Evaluative standards for EMS should be locally credible and acceptable. They should represent criteria that local providers, administrators, planners, consumers, and elected officials are willing to accept as a test of their system's effectiveness; and they must be developed in conjunction with local providers, not imposed by an evaluator in isolation. It is very important that the evaluator assume the role of facilitator to enable a community to see whether its expectations are being met, and not the role of an expert applying his or her own standards.

• EMS criteria should be concerned with instances in which the system is not used, as well as with instances in which it is used. Thus, although there has been concern with characterizing emergency department and ambulance utilization as clinically justified or not, there has been scant attention to unmet needs and their life-threatening consequences.

2 Research Designs for Evaluation

Research designs for EMS evaluation should be carefully constructed. The use of control groups is especially recommended. The designs should allow statements about the relative effectiveness of single interventions as well as of the system as a whole. Inasmuch as changes in an EMS system often cannot be treated in isolation but only as part of a complex set of interactions, multivariate analysis, perhaps entailing use of logistic models for testing hypotheses, may be needed. Population-based statements about changes resulting from EMS intervention should be provided. Research designs should control for exogenous influences on the impact measures, so that rigorous statements can be made about the association between EMS changes and improved health outcomes.

3 Routine Data Collection Systems

Any adequate quality assessment and assurance system requires routine data collection procedures that provide data that are analytically and evaluatively important, can be accurately and comprehensively collected, and impose the least necessary burden on emergency medical personnel. In contrast, the present arrangements for quality assessment and assurance in EMS are often based on "one-shot" surveys, rather than routine data systems, and are thus vulnerable to sampling error and seasonal fluctuations. Data collected by means of reporting forms completed by dispatchers, ambulance attendants, and hospital emergency departments and critical care units are not well integrated with each other and often contain an excessive number of items.

Data collection systems rarely require a 100% sample. What is im-

portant is that the data collection should be systematic and uniform, and that the sample be representative and of appropriate size for a given study. Studies of "tracer" conditions present one approach, but care must be taken, lest the tracer conditions chosen turn out to be unrepresentative.

4 Organizational Entity for EMS Quality Assessment and Assurance

A key issue is identification of the organizational entity most appropriate for undertaking quality assessment and assurance studies and for initiating corrective actions. Although there is little evidence that EMS quality assessment and assurance systems have measurably improved the process and outcome of health care, this probably reflects an inability to identify an appropriate regional authority with the capacity to perform studies and implement change based on them rather than any inherent deficiency in quality assessment as an approach. Indeed, it is not entirely accepted that quality assessment and assurance in EMS is a function both of individual facilities and of the overall regional system. This committee takes the view that quality assessment and assurance should be performed at both levels.

Similarly, it is not reasonable to assume that merely performing a quality-assessment study and disseminating the results will lead to needed changes or that system recommendations for changes in individual facilities and jurisdictions will be rapidly or willingly implemented. In both the individual facility and the system, mechanisms must be created whereby corrective changes can be instituted. This is, of course, part of the more general problem caused by the lack of an effective regional EMS authority to which component jurisdictions and facilities have ceded important resource allocation and quality-control functions. Because quality assessment and assurance are integral aspects of regionalization, the early delineation of *suitable regional bodies able to perform these functions* is a high priority.

Conclusions and Recommendations

Taken together, quality assessment and quality assurance constitute powerful prospective planning and management tools for EMS systems and individual facilities—yet it is apparent that over the past decade they have received insufficient emphasis. Many standards have, perforce, been established without valid evidence that compliance with them results in the greatest benefit to the patient. Standards have often

been imposed without regard for specific requirements and characteristics of a given region. Research designs for the assessment of quality standards have been weak, in that they have tended to monitor such broad activities that it has not been possible to isolate the factors responsible for changes in EMS outcomes. The collection of data for quality control is often done on a "one-shot" instead of a continuing basis, and where the latter is used, data from the various elements of the system are often not properly integrated. Efforts to correct identified deficiencies are often futile because of the absence of a properly constituted authority in the system. In many systems, there is no feedback of quality control data to the operating elements.

Individual EMS facilities and providers, as well as the lay community, should be involved in the setting of quality assessment standards, and those standards should be specific to local conditions.

Designs for EMS evaluation should permit detection of the effect of individual components and activities on the quality of service.

Quality-control data should be collected on a continuing basis and should reflect an integrated sampling of information from all elements of the system.

Quality control responsibility must be placed in the hands of a regional body that is able to improve the system.

Highest priority should be given to the establishment of a feedback mechanism that will identify the best ways to improve performance.

System Management

The openness of an EMS system to quality assessment and assurance will depend very much on the extent to which all participants feel themselves to be members of a team, on the attitudes of the system managers, and on the form of the organization.

Insofar as management implies authority, responsibility, and accountability, many organizations operating EMS systems find themselves in the role of coordinator rather than manager, in that the system is composed of a variety of organizations, each with its own authority and responsibility. This presents obvious problems in maintenance of quality control and efficiency of resource management. Perhaps no system, except one in which a region's only hospital operates the ambulance service, can control all the major emergency care resources of an area. But many systems have developed effective management of the prehospital phase.

There appear to be three principal routes by which this has been achieved: through voluntary but binding delegation of authority in specific sectors, chiefly dispatching and quality control, by the providers to the management organization; through operation or managerial control of the system by a government agency; and by assuring a virtual monopoly to a single ambulance service under firm government regulation. The first route implies provider participation in EMS planning, a strong public education campaign, and strong organizational and medical leadership. The latter two imply commitment and willingness to exercise authority by the concerned government agency.

Key factors in successful EMS management are funding, dispatching, and quality control. The management organization must have a secure financial base if it is to provide those system elements—such as administration, dispatching, communications, and training—not usually covered by charges to users; it must have the authority to control the use of ambulances in its service area; and it must be able to effect improvements in system components. The economics of EMS systems is discussed later. Central dispatch has been achieved by a variety of

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means, ranging from persuasion, through contracts with providers, to government directive. Quality control, requiring the ability to make changes where needed, on the basis of analysis of information from system components, has been formally instituted by few systems. Informal quality control is practiced at many projects through conferences between emergency medical technicians or paramedics and emergency department personnel, through feedback of ambulance form analyses to squads, or through user surveys.

EMS management organizations range from citizens groups, such as EMS committees, to city, county, intercounty, or state governments. It seems clear that no particular organizational form enjoys a monopoly of managerial virtues. Tax supported systems have a good potential for survival, but need to guard against undue subordination to police and fire departments and are vulnerable to changes in political administrations and priorities. At the other end of the scale, EMS committees functioning as system managers are likely to be sensitive to public needs and to have a strong medical component, but are often short of funding and authority. Most systems represent a mix of the public and private sectors. In many rural systems, EMS committees gain strength through appointment of their members as representatives of local government units; and many tax-supported systems have incorporated EMS or medical advisory committees into their management structure. Some systems, in which county governments have specified in detail the kind of EMS system they wished and have then contracted with private ambulance companies to provide the services, have been pleased with the results.

Medical Management

"Medical management" in EMS means the direction of patient care by a physician located either at a base hospital or elsewhere remote from the ambulance attendant and his patient. Whether this direction is given by voice communication, with or without such adjunctive devices as telemetry, or indirectly by protocol, the final authority and responsibility for patient care rests with the supervising physician. The ambulance attendant uses the skills in which he was trained, and the physician aids in interpretation of the findings and gives verbal orders for procedures and medications.

Some degree of indirect medical control, through use of treatment protocols that are, in effect, standing orders, is commonly practiced. The protocols indicate the circumstances and conditions or findings which permit use of specified procedures and medications without voice

communication, and they may specify others that require direct orders of a physician.

It is not certain at this time what degree of authority or responsibility it is appropriate to delegate. More studies are needed on the continued performance of learned skills, on whether life saving skills are misapplied, on whether early intervention is worth the risk, and on whether time and distance from definitive care should be the factors that determine which skills and medications should be used by field personnel with and without voice control by a physician.

As a safeguard against failure of communication or unavailability of an appropriate medical advisor, dispatchers and EMTs should be trained to a degree that allows them to act independently with the aid of sound protocols (subject to case review by physicians). In areas where the workload is insufficient to ensure the maintenance of skills in-service training sessions should be planned. Dispatchers should be prepared to offer advice to callers and make appropriate decisions on the disposition of calls; and EMTs should be prepared to take command at the scene of an emergency without mandatory reliance on remote physician control.

Conclusions and Recommendations

The receptivity of an EMS system to evaluation and reform depends on the extent to which all participants feel themselves to be members of a team, on the attitudes of the system managers, and the form of the organization. EMS organizations which find themselves in the role of coordinator rather than manager face obvious problems in efficiency of resource management and in maintenance of quality control. Effective management has been achieved in many cases through voluntary delegation of authority by providers to a management organization, operation or control of the system by a government agency, or provision of a virtual monopoly to a single ambulance service under firm government regulation.

Whatever the structure, the management organization must have a secure financial base, if it is to provide those system elements—such as administration, dispatching, communications, and training—that are not usually covered by user charges; it must have the authority to control the use of ambulances in its service area; and it must have the ability to effect improvements in system components.

Economics and EMS System Design

This section discusses the economics of EMS systems with particular reference to the interplay between the financing of the system and the system's goals. It reviews the types and magnitudes of EMS expenses and typical methods of funding, and points out that the programmatically appealing concepts of improved prehospital care and systematic organization of services are seriously threatened by traditional financing arrangements.

One of the major findings of the recent study by the General Accounting Office* was that permanent financing for EMS administrative and operating costs that were initially supported with EMS grant funds constitutes a serious problem. Typically, initial interest in most communities focuses on planning and implementing service improvements, particularly those for which federal or other grant programs can be tapped. Active interest in longer-term financing for continued operation tends to surface only as the end of developmental funding draws near. Thus, the process of EMS system design is unbalanced, with serious consequences when external funds are withdrawn.

System Costs

For the purposes of this discussion, EMS costs can be related to four major system functions: pre-hospital care, hospital care, communications, and management. The costs of EMS are influenced by many factors and can vary substantially from community to community. System structure, size, and sophistication and community characteristics are important costs determinants in most cases.

The operation of ambulance services typically accounts for 20% to 30% of total EMS system costs. Personnel costs account for the largest portion of ambulance service costs—often as high as 75%—but they

**Progress, But Problems in Developing Emergency Medical Services System.* Report to the Congress of the Comptroller General of the United States, July 13, 1976.

may vary widely with staffing arrangements (e.g., fulltime *vs.* volunteer personnel) and qualifications. Administration of ambulance services averages about 10% of their costs, but varies with the nature of the organization and the management activities undertaken (e.g., data processing and evaluation). The costs of equipment, training, and space depend largely on the type and sophistication of the services provided.

The burden of fixed costs (those incurred regardless of the number of runs made) and the resulting impact of underutilization are most apparent in prehospital EMS services, especially in rural regions. Substantial fixed costs contribute to the greater expense of maintaining an adequate capacity for ambulance response in sparsely populated areas. Per capita costs generally reflect a strong inverse relationship to population density: they increase greatly as distance increases and the number of runs decreases.

The communication associated with EMS may account for as little as 2% of total EMS costs where costs are shared with other public services or as much as 35% in rural areas, where extensive communications networks are maintained solely for EMS purposes. Significant economies can be achieved where police, fire, and ambulance communications are combined. Factors influencing communications costs include the sophistication of the equipment in use and the degree to which dispatching is centralized, to permit most efficient use of personnel and equipment.

The costs associated with system management vary with the range of management functions performed. Public-information programs, system planning and evaluation, legislative liaison, and fund-raising are a few of the activities that might be included in system management. In the carrying out of these functions costs may be incurred for a regional coordinator or EMS council staff, for consultation, and for office, travel, and data processing services. Management generally accounts for only 1%–2% of total EMS costs, with a tendency toward higher costs in early stages of EMS system development.

Funding Sources and Approaches

It is often useful to distinguish between two types of funding for EMS systems. *Developmental,* or grant, funds have been made available by the federal government (principally DHEW and DOT), by state governments, and by private foundations (especially the Robert Wood Johnson Foundation) for such "startup" activities as system planning and organization, equipment purchases, and personnel training. *Operational* funding, on the other hand, is directed toward the expenses of system

operation, which continue long after developmental funds have been expended to get an EMS program started.

There can be little doubt that developmental funding programs over the last 5 years have led directly to the creation of regional EMS systems across the country. In many cases, however, there have been serious problems in obtaining permanent financing for continuing system operations that were supported initially by grant funds. This is due at least in part to the fragmented nature of EMS financing and to the complexity of the revenue sources through which EMS operating costs must be supported. These sources include patient service revenues (user fees and insurance reimbursements), family subscriptions, general taxes, special purpose taxes, and contributions.

Service charges and subscriptions are major sources of operating funds for emergency transportation. Ambulance services typically charge a base fee with additional mileage charges and supplementary charges for special services. Ambulance charges vary widely, but tend to be higher in urban areas than in rural areas. In urban areas, a fixed fee is quite common; rural ambulance services more commonly add a mileage charge. Collection rates are poor for many ambulance services, ranging between 30% and 50% of charges. However, several groups have achieved collection rates above 80% through the persistent pursuit of delinquent accounts and threats of legal action. In many areas, local governments subsidize at least a portion of ambulance operating costs. The methods for determining subsidies vary, with some set in proportion to the population served, some in relation to the number of ambulance runs actually made, and others set at what appear to be arbitrary fixed levels. Voluntary contributions are the primary source of support for volunteer squads.

As a rule, the costs of EMS communications and system management are borne by local taxpayers or by developmental funds where grant support is available. Patients can be charged in most systems only by the units that contact the patient directly (i.e., the ambulance and the hospital emergency room). It will therefore often be necessary to develop new organizational mechanisms in most communities before such revenues can be utilized to support "overhead" activities like communications and system management.

Several innovative approaches to the financing of the overall costs of EMS systems have been developed in recent years. Some states have enacted laws permitting single-county or multicounty EMS districts to levy property taxes for funds to support EMS. In Atlanta, for example, counties participating in the regional EMS system contribute on a per capita basis to support the management and operation of a central communication system. The recently enacted Pennsylvania nofault

automobile insurance law specifically includes EMS communications cost as a reimbursable expense, along with ambulance charges. A multiparish private ambulance service in southwestern Louisiana operates much like a regulated monopoly, with costs totally covered by family subscriptions and user charges set at levels approved by parish governments.

Despite the expanding set of approaches to EMS financing, it is apparent that reimbursement practices are generally disorganized and fragmented. From a financing perspective, EMS is still operated not as a system, but rather as a collection of unrelated elements. This is especially evident when current third-party financing provisions are considered.

On the average, 80% of EMS patients are covered by one or more health insurance plans through such third-party carriers as Blue Cross-Blue Shield, Medicare-Medicaid, commercial insurance companies, and private programs. Those in rural areas are twice as likely to be covered as those in urban areas. Many insurance policies do not provide coverage for prehospital EMS; policies that do include such benefits are typically limited in the nature and extent of coverage. Common insurance restrictions limit coverage to selected patient conditions, set maximum allowable costs for defined services, or restrict benefits to hospital-based services. For example, 20% of the total population insured through Blue Cross plans across the nation are not covered for emergency transportation; and one-third of those covered by Blue Cross are limited to reimbursement for accident-related injuries only (i.e., sudden illness is excluded from emergency coverage.) Some commercial policies provide benefits for transportation services only if a patient is hospitalized after transportation. Few health insurance plans specify any coverage for either communication or system management costs that are not included in transportation charges. In some instances, treatment services rendered by emergency medical technicians are also not covered.

As reflected in current third-party benefit structures, therefore, insurance benefits have not generally kept pace with changing concepts and developments in EMS delivery. Until third-party coverage is up-dated to reflect all necessary and actual EMS costs, its effect on prehospital services will continue to be far less than on hospital services.

Issues for the Future

While developing EMS systems have provided important insights into the costs and financing of emergency services, they have also raised

important economic questions. These are difficult to answer but may have significant implications for the future development of EMS systems.

Who should pay the bill? Whatever the cost of an EMS system in a particular community, someone must pay for it. The underlying issue can be phrased in the language of the economist as follows: Is EMS a private or a public good? That is, should it be treated as a private service like most other medical care services or as a public service like fire and police protection? If the answer is "private," it follows that the users should pay for EMS through service charges, subscriptions, or other direct means. If the answer is "public," it follows that the cost should be borne by all for whom services are available—in practice, by the taxpayers. In most communities, because hospital-based services are generally relatively well supported through health insurance, it is convenient to consider these services as private. However, to the extent that out-of-hospital services are inadequately supported through private sources, there are significant pressures to consider them as public services and, hence, as eligible for support through governmental sources.

Whatever philosophical position is taken, it is clear that citizens will end up paying one way or another for EMS system development and operation.

What are the effects of financing methods on EMS system structure? How EMS systems are financed may significantly influence their development and evolution. This is perhaps most evident in the case of developmental financing programs, both federal and foundation-supported, which have substantially influenced the nature of EMS systems through extensive specifications of system structure and resource requirements. For example, the federal EMS program explicitly requires grantees to focus attention on selected aspects of emergency system structure and operation as a condition for receipt of developmental funding.

There is additional evidence from both EMS and other health care delivery experience that system structure will tend to be influenced by the sources and nature of funding. It is no coincidence, for example, that the best financed component of the EMS system—the hospital emergency room—is generally also the most well developed. Because there are few traditional funding sources for management and communication activities beyond the developmental stage, there is a danger that a shortage of operating funds will selectively retard development

of these essential components of EMS systems in the future. In general, one can expect prehospital activities to suffer most as developmental funding dwindles.

It is not only the amount of money available for selected activities that determines the pattern of system development, but the role or position of those to whom the money is given, as well. The recipient generally controls the funds. If the funds go to the system *per se* one can hope for distribution among the elements according to design. If they go to the elements, it is unlikely that there will be any sharing, and the structure of the system cannot be controlled.

Are there economies of scale in regional EMS system? An underlying rationale for the design and development of regional EMS systems is the improvement in efficiency that is expected to result from more appropriate use of resources across a broader area and population. The regional organization of health resources and services is one of the dominant themes of this decade in health care delivery. This is reflected most clearly in the recent National Health Planning and Resources Development Act (Public Law 93-641). However, despite substantial federal and private foundation investments in the regionalization, of health services, including EMS, little evidence has been assembled to date to show that regionalization actually result in increased efficiency.

Such important issues as the appropriateness of designated regional boundaries for different emergency services (e.g., for burns, trauma, and poisoning), and the implications of alternative regional system structures must still be examined as EMS systems mature. These issues are discussed in more detail elsewhere in this report.

What trade-offs exist between EMS system costs and service levels? In a time of limited resources, serious questions must be raised about the costs associated with the various levels of service which can be provided in an EMS system. The availability of advanced emergency care throughout the nation is a worthy objective, but the cost of such services will often prohibit communities from obtaining them, at least for the foreseeable future. Such communities will need to set priorities that will permit the greatest improvement in service for the funds available—inevitably, some objectives will have to be sacrificed in favor of others. If these design and development decisions are to be made in the most responsible manner it is essential to know how costs vary with different kinds and qualities of service.

These data can be provided by careful component evaluation and systems analyses, but the tension between cost and service level requires a political resolution.

Summary

It seems clear that the availability of developmental funds has significantly increased public expectations and aspirations for improved EMS and has resulted in significant improvements in many communities. These improvements can involve substantial increases in EMS costs that must be financed on a continuing basis, if the momentum toward expanded EMS service levels is to be maintained. However, it appears likely that uncertainties with respect to support for continuing operation will continue as long as fragmented funding sources must be depended on.

Both the federal and the Robert Wood Johnson EMS programs have permitted the payment of administrative costs, including salaries, from grant funds. On the one hand, it seems clear that many of the projects could not otherwise have become operational. On the other hand, it also seems clear that, in general, this policy encouraged projects to postpone coming to grips with the problem of continued financing. Perhaps future programs should consider some compromise, such as a percentage limit on the amount of grant funds that could be so used, with sharply decreasing percentages in successive years, which might force grantees to develop local funding sources.

Conclusions and Recommendations

Developmental funding programs have led directly to the creation of regional EMS systems across the country. However, in many cases there have been serious problems in obtaining funds for the continuing operation of systems so developed. In most systems the patient can be charged only for services that involve him or her directly (ambulance and hospital care); this leaves the costs of such elements as communications and system management to be met from some other source. Third party benefit structures have not kept pace with the growth of EMS—many insurance policies do not provide coverage for prehospital services, and those which do are generally limited in the nature and extent of coverage.

Initial planning for EMS systems must recognize and deal with the need for funding beyond the developmental stage.

If it is determined that patients should contribute to the payment of overhead costs, arrangements will generally have to be made with the ambulance service and hospital for the sharing of collected fees.

An effort should be made to up-date third party insurance coverage to include all the costs of EMS.

Legal and Regulatory Issues

This section will review some of the most important recent legal developments related to emergency medical care since the publication of *Accidental Death and Disability: The Neglected Disease of Modern Society.* It does not attempt to cover every possible legal issue related to emergency care—many are widely discussed in the medical and legal literature. Moreover, many questions are not unique to emergency medicine, but relate to basic legal principles involving the interface between medicine and law.

The focus will be on four general issues that are particularly important to planners or policy makers as they design or refine emergency care systems. The analysis will reveal a marked but understandable diversity in approach, since legal frameworks must necessarily be tailored to local characteristics and local factual differences. The four areas to be discussed are: the legislation enacted recently in most states that provides basic standards for regulating prehospital emergency care; the amendment of state medical and nursing practice acts and new physician's assistant and paramedic legislation, which begin to delineate the authority and responsibility for physicians and non-physicians to provide prehospital emergency care; liability and insurance protection with respect to acts performed by physicians and others in treating emergency patients, particularly before they enter the hospital; and the evolving institutional responsibility of hospitals in emergency care.

Basic Standards—Regulation at the State Level

The regulation of EMS, like organization and delivery, was fragmented, inadequate, and in some cases nonexistent as recently as 1970. Although state health departments have typically had standard-setting authority over hospital emergency departments, ambulance services were largely unregulated. Frequently, states had developed rigorous standards for barbers and hairdressers, but usually none for the training, vehicles, equipment, or availability of ambulance services.

However, the situation has changed substantially since 1970. Nearly every state has made some legislative changes related to emergency medical care during the past decade, and over half have developed reasonably comprehensive statutes. Typically, the more comprehensive laws include the creation or expansion of a state division or office of EMS (usually under its department of health) with licensing and standard setting authority and authorization for state or regional EMS councils to develop EMS plans and provide continuing advice. Many statutes also include development of a state EMS communications plan; authorization for incorporated cities, counties or districts to contract for or operate ambulance services; and, in a few cases, authority to categorize hospital emergency departments. Some laws provide for the setting or review of rates for ambulance services.*

Other states have limited their legislation to ambulance services. These laws usually include minimum standards related to the training of ambulance personnel, types of equipment and vehicles, and some requirements for licensing of ambulance providers. However, in some states—such as Idaho, Kentucky, and New Jersey—volunteer ambulance services have been exempt from most licensing requirements. It seems highly desirable that all providers of prehospital emergency care, however organized or reimbursed, should be subject to the same criteria.

Most state EMS agencies (usually health departments) function under general enabling legislation and have developed detailed rules and regulations to implement it. Generally, this is a desirable approach, because rules and regulations are usually easier to modify than legislation as new technology and new knowledge develop. Unfortunately, some states have not appropriated enough funds to provide the staff to enforce such standards adequately.

Many local ordinances further define the level of care required of ambulance providers. As counties become increasingly involved in the delivery of emergency care, countywide agreements and standards are becoming more common. Anyone involved in developing or refining emergency care systems will need to consult carefully the legislation, ordinances, and regulations now emerging.

In summary, a wide variety of state legislation has been enacted to provide sorely needed control over the delivery of prehospital emergency medical care. Despite their diversity, the essential ingredients of these statutes are: designation of a lead agency (usually the state health department) as having authority to set standards and regulations, provision for statewide and regional councils to ensure involvement of

*Sadler, A. M., Sadler, B. L., and Webb, S. W. *Emergency Medical Care: The Neglected Public Service*, Ballanger Publishing Co. (Cambridge, Mass.), 1977.

numerous groups, appropriation of adequate funds to enforce standards, and applicability to all ambulance services, no matter how managed or financed.

Licensing and the Authority to Practice Emergency Medical Care

One of the most important developments in EMS during the past 10 years has been the use of nonphysicians—particularly nurses, physician assistants, emergency medical technicians and paramedics—to extend the scope of physician capability at the emergency scene and in hospital emergency rooms. This trend has been widely regarded as desirable and indeed necessary to improve citizen access to prompt emergency care, but concerns have been raised about the legal authority of such persons to expand their roles.

In all states, medical-practice acts typically provide that no one can "diagnose, operate, treat or prescribe," unless he or she is a physician licensed in the state. However, during the last 8 years, nearly all states have recognized the restrictive nature of such provisions and have begun to amend medical-practice acts or adopt new legislation. Many of the changes have occurred in response to the development of physician assistants and nurse practitioners; others have been designed specifically for emergency-care personnel.

In the early 1970s, the American Medical Association, the American Hospital Association and DHEW recommended that states enact amendments to their medical practice acts to codify the right of physicians to delegate tasks to personnel working under their supervision and control. Although the doctrine of "custom and usage" has always established the authority of physicians to delegate tasks, it does not readily apply to innovations in the use of existing health workers or to new types of personnel. Most states have now adopted some form of legislation to facilitate such delegation.

Most laws make no attempt to define actual tasks or situations in which they may be delegated, but provide that "any act, task or function" may be delegated by the physician. Delegation amendments require that the act be performed under the "supervision, control and responsibility" of a licensed physician. "Supervision" and "control" are rarely defined in the statute, leaving the legal resolution of this question, if it arises, to the courts on a case-by-case basis. This is probably wise in view of the enormous variety of situations in which such personnel can perform.

Supervision can take at least three forms: over the shoulder, on the

premises, or remote with regular monitoring and review. It is quite possible that quality of care with remote supervision can equal that with over-the-shoulder supervision if the person supervised is well qualified and there is adequate task definition and review. This is particularly important in emergency care, in which EMTs and paramedics often work at substantial distances from the physician, but still can legally be said to be supervised because their actions are subject to continuing medical review and direction.

In addition to delegation amendments to medical-practice acts, there has been considerable pressure for separate licensing of new types of health personnel. The licensing issue arose in the early 1970s, when licensing of all health professions was under heavy attack. Enacted in the nineteenth century to protect the public from quacks and incompetent practitioners, licensing laws are now viewed as unnecessary barriers to educational advancement, effective delegation of tasks, and innovative use of manpower. Furthermore, they have not eliminated incompetent and unethical practitioners.

In lieu of licensing, many have favored the development of national certification examinations of competence that could be used by state review boards. Once a test is developed and validated, one might be certified by passing the test without having to take a formal preset education program, if previous work experience could be shown. The National Board of Medical Examiners has developed a certifying examination for "assistants to the primary care physician" that is now widely accepted. A national registry of emergency medical technicians has been formed with government support and has been increasingly recognized. Another potential advantage is that national testing and certification would ease the problem of reciprocity between states.

The acceptance of emergency medical technicians (EMTs) as the appropriate ambulance personnel to provide *basic* life support has been nearly universal and has raised few legal issues about the authority to practice. In contrast, there is considerable diversity of opinion concerning the scope of function and the type of training required of personnel providing *advanced* life support—usually known as paramedics or EMT IIs. Such advanced life support functions as cardiac defibrillation, intravenous therapy, the administration of drugs, and ventilation techniques contain considerable risk to the patient if performed improperly. It is understandable that medical opinion is not unanimous about the appropriateness of these procedures and the circumstances under which they should be performed.

Because of these additional uncertainties and risks, several states have enacted laws specially designed for paramedics, in addition to delegation amendments. One of the first and most important was the

California Wentworth-Townsend Paramedic Act enacted in 1970. This legislation specified in detail the functions, including the use of specific drugs and procedures, that can be performed by paramedics under physician supervision. Authority has been delegated to individual counties for the actual conduct and regulation of paramedic programs. The statute defines minimal training hours although most of these minimums have been exceeded in the several counties that have established programs.

Several states have since enacted their own form of paramedic legislation, some of it based on the California law. The great majority of these have been enacted within the last 4 years, and many others are pending before state legislatures. They vary considerably in their specificity and in the degree to which they delegate rule-making authority to state or local agencies.

In most states, initial defibrillation is permitted in the case of a pulseless nonbreathing patient without the requirement of voice contact or telemetered electrocardiogram. However, in those states, such contact must be established between the paramedic personnel and a licensed physician or registered nurse authorized by a physician, and it must be maintained before any of the other functions permitted by law are carried out. Several other states require that voice contact or telemetered electrocardiography be established before defibrillation is carried out. These variations reflect differing medical opinions as to the value of physician contact or advice to paramedics before any emergency procedure is performed. Undoubtedly, the state of the art will continue to advance in the next few years as experience with such programs grows. This experience is likely to be gained quite rapidly, because DHEW is now vigorously encouraging advanced life support as a primary goal of emergency care systems. In the interim, legislation should be flexible and should permit paramedics to function with appropriate delegation and remote supervision by physicians as part of carefully evaluated programs.

Malpractice, Liability and Insurance

Generally, a person is held legally responsible for the delivery of health care on the basis of his or her experience and training. However, considerable controversy has arisen over personal liability when a person, whether a physician or not, renders care at the scene of an accident.

Because of the increasing number of malpractice verdicts and the size of the monetary awards, it is understandable that many health

professionals are concerned that stopping to help in such a case might lead to a malpractice suit. But this is not a well-founded fear in that the law permits a flexible standard of care according to the circumstances. Consequently, a physician is not held to the same standard of care in a roadside emergency as in a hospital operating room or his or her own office. An American Medical Association study undertaken in 1965 indicated that only eight physicians had ever been sued for malpractice in "good Samaritan" situations and that all these suits were settled in favor of the physician. There is still no reported successful lawsuit concerning the rendering of emergency care in "good Samaritan" settings.

Nevertheless, most states enacted "good Samaritan" statutes to provide immunity from liability for emergency medical assistance of first aid. Most of the early legislation covered only physicians, or in some cases nurses, who were acting gratuitously and voluntarily. With the development of paramedic programs throughout the country, these laws are now being expanded in some states to include all types of emergency personnel functioning in an employment situation, as well as voluntarily.

The main theme in such legislation is that persons are granted immunity from liability for any act or omission carried out at the emergency scene or in transit to the hospital unless they cause harm as a result of willful, wanton or gross negligence. Thus, despite the widespread concern about malpractice suits, there has not been a rash of litigation involving emergency personnel, nor does it appear likely that there will be. Judges and juries are most likely to continue to appreciate the enormous pressures and demands placed on emergency personnel working under crisis conditions. In short, as long as paramedics are well trained, are acting within the scope of their training, and are supervised by well trained physicians and nurses under previously developed protocols, there does not appear to be a major expansion of legal risk.

Even in states where comprehensive paramedic legislation has not yet been enacted, it seems safe to proceed with paramedic programs if the previous conditions are met. This is particularly so if EMS councils, local medical societies or such local agencies as the legal counsels for cities or counties have approved and reviewed protocols and program guidelines. Although such review does not have the effect of law, it provides informal sanctions for pilot programs. Program planners confronted with the lack of comprehensive legislation might consider some of these short-run alternatives concurrently with the development of adequate state statutes.

The availability of adequate malpractice insurance for paramedics

and for the physicians and nurses who supervise them has been a concern in some areas. In many parts of the country, existing municipal coverage (if the paramedics are municipal employees) or hospital institutional liability has been adequate, or only a rider to existing policies has been needed. Some large cities have self-insured paramedic programs by setting aside a reserve fund to pay for the legal defense of emergency personnel and to pay damages if necessary. Because of the virtual absence of lawsuits of this kind, it is expected that such insurance will be increasingly available to paramedics as well as to the physicians who supervise them and the institutions that employ them.

Hospital Emergency Departments

At one time, it was possible for a private hospital to refuse to admit patients for emergency treatment. Its right of refusal was predicated on the absence of any affirmative commonlaw duty requiring a physician or a hospital to render medical treatment. However, abuses have prompted legal decisions that have virtually eliminated the freedom of a hospital to refuse emergency treatment and which require that if an institution holds itself out as being able to treat emergencies, it must accept all patients who present themselves with emergency conditions.

Indeed, the Joint Commission on Accreditation of Hospitals and nearly all state health departments have developed detailed requirements concerning hospital emergency rooms. As stated in other sections, categorization plans have now been developed in many states and in a few cases have actually been given legal authority. This is desirable, because not every hospital in a given region should be required to provide a particular level of emergency care if other hospitals in the region are more adequately equipped to do so. In spite of the increasing number of malpractice verdicts against physicians and the size of monetary awards, there have been few lawsuits involving physicians, nurses, paramedics, or EMTs as providers or supervisors of emergency treatment. Thus, the fear of such legal action should not deter the development of advanced life-support systems.

There has been a concurrent concern regarding hospital liability for prehospital emergency care provided by hospital-based emergency medical technicians or by paramedics who rely on hospital-based physicians for supervision and medical advice. Again, there has been no rash of litigation and it would seem adequate physician supervision and control, good training programs, and well-developed protocols would provide solid protection.

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Conclusions and Recommendations

Nearly every state has made some legislative changes in the interest of regulating EMS, and more than half have developed reasonably comprehensive statutes.

Nearly all states have recognized the restrictive nature of older medical-practice acts and have begun to amend them or adopt new legislation related to the role of emergency care personnel and to the delegation of responsibility to EMTs and paramedics by the physician, and affording a measure of immunity from liability for emergency care personnel properly performing assigned tasks.

To protect the public, all states should enact comprehensive legislation assuring the basic quality of ambulance services, and this should apply equally to all ambulance providers, no matter how organized, managed, or financed. Such legislation should include the designation of a lead agency (such as the state health department) as having authority to set standards and adopt regulations; the provision for statewide and regional advisory councils, and the appropriation of adequate funds to enforce such standards.

The development of advanced life support programs should be facilitated through the enactment of flexible legislation that permits paramedics to function under remote supervision by physicians (or specially trained nurses) as part of carefully monitored and evaluated programs.

Regionalization and Categorization

Regionalization of EMS is the process of identifying and developing resources on an area-wide basis to meet the needs of all the acutely ill and injured for prompt, efficient, and effective medical care. Prerequisite to regionalization are the establishment of geographic boundaries of the EMS delivery area and the development and definition of organizational, operational, and advisory authorities for planning, implementing and evaluating the EMS system and its components.

Regionalization is achieved by areawide organization, coordination, and integration of the components of an EMS system, including communication, training, and personnel. The regional concept incorporates such arrangements as transfer and mutual aid agreements which make resources and services that are outside an EMS region available to the population in it.

A major medical goal of regionalization is the delivery of the acutely ill and injured to the specialized medical facilities best able to care for them. Acute illnesses and injuries for which regionalization of care, through transfer agreements and modifications of patient flow patterns, is alleged to improve survival or reduce morbidity include cardiac arrest, burns, neonatal disease, trauma, spinal-cord injury, drug overdose, and acute psychiatric illness. The assumption that regionalization of emergency care will result in decreased morbidity and mortality is strongest in the case of neonates and spinal cord injury and is probable but not as well substantiated in the case of the others listed.

A major economic goal of regionalization is to prevent or reduce duplication of costly services, equipment, and facilities. Such savings have been demonstrated in the formation of consolidated dispatch centers, in centralized ordering of ambulance and communication equipment, and, in a few systems, in a rational placement of ambulance squads. On the other hand, the prospect of categorization may increase hospital costs, as competing hospitals increase their outlays for additional emergency equipment and staff, through fear of being downgraded, bypassed, or eliminated in the emergency care system. Whether such jockeying among

hospitals would cease after implementation of a regional plan for EMS emergency medical services, including categorization of hospital facilities, is conjectural. Most EMS systems, which owe their existence to the voluntary cooperation of independent providers, are unable to do much toward elimination of redundant services. Often, savings that are achieved through regionalization are difficult to demonstrate, because they are offset by the costs of upgrading the quality of the service.

Operational control of regional EMS programs has most frequently been assigned at the state level to the health department or to a body reporting independently to the Governor and locally to a fire service or to some newly developed consortium. The major disadvantage of assigning operational control of a regional EMS system to an existing agency such as a health department, fire department, or police agency, has been the difficulty in obtaining recognition of the importance of this mission in the agency when EMS must compete with the agency's other programs for authority, funding and qualified personnel. Multicounty and multicommunity EMS regions often have no satisfactory existing governmental structure or political constituency that can provide operational authority or guarantee continuity for an EMS system. Differences over funding of a multigovernment EMS region can be divisive, if one community perceives its tax money as being used to subsidize services in another community.

Whatever its form, the organization responsible for management and operation of an EMS system must have the ability and commitment to integrate and coordinate all components of the system with each other and with disaster plans and total health care systems; to ensure compliance with the regional plan and maintain quality control of the system and its components; to maintain a data base of system activities and evaluate their efficacy; and to furnish the providers, the government agencies, and the public with the information they need for system supervision and improvement.

Categorization of hospitals' ability to provide services necessary for the care of the 5% who are acutely ill and injured is one tool available to planners to assist them in matching regional resources and needs.

Better prehospital organization and care, including improvements in access to the EMS system, training of EMTs, central dispatch, and radio communications between EMT and hospital physician, are now bringing more injured patients alive to the hospital than was the case 10–15 years ago. However, during the same 10–15 years, the hospital phase of the care of the acutely injured has not improved commensurately. Recent reports indicate many potentially salvageable patients who arrive alive at the hospital are still dying unnecessarily. Recent studies have shown that errors in evaluation and management are common. The

planning, mobilization, and organization of hospital staff and facilities necessary for the care of the injured were often inadequate.

A major cause of inadequate hospital care, particularly in suburban and urban areas, is the delivery of patients to the nearest hospital rather than to a more qualified pre-designated hospital capable of caring for the patients' injuries. There is little question but that hospitals with extensive experience with critically injured patients (trauma centers) provide better care for such patients than hospitals receiving them only occasionally. The skills and teamwork employed in this complex task are improved by practice and repetition, which come with a large volume of injured patients.

In some regions, categorization of hospitals and the process of categorization have created anxiety on the part of physicians and hospital directors. An often expressed fear is that their hospitals will be bypassed, with subsequent loss of patients, income, and prestige, leading to the disruption of physician practice patterns, and compromise of existing residency training programs. Conversely, a trauma or burn center may see categorization as increasing its burden of indigent but expensive patients. These perceived threats focus on EMS planning, implementing and regulatory agencies, such as State and local health departments, Health Services Agencies and EMS councils. The anxiety of these physicians and hospitals is heightened by their feeling of helplessness in dealing with governmental EMS agencies and councils in which they do not feel adequately represented; for example, many EMS advisory councils which have 51% consumer and 49% producer membership, may have only 1-2 physicians and one hospital administrator out of 10-14 members. Many physicians feel these agencies and councils lack the technical expertise essential to address issues of categorization, training, communication, and legislation that affect EMS.

Making categorization more palatable to hospitals in a regional EMS plan requires development of tradeoffs among hospitals. The success of categorization may well depend on the skill with which these service tradeoffs are balanced and perceived to be economically fair by the hospitals and physicians affected.

The types of illness and injury requiring hospital transfer or consultation could be better delineated and gain greater local acceptability if data were available to document the reduction in mortality and morbidity associated with care in the region's specialized units. Therefore, trauma, burn, and cardiac arrest registries should be a requirement of regionalized emergency medical care.

Whether hospitals are graded horizontally, according to their ability to care for the acutely ill and injured, or vertically, according to the special

services provided, the public should know which services are available at each hospital.

Another obstacle to categorization has been conceptual disagreement among professionals as to the most appropriate criteria for classifying hospital facilities. Criteria for classifying hospital facilities recommended by state, county, city, and HSA EMS agencies often differ markedly, not only from state to state, but within any given state.

Development of EMS systems and organizations at the state, HSA, county and city level has also led to jurisdictional uncertainties with regard to which agencies should be responsible for EMS planning and implementation. Many of these uncertainties could be resolved by appropriate legislation or guidelines from state EMS planners.

Regionalization of EMS should entail planned coordination with emergency preparedness agencies. Lack of such coordination leaves populations in areas of high risk from tornadoes, earthquakes, or nuclear terrorist actions with no assurance that provision has been made for rescue and emergency medical care.

In summary, regionalization and categorization of hospital care of the critically ill and injured have sometimes been resisted because of economic and political concern. Nowhere in EMS is there a greater need for study than in the effects of regionalization and categorization on access to care, on the quality and the cost-effectiveness of care, and on existing hospital residency programs, hospitals, physicians, and patient outcomes.

Conclusions and Recommendations

Regionalization of emergency medical services, extensively encouraged and developed through federal and foundation programs, is intended to improve prehospital emergency care through centralized management and quality control of emergency medical resources. The degree of regionalization achievable in a given region will depend on the willingness of providers and political entities to cooperate, on the adequacy and permanence of the funding base, and on the authority inherent in the EMS management organization. Regionalization includes arrangements with hospitals outside an EMS service area for specialized medical services not available within the area.

Categorization of hospitals can be an important aspect of EMS regionalization, making possible the delivery of critically ill and injured patients to the facilities best able to care for them. But categorization has been effectively implemented in few areas, owing to lack of agreement on criteria and to fear adverse economic consequences.

Regional EMS planning should include the establishment of acute care registries, of uniform ambulance and hospital records for patient tracking to allow for assessing the impact of regionalization on health outcomes, and of arrangements with hospitals outside the EMS service area for specialized services not available in the area.

Studies are urgently needed on the impact of hospital categorization both on health care delivery and outcomes and on hospital economics. State and regional health authorities should seek to develop service tradeoffs among hospitals to offset the perceived economic threat of categorization. Authoritative criteria and methods of categorization need to be established.

EMS Communication

The EMS communication network can be considered in terms of functions and of components. Thus, EMS communications must serve the following functions:

- Citizen access—the system must include the means, usually telephone (or in remote areas by CB radio Channel 9) whereby the public can gain immediate entry into the EMS system.
- Linkages among components—to function efficiently, the system must provide radio and/or telephone linkages among all EMS system components—dispatchers, ambulances, and hospitals—as well as with police and fire departments and other providers of emergency services.
- Medical supervision—the system must provide the means—by radio, directly, or through telephone interconnections at the central medical emergency dispatch (CMED),—by which EMTs and paramedics can receive instructions and advice from an emergency physician, usually at the hospital emergency department.

The components of the EMS communication system include:

- Equipment—transmitters, receivers, CMED consoles, relay stations, telemetry equipment, etc.—whatever is needed to serve the functions of a particular system.
- The personnel responsible for responding to calls, establishing linkages, dispatching emergency vehicles, maintaining current information on system status, and maintaining the equipment.

The receipt of a call, usually by telephone, from a person perceiving an urgent need for medical attention, is one of the two major pathways for access to emergency care, the other being direct access to a hospital emergency department. To call for help expeditiously, the caller must either know or have rapid access to the emergency number. Thus, there is need for standardization of the display of information in telephone books, prominent display of emergency numbers on private and public telephones, and training of telephone operators to transfer calls promptly to appropriate sources of help.

For an EMS system, as opposed to a single ambulance service, communication links (in addition to those required for public access and ambulance dispatch) include links with police, fire, and other public safety services for mutual assistance; with civil defense and adjacent EMS systems for disaster coordination; with poison control, drug control or other special centers for referral of certain calls; between ambulances and hospitals for notification and advice; and among hospitals and rural clinics for consultation and referral.

EMS access is commonly by telephone. Arrangements vary in sophistication from those in which the public is instructed to dial "Operator" to those in which 911 is used for all emergencies, with the caller's number and location automatically displayed before the dispatcher. The "best" system is that which is most suitable to the needs and resources of a particular region.

911, the universal emergency telephone number, now used in cities and counties scattered throughout the United States, is considered to represent the best solution to the access problem for a highly mobile population. Use of 911 presupposes an agreement among police, fire, and EMS organizations to cooperate; the ability of the local telephone companies to supply the service; and the ability of local agencies to pay for it.

Ideally, cooperation among a region's emergency response agencies will take the form of a consolidated dispatch center, serving police, fire, and EMS thus obviating the need for electronic communication links among these agencies. Where this is not possible, calls to 911 may be answered at a public safety answering point (PSAP), which immediately relays the call to the appropriate dispatcher.

Problems associated with 911, to which system planners should be alert, include the following:

- The difficulty often encountered of getting police, fire, and EMS agencies to accept 911 or to agree later on where the consolidated dispatch center or PSAP should be located; emergency response services and agencies often feel that their identities are inextricably tied to their individual telephone numbers.
- The possibility that, for instance, a single county may promote adoption of 911 county-by-county to undermine the concept of a regional EMS response (one proposed method of managing 911 calls is to install a countywide 911 system in which calls would automatically be routed to an answering point nearest the caller, thus effectively blocking even countywide coordinated response).
- The fact that many small telephone companies, common in rural areas, lack the resources for conversion to 911.

• The inability of many regions to meet the price stipulated by the local telephone company for conversion to 911.

The objection sometimes raised that 911 would delay EMS system response by interposing an additional intermediary between the caller and the dispatcher is, we feel, invalid inasmuch as the time saved by the caller (particularly in the case of the very young and very old) in not having to search for the correct local number would more than offset the few seconds required, if a PSAP is used, in identifying and relaying the call.

Apart from the potential for better service that a consolidated dispatch center using 911 implies, a persuasive argument for its adoption may be that it is one area of emergency communications that can be shown to be cost-effective: one dispatch center for police, fire, and EMS is ordinarily less costly to operate than three. If the three agencies all contribute to the establishment of a consolidated communications center, the initial cost will be less for each.

In regions where 911 is not now possible, a single EMS access number, widely publicized and identified on all public telephones, should be established.

In the United States today, the most widely used nontelephonic means of EMS access is the CB radio Channel 9. The principal problems with this have been the lack of designated answering points and lack of radio discipline in the use of Channel 9. However, a growing number of EMS systems now monitor Channel 9, and in several states, such as Missouri and New Mexico, police patrol cars systematically monitor Channel 9 and relay information on medical emergencies to the nearest EMS communications center.

A variety of special access devices—such as electronic monitors for persons with cardiac problems, teletype systems for the deaf, vehicular emergency signal transmitters activated by sudden impact, and television monitors located in high hazard areas—have been tried experimentally but have yet to be evaluated.

For the network of an EMS system, it is generally acknowledged that central medical emergency dispatching (CMED) is a desirable goal. This entails the receipt of all calls for assistance and the dispatching of an appropriate vehicle or team or referral to a non-EMS agency. The coordination of public services needed to respond adequately to a given emergency is here visualized and acted on. Decisions at the CMED are made on the basis of assessment of need and timely knowledge of the location and status of EMS resources. Continuous knowledge of the status of resources allows the dispatcher to identify the closest available emergency vehicles and the closest hospital emergency department

that is suitable for the patient's needs. The communication center may also link EMTs with hospitals or consultants, by radio or radiotelephone, to permit receipt of advice and guidance with respect to treatment at the scene and in transit. Through that link, hospitals may be informed of expected emergency-vehicle arrivals or decisions may be made as to the most appropriate hospital for special cases.

Complete CMED has been achieved in very few systems, and its impact and cost-effectiveness have yet to be evaluated. In general, each system must explore its own needs and design a CMED to meet the specific requirements of the region. "Standard" designs are not likely to be appropriate to many specific systems, and there is little information indicating the merit of a given design.

It is important that the communication system provide for the collection of data that will allow the linkage of records of patients entering the system—starting with the request for assistance, proceeding through prehospital care to care in the hospital emergency department, and including followup. Such records are essential to the process of evaluating the effectiveness of the EMS system, and thus to improving it.

The introduction of a 911 system requires specially trained personnel who can connect or direct callers to appropriate sources of advice on emergency assistance. With the development of more extensive and sophisticated EMS communications there is increasing need for refinement in the selection and training of dispatchers and for the development of protocols or procedures for decision-making at the dispatch center. These procedures, again, should be undertaken in considerations of policies of the specific system and the internal and external networks required.

The importance of dedicated radio frequencies for emergency medical communication is recognized in Federal Communications Commission Docket 19880, which established 10 UHF channels (20 frequencies) exclusively for EMS. Although VHF systems are still useful and may be more affordable in some areas, EMS planners should allow for eventual phasing in of the UHF system.

The EMS communication network often suffers from interference from the radio systems of other agencies in the same community or of EMS systems in adjacent communities. There is a clear need for coordination of EMS communications on an areawide basis, both to preclude interference among EMS systems and to facilitate the transfer of patients from one region to another. A consolidated dispatch center, shared by police and fire departments and EMS, can provide one means of coordinating the use of frequencies among emergency services of a particular region. Multipurpose communication systems as found in

systems with consolidated dispatch centers, also provide the advantages of economies of scale, joint funding, cost-sharing, and the specialized management that is more likely to be available to larger and more comprehensive systems. In general, development and operation of such local enterprises would be further enhanced by coordination among relevant federal and state agencies.

Conclusions and Recommendations

The EMS system is activated by a call for assistance. The universal emergency telephone number, 911, provides the best access for a mobile population—saving time and realizing the economy of a consolidated communications center. Problems to be anticipated in establishing 911 are reluctance of involved agencies to relinquish their own numbers, a desire to center 911 on a local rather than regional base, and lack of resources or funds to make the conversion. Central medical emergency dispatching (CMED), entailing the receipt of all calls for assistance and dispatch of EMS resources or referral to appropriate non-EMS agencies, is a desirable goal for EMS systems. Radio communication within the network is often subject to interference from the transmission of other community agencies or of adjacent EMS systems.

The universal emergency telephone number, 911, should be installed wherever possible—lacking that, a single EMS number should be established, identified on public telephones, and widely publicized.

Central medical emergency dispatching (CMED) should be seriously considered, but the facility should be designed to meet the specific requirements of its region.

Greater effort should be expended on the coordination of EMS communications on an areawide basis, and this would be enhanced by technical assistance from state or federal sources.

The communication system should provide for the collection of data that will allow linkage of patient records that are essential to continuing evaluation of the effectiveness of the service.

A program of technical assistance, under federal or state auspices, could bring available experience and knowledge to the aid of regions that are planning new or improved EMS communications. Interaction among manufacturers, users, and communication specialists is desirable as a stimulus to the development of useful equipment at reasonable costs. Organizations

such as the Association of Public Safety Communications Officers and the Association of State Telecommunications Directors should be brought into technical assistance programs.

A handbook, setting forth telecommunication requirements and guidelines for the staffing and operation of emergency communication centers, is needed.

Transportation

In the early part of this century, a military writer stated that the ultimate objective of the Army Medical Department was "to bring the patient, the facilities for his treatment, and the surgeon in conjunction under the most favorable possible circumstances." In a general sense, this is true of a civilian emergency medical system. In those days, the objective could be furthered by placing mobile hospitals close to the troops, an option not readily available to EMS. The other option is to have the means to move the patient to the hospital. This is the classic function of the ambulance, and there are still many vehicles that serve only that purpose. However, the introduction of modern emergency medical vehicles has permitted, in a sense, the movement of a part of the hospital to the emergency site.

The basic criteria for an EMS vehicle are speed, safety, and comfort. Beyond that, the vehicles differ in the rescue and medical equipment on board and in the sophistication of their communications. It is obvious that these characteristics are related to the degree of training of the personnel who man the vehicles, and this in turn is a function of the design of the specific EMS system.

Generally, the vehicles involved may be those which simply transport patients with a minimum of care en route, those which provide a working environment within which trained personnel can provide a good measure of care both at the scene and en route, and those designed solely to provide a fairly sophisticated workplace for highly trained technicians, and not to transport patients. The use of the latter type of vehicle requires that it be accompanied by an ambulance or that its personnel be able to summon one.

The 1968 report of the NRC Committee on Emergency Medical Services *Medical Requirements for Ambulance Design and Equipment*, has served as a guide for emergency vehicle design, and the basis for the paper, *Ambulance Design Criteria*, prepared by the DOT National Highway Traffic and Safety Administration. Although present standards for emergency vehicles are generally appropriate, they may not suit all circumstances and locations. The design criteria must be related to

specific tasks, and their adequacy is best determined locally. There is a need to validate some of the present design criteria in terms of operational effectiveness, and until this is done the criteria should be applied with a measure of flexibility. In view of rapid technologic advances, it would seem appropriate to reexamine vehicle standards every three to five years.

Transportation services by part-time providers (e.g., funeral homes) is no longer a major concern, owing to a general upgrading of emergency vehicles to conform to specified standards. However, in many areas, the number of such vehicles is inordinately high. Criteria are needed to permit a rational deployment of vehicles, taking into account response time, services offered, and quality control.

There has been increasing interest in the air ambulance, both rotary and fixed-wing craft. The Federal Aviation Administration, concerned with standards for medical air transport, has been developing criteria for size, interior design, and equipment for such aircraft. What remains to be established are the circumstances under which emergency air transport should be called for and who should be responsible for the decision to do so. The safety of the crew and the passengers must be the paramount consideration. Because such vehicles and their operation and maintenance are very expensive, it is usually necessary to finance them through a multipurpose system. The considerable experience that has been acquired in the Military Assistance to Safety and Traffic (MAST) program and in a number of police, fire, and private systems may be useful as a guide to further development.

Conclusions and Recommendations

Present standards for emergency vehicles are generally appropriate, but they may not suit all circumstances and locations. The feasibility of putting military surplus aircraft to use in civilian EMS systems should be studied.

There is a need to validate the operational effectiveness of some of the design criteria for EMS vehicles.

Until design criteria have been validated, they should be applied with a measure of flexibility.

Vehicle standards should be reexamined every 3–5 years.

Manpower and Training

Human resources are the major element in any EMS system. Among the factors that have a bearing on the recruitment and training of personnel to optimize local or regional systems are the geographic and demographic setting, the numbers and types of personnel needed, the availability of training facilities and personnel, the form of system administration and quality assurance, the available funding, and the agreed on targets in terms of acceptable morbidity and mortality from specific diseases and injuries. It must be assumed that there are personnel qualifications and staffing patterns that are most effective for a given system, once it is characterized in terms of these factors.

The personnel who may be involved in the provision of emergency medical care can, for our purposes, be roughly divided into those who are formally parts of the EMS system and those who are not. Those within the system can be roughly grouped into prehospital-care and hospital-care categories.

Although a variety of designations are in use for prehospital-care personnel, this report uses the terms "Emergency Medical Technical" (EMT), "Emergency Medical Technician-Intermediate" (EMT-Intermediate), and "Paramedic." In the hospital-care category are physicians and nurses whose titles include the descriptive works "emergency" or "critical care." Outside the care structure of the EMS system are fire, police, utility, and other such personnel, and lay persons.

A number of questions can be raised with regard to the current planning and implementation of programs for EMS manpower development. Among these is the question of the extent of need for advanced-level emergency care, as exemplified by the paramedic. In recent years, this category of personnel has become well established, and its members are increasingly subject to certification programs required by law. Yet we lack grounds for determining how many such workers are needed to serve specified geographic regions and populations. Nor is there agreement on how they should be trained, supervised, deployed, and evaluated.

The cost of paramedic programs should be considered in both urban and rural areas. In a given system, it should be possible to determine

the relative impact of alternative investments in the training of more basic-level EMTs and their deployment at sites that permit more rapid response. Another alternative that has been suggested is the greater utilization of EMT-Intermediates. Decisions on this matter should be made, in a given system, on the basis of the expected frequency of life-threatening emergencies that require advanced care; the assumed competence of EMTs of various levels of training to assess and treat patients in those emergencies; and the relative costs of teaching and maintaining the EMT skills and knowledge involved.

The training of ambulance attendants, particularly to the paramedic level, poses severe problems in rural and wilderness areas served by volunteer squads. These people are likely to have neither the time nor the funds to travel to a college or central hospital and to enroll in an intensive 200–500 hour course. Yet they serve regions in which, because of the often long ambulance runs, advanced care at the scene and in transit is most needed. A partial answer to this problem may be found in the modular form of the recently-issued DOT-HEW-DOL paramedic course, which may permit a regional system to select those segments of advanced training that it most needs, such as IV therapy or endotracheal intubation, and to have them taught at a local hospital or community college. Another approach sometimes used is to provide advanced training for only two or three members of a given volunteer squad. Equally difficult is the problem of maintaining advanced life saving skills in a rural or wilderness volunteer squad, where each member may serve for only a few hours each week, and thus have little opportunity to practice and preserve skills. A partial answer to this has been to provide squad members with rotational tours of duty in a hospital emergency department or with an active urban squad. Underlying this is the general training problem, which deserves intensive investigation, of determining what the optimal number of EMTs and paramedics is for a given area and population density.

The relative effectiveness of providing advanced emergency care on the basis of standing procedures (protocol) without direct medical supervision, as opposed to physician control by means of voice communication and telemetry, remains to be determined. This is yet to be evaluated with respect to medical outcome in well-designed, coordinated studies with adequate samples of patients in comparable settings. One approach that is being tested is the combination of standing orders or treatment protocols with guidelines for communication with physician consultants. Regardless of the results of the evaluation, it will undoubtedly be found that different settings and EMS systems require their own arrangements and it would be counterproductive to fix or mandate one approach for all systems and settings.

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With respect to evaluation of personnel, the number of hours of training completed is likely to be less valid as a measure of competence than an appraisal of the performance in actual or simulated cases. The adoption of more or less standard sets of tests of skill and knowledge would enhance reciprocity in certification, geographic mobility of personnel, coordination of standards for required continuing education, and recertification or decertification procedures. However, if standardization of testing, insofar as it dictates training content, is carried too far personnel may find themselves trained in techniques rarely or never used in the EMS system in which they work, yet uninformed and unskilled in procedures that are often used.

For example, endotracheal intubation is part of the present DOT paramedic training program, but some systems use only the esophageal obturator airway. Training guidelines should be sufficiently flexible to allow local modification and adaptation of training programs when necessary. This acquires further importance when one notes that there is often a relationship between the local methods of recruitment and selection of personnel and the training programs that are suited to the given region.

The role of the physician in prehospital emergency care is generally accepted as, at most, indirect. It is not usually feasible or economical in this country for physicians to ride in emergency vehicles. However, they are increasingly involved as EMS system consultants, as hospital emergency-department directors and clinical staff members, and as supervisors of EMT training programs. In some systems, nurses trained in intensive and coronary-care units accompany the paramedics on the emergency vehicles. Nurses are also assuming increasingly important roles emergency departments and in the training and supervision of EMTs.

One generally thinks of the EMS system in terms of ambulance personnel, medical dispatchers, and hospital emergency-department staffs. But, for the individual patient, an important figure is the layperson who, being near at hand, is often referred to as the "first responder." A beginning has been made in adult education programs and in the revision and upgrading of elementary and secondary school curricula in first aid and emergency care. However, the great potential of informed laypeople will not be realized until more effort is devoted public education and training. Certainly, high-risk industries and occupations should have personnel with emergency medical training, and all public safety personnel should have at least the basic skills with which to institute first aid.

With the burgeoning of professional personnel engaged in emergency medical care, it may be timely to examine the role of medical schools,

nursing schools, and education programs for allied health professionals. Do their curricula reflect the growing demand for EMS training? Might they contribute to the training of the lay public by offering aid and guidance in curriculum development and revision?

In developing EMS manpower, particularly at the EMT level, it is important to take into account the need to attract persons to careers in EMS, to offer them the possibility of advancement, and to ensure job satisfaction in order to retain experienced personnel. An example of the problems is reflected in the fact that EMS divisions of fire departments often find that they are busier than the firefighters, yet receive little or no additional compensation or recognition. Some communities are establishing EMS as a separate force, apart from police or fire departments, but this often requires additional investment and may lead to unnecessary duplication.

Conclusions and Recommendations

In recent years the occupational category of paramedic—the most highly trained emergency medical technician—has become formally established, and large numbers have been recruited, but we lack criteria by which to determine the optimal distribution of such personnel in specific geographic and demographic regions. There are no valid data by which to determine the extent to which paramedics may be left to function without direct guidance by physicians. The assessment of individual competence is better done by appraisal of performance in actual or simulated cases than by review of the number of hours of training completed. The lay "first responder" is an important figure in the provision of EMS, but the teaching of first aid through adult education programs and school curricula has only begun.

Efficient distribution of EMTs and paramedics in a given system should be determined on the basis of the expected frequency of life-threatening emergencies that require advanced care, the assumed capabilities of EMTs with various levels of training, and the relative costs of teaching and maintaining the skills and knowledge involved.

Well-designed coordinated studies, using adequate samples of patients in comparable settings, should be undertaken to determine the relative effectiveness of advanced emergency care provided under a set of established procedures (protocol) and that provided under direct physician guidance by voice communication and telemetry.

The competence of individual EMS personnel should be evaluated on the basis of observed performance in actual or simulated circumstances, rather than in terms of hours of formal training completed.

Greater effort should be devoted to public information and education programs aimed at increasing the number of laypersons in the community who are competent in first aid and emergency care.

Other Operational Problems

Hospitals

Many hospitals, especially teaching hospitals, rotate medical personnel assigned to emergency department (ED) duty. Because the tour of duty in this setting is limited, physicians do not develop an understanding of the ambulance personnel, their individual capabilities and skills. They are therefore often reluctant to advise or give orders for prehospital care, and thus they often delay care until the patient arrives at the hospital.

In some hospitals equipped with radio for communication with ambulance attendants, the radio has been moved out of the ED and placed with the hospital telephone operator or is kept in the ED but turned down "to cut down noise" and is inaudible. In these circumstances the benefit of installing the radio is diminished or voided.

Emergency departments have become the entry points for primary care for a large segment of the population who have no private physician. An additional large percentage of visits are by people who have private physicians but use the ED because they do not wish to bother their physicians, cannot contact them, wish to take advantage of the 24 hour availability of the ED or have insurance policies that cover emergency visits, but not visits to a private physician. The ever-increasing volume of ED visits has reached about 60 million per year and causes severe crowding and long waiting periods. Although triage systems usually afford rapid care for the most critical patients, many with painful or urgent conditions must wait many hours to be seen.

Ambulance companies, often with good reason, may be reluctant to go into areas with high crime rates. Some commercial groups are reluctant to respond to calls when the chance of collection is slim. In many areas the only agency or office that is available 24 hours a day is the police or sheriff's office. It is, therefore, most effective for this office to be the recipient of medical calls as well. However, the disadvantaged often have a deep mistrust of law-enforcement groups, and their fear of

being conspicuous makes them reluctant to call. In this circumstance, the entry point interferes with access. Another problem of the poor is the shifting of such patients, if they have no identifiable payment mechanism, from one hospital to another. Areas of low socioeconomic status are likely to lack both the necessary funding and the available manpower to support a volunteer ambulance service.

Triage

"Triage," originally a term used to describe the sorting of mass casualty victims, now generally means simply the sorting of patients for care. This sorting can occur at various points in the daily operation of an EMS system. There is no unanimity of opinion as to where or by whom it should be done.

Triage by Dispatchers EMS systems vary widely in their allocation of triage responsibility and authority to dispatch. This diversity is reflected in the level of training that the various EMS systems require of their dispatchers.

At one end of the spectrum are systems that have no triage activity by the dispatcher. In this group, there are both simple and sophisticated systems. In many rural areas, the dispatcher function is allocated to the sheriff's office because it is the only official organization that operates 24 hours a day. It is considered most cost-effective for the dispatcher to handle all calls, both police and medical. In this case, the dispatcher is usually not prepared for triage. In contrast there are sophisticated systems in which the dispatchers do not handle triage. An example is a region with a computerized locater system based on grids and landmarks that can identify and display on monitors the names of the closest units and indicate vehicular and crew capability. In this system accuracy of spelling and speed of typing are considered of prime importance. Therefore, they hire expert typists who have no medical training and do not handle triage.

At the other end of the spectrum, there are systems that use EMT or even paramedic-trained dispatchers with field experience. In such systems, a dispatcher may handle triage and decide whether a responding unit is to be sent, what kind of unit it should be, and often the hospital to which the patient is to be taken. In some systems a dispatcher can intervene with emergency instructions and advice on measures to be taken before the arrival of the ambulance. There are both advantages and dangers in this practice. There are the limitations of not being on the scene, of acting on the basis of incomplete information,

and of overconfidence in diagnostic ability based on limited medical knowledge. Some systems have developed algorithms for guiding the dispatcher in triage. Advice should be limited to what to do until the ambulance arrives. More documentation is needed to ascertain whether harmful, as well as beneficial, outcomes result.

Dispatchers should have linkages to poison control centers, suicide prevention agencies, battered spouse organizations, and other organizations related to urgent needs. The need to tie in with police and fire departments is now recognized almost universally.

Triage by EMTs at the Scene There is little disagreement that the EMT has a triage role at the scene. However, he should be able to refer to or discuss questions with a higher level of authority, such as a physician at a base hospital.

Triage in the Emergency Department Emergency departments of hospitals are often crowded and the people waiting to be seen have conditions of various degrees of urgency. Therefore, persons arriving in an ED should not be seen solely in chronologic sequence of arrival. A health professional should be assigned the duty of triage. Who that person should be is not uniformly agreed on. In some places, triage is performed in a perfunctory informal fashion; in others it is an organized formal function of the ED. Most commonly it is performed by a nurse. There are some who believe this triage is a most critical function and should therefore be performed by an experienced physician. They also feel that, although the traige nurse or physician assistant can consult with a physician when in doubt, the index of suspicion is too often limited by inadequate knowledge or tempered by an unwillingness to disturb a busy physician. Further studies should establish preferred patterns.

Triage for Transfer to Another Hospital Guidelines should be established for conditions that, because of type or severity, should be treated at other facilities. There should be voice communication between the physician treating the patient and the one to receive the patient and agreement on the degree of stabilization necessary before transfer, the tests to be performed before transfer, how the patient is to be transported, who is to accompany the patient, and what care should be provided en route. Most of these agreements should be prearranged, so that only the special features of a given case need be discussed by the physicians involved.

Public Education and Information

Emergency medical services are a community resource. If they are to be nurtured, they must have the understanding, the confidence, and the support of the community. As noted elsewhere in this report, ready accessibility to EMS cannot be taken for granted. People must be taught how to enter the system to get an effective response.

The lay public must be considered an element of an emergency medical system. During the period between the emergency event and the arrival of the first emergency unit, the intervention of laypersons trained in first aid and CPR can make the difference between life and death.

Improvement in the above circumstances can only be brought about by educating the public. There is evidence that the effectiveness of many EMS systems is limited by inadequate efforts to inform and educate the community.

During the planning stage and the initial period of operation of a new system, the main effort should be devoted to developing community understanding of the service and support for it. Where a broad-based EMS committee exists, a public education subcommittee (including mass-media representatives) could use the following approaches:

- Provide statistics on the incidence of emergency events in the community or region and the potential effectiveness of the EMS system in reducing mortality and morbidity.
- Describe the new EMS system, its resources, how it works, and how it is financed.
- Present the concept of self-help in public media and at community meetings.
- Recruit leaders for EMS training programs for the public.
- Undertake special information campaigns to increase public competence in gaining access to the EMS system.

Once the EMS system has acquired some experience, public education and information activities might be aimed at the following:

- Assessment and enhancement of public knowledge of the system,

attitudes toward it, and practices in using it, including use of the emergency telephone number.

- Assessment and development of the firstaid skills of the public, including the ability to determine when those skills should be applied, such as recognition of early warning signs of catastrophic illness.
- Development of public education programs designed to remedy specific deficiencies brought to light in the preceding assessments.
- Presentation of preventive programs based on the local incidence of the type of accidents experienced by the EMS system—accident prevention, seatbelt use, safe storage of poisons and toxic substances, etc.; presentation of data regarding overuse and underuse of the system as a point of departure for a continuing campaign to enhance public effectiveness in using the service.

In a well-established system that has already carried out many of the activities mentioned above, the chief problem is the maintenance of interest and enthusiasm. Some approaches that may be helpful are the following:

- Encouragement of continuing education and advanced instruction designed to reach a larger segment of the community—competitive incentives may be offered for achievement, such as certificates indicating advanced skills.
- Encouragement of persons who attain specified levels of training and who demonstrate interest and enthusiasm in the program to become speakers for civic organizations and community forums.
- Creation within the community of an organization of volunteers devoted to emergency care, along the lines of the numerous disease-specific voluntary health organizations now found in the community.

Public education and information programs may most effectively be implemented through existing community organizations, such as schools, churches, clubs, parent groups, and scout troups. Employers may also be encouraged to participate in developing training programs for their employees.

Beyond formal programs, the public may be kept aware of EMS by appropriate display of the EMS telephone number, in the presence of emergency telephones on highways, and in other critical public areas; by dissemination of EMS information in commercial mailings, product labels, billboards, and special EMS newsletters; and through public service programs and notices in public media.

Leaders for public education and information programs may be drawn from the following resources:

- Medical societies and other organizations of health professionals.

- Health organizations such as the American National Red Cross.
- Industrial and commercial organizations that are prepared to launch inplant and communitywide programs.
- Officials in various public health and safety agencies.
- Service clubs and special organizations, such as CB clubs.
- Well-known speakers and community figures, who may be encouraged to participate in meetings aimed at generating interest in EMS education.

Despite federal and state aid, the financing of an EMS system is likely to remain largely the responsibility of a community or region, and it is necessary to gain citizen support for appropriate legislation and for the provision of public funds to maintain the system. To generate public support, public officials must be made aware of the following:

- The potential effectiveness of EMS in saving lives and reducing morbidity.
- The potential benefits of regionalization of EMS and centralization of management.
- The importance of trained citizens as "first responders."
- The impact of federal and state EMS legislation on the development and operation of local and regional EMS systems.

Conclusions and Recommendations

There is evidence that the effectiveness of many EMS systems is limited by inadequate efforts to inform and educate the community.

Public information and education programs should be considered essential parts of the planning and operation of an EMS system. These programs should be keyed initially to the development of understanding of the service, and of support for it; once an EMS system is established, to assessment of public understanding of and participation in the activity; and, in older systems, to the maintenance of interest and enthusiasm.