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for the
U.S.A. BICENTENNIAL
EMERGENCY MEDICAL SERVICES
AND TRAUMATOLOGY CONFERENCE**

**May 10-12, 1976
Baltimore, Md.**



U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Health Services Administration
Bureau of Medical Services
Division of Emergency Medical Services

INTRODUCTION

These abstracts have been solicited from a select group of emergency medical service (EMS) personnel; physicians, administrators, allied health personnel, organizational representatives, and governmental officials. The presentation here is intended to provide other EMS personnel and interested individuals with brief descriptions and references to significant experiences, descriptions, and finding(s) pertinent to the planning, establishing, operating, expanding and evaluating EMS systems in their regions.

The content of these abstracts is not the responsibility of the Division of Emergency Medical Services (DEMS). Many of these abstracts have been further abbreviated by the DEMS staff in order to present as many of the submitted materials as possible. Lack of time and space prevented the inclusion of many papers which, although containing valuable information, were considered too long for reduction.

It is planned that this approach will be continued and repeated periodically in order to provide the national experience in EMS systems development with the shortest possible publication lag time and to provide immediate cross fertilization of ideas, progress, and problem solutions from those EMS experts at all levels of program activity.

Revised or additional abstracts may be submitted at any time. Please indicate revision and reference page in this volume. See appendix of this publication for standard format.

TABLE OF CONTENTS

<u>SUBJECT CATEGORIES</u>	<u>CODES</u>	<u>PAGES</u>
Personnel/Training	Pers.	1-1
Communications	Comm.	2-1
Transportation	Trsp.	3-1
Facilities/Categorization	Fc./Ct.	4-1
Critical Care	CC	5-1
Public Safety Agencies	PSA	6-1
Consumer Participation	Cons.	7-1
Accessibility to Care	Acss.	8-1
Transfer of Patients	Trfr.	9-1
Standard Medical Record Keeping/Data	SMRK	10-1
Consumer Information and Education	CE&I	11-1
Independent Review and Evaluation	Eval.	12-1
Disaster Linkage	Dist.	13-1
Mutual Aid Agreements	MAA	14-1
International EMS	Int.	15-1
Federal Grants	Fed.\$	16-1
Federal Agencies	Fed. Ag.	17-1
State EMS	Ste.	18-1
Regional Organizations	Reg.	19-1
Urban EMS	Urb.	20-1
Rural EMS	Rur.	21-1
Legislation/Ordinances	Leg.	22-1
Planning	Pl.	23-1
Administration/Management	Adm.	24-1
Financing	Fin.	25-1
Medical Control	Md.C.	26-1
BLS/ALS	LS	27-1
Equipment	Eqmt.	28-1
Special Problems	Spec.	29-1
Institutions/Foundations/Associations	Org.	30-1
Commercial/Private	Cm.Pr.	31-1
Research	Res.	32-1
EMS Councils/Task Forces	Cou.	33-1
Appendix		

PERSONNEL / TRAINING

MASSACHUSETTS NURSE EDUCATION PROGRAM

Common with most of the nation, Massachusetts has few educational opportunities in emergency medicine for nurses, either in its schools of nursing or after graduation. Therefore, in early 1975 Office of Emergency Medical Services organized a State Nurses Continuing Education Committee to assist in the development of appropriate educational programs. The committee is composed of practicing emergency department nurses from all regions of the state and from both large and small hospitals. It included representatives of various clinical specialties and of professional nursing organizations.

In early 1975 other state EMS offices were surveyed to secure information on programs which had already been implemented, and their curricula were reviewed by OEMS and the Committee. A 137-hour curriculum was agreed upon, comprising 97 hours of didactic work and 40 hours of clinical experience in a hospital and with an ambulance service. The course, entitled Critical-Care Emergency Department Nurse Education Program (CEDNEP) has been offered as a month-long course three times. Sponsoring hospitals have kept the CEDNEP nurse on salary during the month-long course and have covered her necessary expenses, including meals and travel.

In order to enable as many nurses as possible to participate in CEDNEP, OEMS is working with the graduates of the month-long course to organize regular workshops and seminars which enable many more nurses to cover the full CEDNEP curriculum over an extended period. These CEDNEP modular programs are beginning throughout the state.

OEMS is also working with the State Labor Department to develop a continuing education program for the Commonwealth's 800 industrial nurses which recognizes their combined role as "nurse-first responder-EMT."

Pers., Ste.

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COACHING THE EMS COACHES

Six years of attending EMS conferences and participating in the development of EMS activities have shown one constant fact: new EMS coordinators are continuously coming on board.

The EMS coordinator comes on board full of enthusiasm, bright-eyed and eager to support the great causes of EMS.

However, in a very short time, the scope of EMS activities, the social and economic barriers, plus the lack of knowledge about the EMS System and the difficulty of defining the system, all cause pure fear and helpless feelings about the EMS coordinator job and himself as a person.

If EMS development was easy, it would have been done long ago. But, it is not easy and EMS coordinators must be brave souls to survive the rigors of the job.

A tool to help EMS coordinators function would be a thorough understanding of the EMS system using "units of care" as a guide. It would provide a framework within which to work.

Without some logical framework, various thrusts can be made to improve EMS functions, but they do not make a system. We, as EMS coordinators, are charged to develop systems, not independent components. The "EMS Systems Act of 1973" is just that: A Systems Act.

So coaches: define your system or use "units of care" as a guideline and go to work with the "gusto" you had when you came on board.

Pers., Adm.

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EMERGENCY NURSE PRACTITIONER PROGRAM

The Emergency Nurse Practitioner program is a joint venture of College of Nursing, Arizona State University, Tempe, Arizona, and Maricopa County General Hospital, Phoenix, Arizona. The program is two semesters (32 weeks) in length. The purpose of the program is to prepare nurses to assume additional responsibility in patient care under the supervision of a physician.

At the completion of the program, the R.N. will be able to evaluate patients by ability to: take an appropriate patient history, perform a physical examination, perform specific screening examinations, differentiate between normal and abnormal findings on the physical examination, decide which abnormal findings are significant and urgent, order appropriate special studies, and interpret findings of studies done; and to manage patient problems by ability to triage patients in terms of priority of care, distinguish between patient problems he/she can manage and those requiring consultation or referral to the physician, refer patients with abnormal non-urgent findings to appropriate others, provide definitive care and follow-ups under physician's supervision or consultation for minor health problems or injuries, initiate treatment of urgent problems based on signs, symptoms, findings of history and physical examination, and special studies, and provide counseling to individuals and families.

During the first semester there are two hours of lecture of discussion and four hours clinical practice each.

During the second semester students attend one or two hours of lecture, discussion and six to eight hours of clinical practice.

Pers., CC

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PROBLEMS AND SOLUTIONS

Problem: There are 33 Trade and Industrial Education Instructor's in the 11 counties of northwest Ohio. These men teach the 60-hour Emergency Victim Care Course which is the basic unit of instruction for the ambulance and rescue squad personnel in northwest Ohio. To keep these instructors abreast of the latest developments in the field of EMS, and in order to assure a continuation of the standardization of teaching methods and materials, a coordinating body was needed.

Solution: Through the efforts of REMSNO staff member, Robert Sawyer, the Emergency Medical Technician Instructor's Association of Northwest Ohio was recently formed. The Emergency Victim Care Course which they teach includes instruction in the treatment of shock, fractures, and bleeding control, the art of cardiopulmonary resuscitation and auto extrication (methods for removal of patients from wrecked motor vehicles). A continuous undertaking of the group is an informal "news-letter" which is mailed to the instructors as needed. Utilizing REMSNO as an information bank, the group's secretary, Robert Sawyer (REMSNO staff member), keeps the group abreast of the latest news relating to the EMT Instructor. The group is headed by two area firemen, one each from the Toledo and Sylvania Fire Departments. (Most of the instructors are active firemen in northwest Ohio). The first project of the group will be the selection of specialized slides to be used as aids in the teaching of the 60-hour course. As 100% of the Instructors in northwest Ohio are members of the organization, the group should go a long way in standardizing the teaching effort in the REMSNO area of northwest Ohio.

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ROLES AND RESPONSIBILITIES OF EMS PROVIDERS, USING UNITS OF CARE AS A GUIDE

Early in the development of EMS Systems, EMS Coordinators were faced with professional territory ("Turf") problems: providers discussing areas of care that were not their responsibility and a general confusion about who ought to be talking to whom about what.

In order to bring some logic into the EMS coordinator's mind, be able to approach EMS problems logically and develop an easily understood framework by which to communicate, the "Units of Care" tool was developed.

"Units of Care" (see Abstract on Units of Care) break the EMS Health System into 10 activity units and served to identify the System. Once the System was identified, providers could decide what responsibility they had in any particular unit. Thus, by units, providers could identify those activities on which they should concentrate to promote better patient care.

In terms of human behavior, this format became non-threatening and allowed cooperation among providers to proliferate.

An EMS coordinator could then discuss the system with a group of nurses, physicians or EMT's and zero in on who should be doing something about what.

The EMS coordinator should see that everyone concerned knows the System, but allow providers and others to choose the Unit most appropriate for them to impact, in accordance with their expertise and degree of responsibility in their chosen Unit.

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EMS FORMULA K+H+A = PC

Knowledge plus hardware, placed in the heads and hands of health care providers, plus an attitude of cooperation and teamwork, impacted on a patient, equals patient care (good or bad). Some premise must be established in EMS toward which all concerned can work. This formula was developed to give EMS participants and providers a sense of direction and was integrated into the "unit of care" framework to provide overall effective administration and coordination.

K-KNOWLEDGE is located in books, periodicals, texts, etc., in written form. Knowledge is located in teaching institutions (medical schools) in verbal and written form. Knowledge is located, written, computerized and in verbal form, in research and consultant institutions. Knowledge must be dispensed so that when the medical problem arises, the providers have instant mental recall.

H-HARDWARE is any tool or equipment providers may deem necessary to perform functions in whatever unit of care they may be operating. Care should be taken that the tool or equipment is necessary to improve patient care in the appropriate unit of care. Hardware is often sought because it is visible, but frequency of use, method of use and obsolescence make this the weakest component of the formula.

A-ATTITUDE is the most important component of this formula. Without a spirit of cooperation and a keen sense of the teamwork need to impact patients in all units of care, there is little hope for better patient care or the development of an EMS system. There is a vast amount of paranoia concerning "turf", medical-legal and government intervention, but if providers can be convinced that EMS systems only wish to make patient care visible and predictable so all elements in all units of care can function in a coordinated fashion, the net result will be optimal Emergency Health Care.

Pers., Spec., Eval.

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EMT CONTINUING EDUCATION

Continuing education for EMT's has focussed on relatively few courses, primarily the 20-hour DOT curriculum, defensive driving or extrication courses. These programs, however, do not provide a sufficiently broad or varied educational experience, nor are they widely available for the large number of EMT's in Massachusetts (over 5,000 as of October 1975). OEMS has therefore supported the development of additional meaningful refresher opportunities for EMT's, and for the combined EMS team: the EMT, the physician and the emergency department nurse.

Monthly morbidity and mortality conferences (case review sessions) have been or are being instituted in nearly a dozen hospitals throughout the state. These conferences are attended by physicians, nurses and EMT's, who together examine and comment on one or more specific, anonymous case studies. Nearly two dozen hospitals now permit EMT's from local ambulance services to observe and assist on a regular basis in their emergency departments, critical-care units, delivery or operating rooms.

Regular joint workshops in emergency medicine for EMT's, nurses and physicians, sponsored by individual hospitals, local chapters of EDNA (the Emergency Department Nurses Association), local chapters of the Massachusetts EMT Association, and others. In-service refresher training has expanded significantly over the past year. Private, municipal and volunteer services have begun to schedule regular sessions for both didactic and clinical review.

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ON-SCENE PROTOCOLS AND TRAINING FOR FIRST RESPONDERS

A 1974 State law requires an estimated 37,000 "first responders" (police, fire, and lifeguards) to complete approved training in first aid, including CPR, by July 1, 1977. The State Office of Emergency Medical Services has drafted regulations which prescribe the course content, instructor qualifications, and refresher requirements (annually in CPR, every three years in other first aid) to carry out this law.

By law, any service which regularly transports emergency patients in Massachusetts is required to transport those patients in a certified ambulance which meets state standards of design, equipment and personnel, as established in the State Ambulance Law and Regulations. First responders need guidelines which will help them to decide when they must call for an ambulance and when they may themselves transport a patient, e.g., in a police cruiser. In addition, disputes sometimes arise between EMT's and other public safety personnel at the scene of an emergency over such issues as the extent of the treatment to be rendered, the type of vehicle needed to transport, and other matters requiring interaction and cooperation at the scene.

In order to avoid delayed or inappropriate decisions affecting patient care, many Massachusetts communities have developed guidelines or protocols which address these issues. For example, many police and/or fire departments have issued orders which place the responsibility for medical care at the scene and enroute to the hospital solely on the EMT. Non-EMT's are prohibited from interfering with patient care and are required to render all reasonable assistance requested by the EMT.

The Massachusetts Department of Public Health has convened a statewide task force to address these issues in detail, with a view toward the adoption of state guidelines which will encourage a consistent approach to these problems statewide.

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DEVELOPMENT AND IMPLEMENTATION OF A REGIONAL
TRAINING PROGRAM FOR CARDIAC TECHNICIANS

The didactic phase of the first regional cardiac technician training program was recently completed. Harry G. Plunkett, Jr., M.D., a Director of the TEMS Council and the Chairman of the TEMS Manpower-Training Committee served as physician coordinator assisted by Don Haupt of the Norfolk Paramedical Rescue Service as course coordinator. Instruction was completed at Norfolk General Hospital and the Eastern Virginia Medical School. The thirty-seven (37) EMTs completing this phase included nine (9) from the Portsmouth Ambulance Service; eight (8) from the Norfolk Paramedical Rescue Service; eleven (11) from the Nansemond-Suffolk and nine (9) from Bennetts Creek Volunteer Rescue Squads.

The clinical portion of the course is now in progress in the various hospitals involved in the program. (Louise Obici Memorial, Suffolk; Maryview and Portsmouth General, Portsmouth; and Norfolk General, Norfolk. It is also considered significant in that both volunteer (20) and paid (17) EMTs participated.

The associated telemetry/communications equipment procured for the vehicles was funded by the TEMS Council 1203 grant award. The hospitals initiated a fund drive to procure compatible equipment.

It is anticipated that the advance life support systems in Suffolk and Portsmouth will be operational by early February 1976.

As a "spin off" of this endeavor, agreement has been reached among ambulance service agencies of the four political jurisdictions having advanced life support systems to utilize a standard drug and IV box and patient record form. Thus, the volunteer rescue squads in Virginia Beach and Suffolk, the paramedical rescue service of Norfolk and the Portsmouth Ambulance Service will be able to exchange drug boxes at any hospital within these four political jurisdictions.

Pers., Reg., Trsp.,

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ESTABLISHMENT OF AN INTER-REGIONAL EMT-LAY INSTRUCTORS ASSOCIATION

In late 1974, special courses of instruction were developed and implemented by the Commonwealth of Virginia through the Community College System to qualify selected, experienced EMTs as Lay Instructors. Persons so designated qualified as EMT Course Coordinators and in areas where it is difficult to obtain physicians could teach certain portions of the EMT course.

Following several informal meetings, the lay instructors in Tidewater and Peninsula regions agreed that it would be highly beneficial to establish a formal organization. At a meeting on April 29, 1975, Larry Smith of Norfolk Paramedical Rescue Service was elected Chairman of an organizational committee which included representatives from Norfolk, Portsmouth, Virginia Beach, Chesapeake, Suffolk, and Virginia's Eastern Shore, as well as Newport News, York County and Hampton.

Proposed bylaws were subsequently drafted by this committee at a meeting on July 15, 1975, distributed to the membership and subsequently adopted with some modifications at the July 29, 1975 meeting of the Association.

The Association has acted responsibly to effect needed regional and inter-regional coordination and standardization of EMT training and to enhance the quality of the courses offered to EMTs in Tidewater.

Administrative-logistic support for the Association is provided by the TEMS Council.

Pers., Reg.

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THE USE OF NURSE PRACTITIONERS IN THE TEACHING HOSPITAL EMERGENCY DEPARTMENT

Following a standard nurse practitioner course, consisting of six weeks of didactic sessions and six weeks of practical unit rotations, registered nurses with emergency department experience became Emergency Department Nurse Practitioners at the Colorado General Hospital.

A long list of chief complaints of patients with purely non-emergent problems were identified as appropriate for nurse practitioner care. Nurse practitioners were assigned to shifts of the highest Emergency Department utilization, running from late morning through early evening. Appropriate patients underwent history and physical examination by the nurse practitioners. Cases were presented to Emergency Department attendings, and formulation and care programs were jointly derived. These care programs were communicated to the patients primarily by the nurse practitioners after case presentation and discussion.

Patient satisfaction with care rendered has been high, and errors as a result of inadequate or improper data collection or poor nurse-practitioner-physician attending communications have been minimal.

Nurse practitioners can undoubtedly provide good medical and nursing care to a significant fractions of the non-emergent Emergency Department patient population. The efficiency of the data gathering and subsequent physician case-presentation approach is open to some question.

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Pers., Fc./Ct.

**USDOT Curriculum for Advanced
Emergency Medical Technicians**

A curriculum for the training of emergency medical technicians to the level of Paramedic has been developed at the University of Pittsburgh under the auspices of the United States Department of Transportation. This curriculum was based upon a review of all major curricula currently in use in this country as well as the standards set down by the National Research Council of the National Academy of Sciences.

The curriculum consists of three major documents:

- (1) a Course Guide, which provides resource material on administration of the course to the individual charged with course coordination;
- (2) Instructor Lesson Plans, which furnish instructional materials for each unit of the course;
- (3) a Student Study Guide, which serves as a textbook and reference volume for the student.

Each of these documents will be described in detail.

The course is organized into 15 modules and arranged in such a way that each module can be taught independently of the others-- to enable flexibility of scheduling and take into account the special constraints of rural and volunteer services. Each module is further subdivided into units, each of which contains objectives, content outlines, guides to demonstration and practice sessions, and skill evaluation sheets.

The curriculum will be generally available by early summer, 1976 through regional offices of the National Highway Traffic Safety Administration.

Pers.

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PARAMEDIC TRAINING IN JUNIOR COLLEGES

The University of Kansas Medical Center has been training paramedics since 1973 utilizing facilities of the School of Medicine and equipment of the Emergency Medical Training Program. In addition to conducting its own paramedic training classes, the University acts as the authorizing agency for all training programs within the state of Kansas. This authority to review and approve or disapprove all training program proposals was given to the University by the Kansas Legislature.

Several junior colleges in the State have approached the University and asked for assistance in starting a training program. The University forwards its teaching objectives to the college where they are reviewed by the college's administration and faculty. These groups make what revisions they feel necessary in order to fit the objectives into their particular teaching situation. These revisions are returned to the University for evaluation by the staff of the Emergency Medical Training Program. If the objectives, as formulated by the junior college, are found to be satisfactory, they are given approval by the University.

In addition to reviewing teaching objectives, staff members of the University make on-site visits to the junior college to evaluate clinical facilities of the area hospitals. The University then assists the junior college in drawing up clinical schedules that will give the students adequate experience.

Each junior college has incorporated the paramedic training program, which is spread over a full years time span, into an Associate of Arts Degree program. The students spend their first year at the college taking courses such as English, life sciences, and business administration. Adding these courses to their paramedic training enables the students to receive an Associate of Arts Degree thus, starting them on a career ladder.

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SELECTING AND TRAINING THE TRAUMA UNIT NURSE

In staffing and training the nurses to work in a regional trauma center primary consideration was given to the type of nurse who could best work in a trauma intensive care unit. The classic premise was that skills and knowledge were more easily acquired than were attitudes. Nurses were selected on the basis of demonstrated willingness to learn and receptiveness to change. We recruited particularly those nurses who conveyed a sensitivity to the emotional aspects of care of patients and families. Emphasis was also placed on a demonstrated concern and interest in others with whom they had worked. It was felt important to select those individuals who would function smoothly and pleasantly in a high stress environment. Intensive care unit experience was considered useful but not a prerequisite for working in the unit.

Prior to opening the unit, an intensive training program was conducted to prepare the nurse for working in this special care area. A two-week didactic course covered the anatomy and pathophysiology relative to the care of patients with multisystem trauma. Practical laboratory exercises were utilized to learn the technique of endotracheal intubation, the insertion of IVs and the management of arterial lines, chest tubes, drainage tubes, transducers and respirators. Special classes with individual instruction and practical exercises were conducted using the computer in conjunction with our patient monitoring system. Emphasis was placed on the concept that the computer was a tool to free the nurse from clerical and computational tasks so that she could direct more attention to patient care. Small group seminars with a psychiatrist were used to learn concepts of managing the psychological needs of the patient as well as coping with working in the stressful environment of the trauma unit.

Experiences within the trauma unit have validated these policies of recruitment and training. The competency of the nurses has repeatedly demonstrated itself and the physicians consider the trauma unit the most pleasant and efficient intensive care area in the hospital.

Pers., CC.

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AN EDUCATIONAL PROGRAM IN EMS SYSTEMS ADMINISTRATION

The title EMS administrator is broadly applied to individuals with different job descriptions and concerns. The differences derive from the particular nature of one's system and organization, as well as from one's position within that system and organization. The result is a heterogeneous group for whom it is difficult to offer relevant educational support in any single program. To complicate matters, there are continual changes in EMS technology, funding environment and rationalization of services, and programs that are useful specifically because they are topical are soon outdated. Despite these obstacles, no one doubts that educational support is essential, and that given the critical nature of the EMS administrator's job, such support must be offered quickly and concisely.

The Center for the Study of Emergency Health Services, University of Pennsylvania, under the auspices of a contract from DHEW, has addressed this complex problem by developing and offering a series of one-week courses to a carefully defined subgroup of EMS administrators: those who oversee the coordination of an emergency medical services system, or those who oversee some aspect of systems operation from a centralized agency. The courses offer a coherent picture of the administrative functions these individuals have in common: planning, financing, implementation and evaluation. Within this curricular framework, EMS-specific illustrations can be updated as required.

Eight courses with a total enrollment of 122 EMS administrators have been offered to date, and courses are scheduled for the summer and fall of 1976. A thorough evaluation of the pilot endeavor will culminate in the development of a model curriculum available for national dissemination in August 1976.

Pers., Adm.

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MEDICAL SPECIALIST PHONE CONSULTATION SYSTEM
IN SOUTHEASTERN MINNESOTA

A medical specialist phone consultation system is being designed in southeastern Minnesota to meet the consultation needs of our region's medical staff for the management and referral of critically injured patients. Instituting this system would also meet the categorization criteria requirements for five Area Emergency Centers (facilities with intermediate emergency care capabilities).

The medical specialist phone consultation system will be housed in Mayo Clinic and shall provide access to consultants in sixteen specialties: Anesthesiology, Cardiovascular Surgery, General Surgery, Internal Medicine, Neurology, Neurosurgery, OB-GYN, Ophthalmology, Orthopedic Surgery, Pediatrics, Plastic Surgery, Psychiatrist, Radiology, Thoracic Surgery, Urology, and Cardiology.

To gain access to these consultants, the medical staff of the outlying five Area Emergency Centers will be given a single phone number to call. A specially trained switchboard operator at Mayo Clinic will receive, process, and route the incoming calls for emergency consultation accordingly. Initially, all calls for specialist phone consultation shall be monitored for internal evaluation of the system.

This system is expected to be implemented within a month. It is expected to be accessible to all hospitals in the SEMHPC region in the very near future.

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E.M.S. NURSE-PHYSICIAN TRAINING PROJECT

North Dakota is one of the nation's most rural states with a physician patient ratio of about twice the national average, but has managed to develop an excellent prehospital emergency network with a high number of E.M.T.'s, and good communication system. However, we have no full time emergency physicians. Most of the emergency rooms are covered by their hospital staff's with various types of rotation systems, so it was felt expediant to train physicians and nurses in present day techniques. Under a H.E.W. grant, the University of North Dakota Medical School obtained cooperation with the Emergency Department of Denver General, so that conjointly they are training physician - nurse teams from the various cities in the State in a two phase program. In the first phase a team of doctors and nurses from Denver General come to a North Dakota city and present a four day workshop for the doctors and nurses in that area on various aspects of emergency medicine.

Following this session, there are five doctors and five nurses from various hospitals who go to Denver General Emergency Room for an on the job exposure to these same techniques in the Emergency Room and Ambulance Service. This is the second phase of the program.

Four such sessions will be held in the four A.H.E.C. cities of North Dakota and will train people from all the major hospitals of the State. It is hoped that these trainees will then bring this knowledge both to their areas and act as focal persons to react to further emergency medicine training in their particular hospitals.

Pers.

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USE OF THE TELEPHONE CONFERENCE IN EMERGENCY MEDICAL TRAINING

One of the most pressing problems in the rural areas is education for members of the health team. Distance, availability of personnel, and travel and per diem expenses are major considerations for the rural community hospitals.

Valley View Hospital in Ada, Oklahoma has provided one solution - the use of the telephone conference network for EMT-A instruction for both basic and refresher training. The present network has grown from seven, originally funded under the Regional Medical Program, to 96 hospitals state wide.

To date, more than 150 EMT's have been trained by the teleconference method in southeast and south central Oklahoma. The only restriction in expanding instruction is the number of training kits available, the present seven having come from HEW funding for emergency medical services. Pushing one button could make the programs available to the remainder of the state.

Dr. David Ramsay, FACS, is in charge of all EMT-A instruction, based on the 81 hour Dunlap course. A local physician is present at each of the six or seven sites receiving the teleconference simultaneously. Each physician is assisted by either a Registered EMT or RN. Cooperative assistance has been provided by the Oklahoma Trauma Research Society in testing for national or state registry.

The teleconference has also been used in conjunction with seminars to provide a 24 hour course in emergency room nursing on a state wide basis. After 16 hours of initial instruction by teleconference, instructional teams visited the following population centers in Oklahoma: Bartlesville, Lawton, Enid, Oklahoma City and Ada to provide eight hours of seminar instruction. More than 1,000 nurses profited from this opportunity.

In short, the teleconference method of emergency medical personnel instruction has met with highly favorable results. It has made instruction available to remote areas, it has reduced time for both students and instructors away from the job; it has reduced the costs of travel and per diem; and most importantly, it has attracted the interest and allowed the direct involvement of the physicians.

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EMERGENCY/AMBULATORY NURSE PRACTITIONER PROGRAM

The maldistribution and scarcity of primary care physicians have created the problem of patients with non-acute problems seeking medical care in the readily available emergency departments as well as for care of urgent medical problems. A program to train Emergency/Ambulatory Practitioners to function within the system of hospital Emergency/Ambulatory Care departments was developed. The training of Emergency/Ambulatory Professional Nurses with additional education and clinical experience will prepare them to make certain decisions and perform certain functions and tasks previously undertaken only by physicians. These include independent functions and delegated medical responsibility under physician supervision. These objectives lead to a system in the delivery of Emergency/Primary Care for non-urgent health needs, as well as the acute, urgent medical problems that present to an Emergency department.

The Emergency/Ambulatory Nurse Practitioner Program is a 30 week continuing education program to train 20 registered nurses annually. The course is approximately 1200 hours, of which 600 hours is didactics and laboratory and 600 hours is clinical practice and acquisition of clinical skills. The first 15 weeks is spent at Allegheny General Hospital, Pittsburgh, Pennsylvania, and in the second 15 weeks the participants spend four days each week in their home hospitals under the guidance and direction of their individual physician preceptors. They return to Allegheny General Hospital (one day each week) for review and reenforcement of areas needing more exposure and experience not generally available in their home hospitals.

Twenty Emergency/Ambulatory Nurse Practitioners have graduated with a third class now in the first semester. An evaluation plan for measuring outcome by using specific parameters to determine on-the-job performance has been done on the Emergency/Ambulatory Nurse Practitioner and it confirms a performance level that meets the objectives of the program.

Pers.

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EMERGENCY MEDICAL TECHNICIAN TRAINING
ARKANSAS EMERGENCY MEDICAL SERVICES SYSTEM

The Emergency Medical Technician training program for the State of Arkansas (based on the 81 hour D.O.T. Curriculum) is coordinated by the Arkansas Department of Health.

These EMT schools are being sponsored by approximately 27 cooperating Vo-Tech Schools and Community Colleges: These primary training sites are responsible for conducting and coordinating the basic EMT program within their respective service areas. Other training sites such as hospitals, fire departments, etc. are coordinated directly by the Department of Health.

The Department is assisting all approved training sites with Audio-Visual Aids and other technical assistance (e.g.) instructor training workshops.

There are presently six advanced level training sites throughout the State. These are conducted on an individual basis leading to an associate arts degree in Emergency Medical Technology.

Certification of basic EMT's is conducted by the Department of Health as per ACT 435, 1975, of the Arkansas Legislature. Certification of basic EMT's is competency based and there is no certification at present for the advanced EMT.

Pers., Ste.

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EMERGENCY MEDICAL TECHNICIAN-HOSPITAL TRAINING PROGRAM

The Emergency Medical Technician-Hospital training is designed to (train) unemployed persons to be nurse technicians in hospital emergency rooms. The program is funded under a contract from the Department of Labor to the University of Pennsylvania Office of Training and Staff Development. This pilot program of one year has been broken into segments of training in mathematics and language skills; clinical studies; and a combination of clinical studies and on the job supervision.

The medical aspects of the program have been coordinated by a registered nurse instructor under the auspices of the Center for the Study of the Emergency Health Services. Instruction and practice include routine emergency department care, basic and advanced life support; patient handling and patient-family interaction. The clinical curriculum enables students to perform most emergency room tasks (excluding administration of medications) under the supervision of a registered nurse, as well as qualifying them to take the EMT-H examination. There are 15 students in the course who will have completed 300 hours of classroom practice and study and 20 weeks of on the job training in 6 cooperating hospital emergency rooms. The course completion and employment date is May 20th, 1976.

A survey conducted in 1973 revealed a need for such a job category. An updated survey and evaluation of job availability and placement is anticipated in the spring of 1976. A more thorough evaluation and curriculum revision is planned for the summer of 1976.

Pers., Fc./Ct.

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TRAINING PROGRAM FOR EMERGENCY MEDICAL SERVICE PERSONNEL

The effectiveness of any properly designed communications system depends entirely on the ability of those who use it. It is therefore imperative that a training program be implemented for the instruction of operating personnel. This training is doubly important in the operation of an EMS network. The importance of communications discipline during operation of the system cannot be overemphasized. Proper procedure must be taught as to how to initiate, carry-on, and terminate a communications sequence. Instruction includes the use of simulators, mock-ups of actual consoles and mobile units, connected by wire line for simulated on-the-air practice by the trainees. This is important so that the personnel can obtain a working knowledge of the features and limitations of their equipment. Trainees gain confidence in their ability to function as a part of the system. In a similar manner, the trainees undergo instructions regarding the necessary medical information that will be sent by radio, eliminating the superfluous, and making sure that vital information is sent. At the termination of the training program, an evaluation of the trainees is made to determine their ability to operate under actual emergency situations. Information regarding the effectiveness of the training is fed back to the program from hospitals and ambulance operators observing the new personnel. In this manner, up-to-date and relevant information will keep the operators of the communications system efficient, resulting in an effective Emergency Medical health care program.

Pers., Comm.

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ROLE OF EMS AREA COORDINATOR

Traditionally there exists in any geo-political area, a great deal of friction between large and small hospitals; hospitals and ambulances; ambulances and public safety agencies. As a result, services such as EMT-A Training courses, transfer of critically ill and injured patients, and simple communication systems have been difficult to develop and incorporate into EMS systems.

The position of the EMS Hospital Coordinator can best be described as coordinating existing services and programs to develop uniformity and improve patient care. The coordinators are EMS-A's who reside in the area they will serve, and are employed by East Central Michigan Comprehensive Health Planning Council. As a result, they are knowledgeable about existing services and areas needing new ones. Because they are not employed by hospitals or other agencies in their service area, they can approach the problems and people involved as a neutral part, and overcome personal and political barriers. Onsite data collection is easier to perform accurately. They also function in coordination and assist with instruction of EMT-A courses promoting uniformity of courses and instruction. Education of emergency room personnel in the use of communication equipment and established referral patterns is another important responsibility. Provision of technical assistance to agencies requesting assistance in writing grants is another method of providing areawide coordination of communications and transportation equipment.

We have found it useful to place these coordinators at the four medical control point hospitals in our fourteen county area. This focuses attention on these designated hospitals as educational and referral centers for their three or four county areas. To date, we have had no difficulty with this approach and find it to be an excellent method of developing a regional EMS system.

Pers., Reg., Adm.

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In 1972 the Emergency Medical Technician Program was introduced at Grand Valley State Colleges. The program was financially supported by the Colleges and also funded in part by a Grant from the Michigan Association of Regional Medical Programs. This Grant terminated October 31, 1974 and the Colleges assumed the fiscal responsibility for the EMT Program.

Two levels of training are offered which include the basic and the advanced programs. The clinical training for the EMT is provided through the cooperation of the four local hospitals.

Using a college based program provides the EMT with the support of an educational institution, gives college credit for the 400 plus hours program and graduates the student with a certificate of accomplishment.

The Grand Valley State Colleges has diversified its approach to emergency medical services by extending EMT training to industry, dentists, nurses, dispatchers and school personnel. It has become increasingly obvious that the first response system cannot always render life saving techniques because of time limitations and thus additional groups have been taught emergency medical care as it applies to the environment.

It is appropriate and perhaps should be encouraged, that college systems become involved in the emergency medical technician programs. Aside from the obvious advantages of college credit and accreditation, quality control of this vital training program can be achieved.

Pers., Org.

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STAT, AN INTENSIVE COURSE IN EMERGENCY NURSING

The great percentage of small hospitals do not have on-going inservice training. Many of the nurses are on call for the emergency room. With the aid of 776 funding South Dakota has established a 60 hour course in emergency nursing to upgrade and update emergency nursing procedures in South Dakota hospitals. The curriculum was developed by inservice staffs of the larger hospitals to fit the situations usually occurring. The course is conducted in the larger hospitals using physician specialists as instructors. The 60 Hour course is taught in modules allowing the nurses from smaller hospitals to attend. The course has been partially successful, not because of lack of acceptance but because of lack of personnel and time to "sell" the course.

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ON THE JOB TRAINING

The information herein is in regard to the "On the Job" training for EMT's from rural communities of North Dakota, who are not exposed to a great deal of trauma, because very little trauma exists in their communities.

In 1973, the "On the Job" training program was suggested and offered to volunteer and other ambulance organizations for persons who were exposed to only a few ambulance calls per year. The results and interest of this program have been incredible. Since its beginning, nearly 300 National Registered EMT's and North Dakota have registered ECT's participate.

The North Dakota Emergency Medical Services Department, schedules two people per weekend to attend. The trainees generally arrive on Friday and stay until Sunday or later. Items covered during this period include: (1) Organization of the ambulance service; (2) Records and reports; (3) Communications; (4) Proper use of all ambulance equipment; (5) Location of all medical centers, and best routes to follow; (6) Local emergency driving policies; (7) Legal responsibilities (Coroner calls); (8) The importance of total cooperation with hospital emergency room staff, law enforcement agencies, and fire departments; (9) Emergency procedures, including the pre-hospital transportation and care of all kinds of victims of sickness and trauma; (10) They respond to all emergencies with well trained personnel. Films and other training devices are implemented and they are given information of how and where to obtain the latest life support equipment. The trainees are provided with sleeping and eating quarters, sheets, towels, blankets, and a recreational area, TV, etc. Since the very beginning, the course was booked solid every weekend. Expenses are paid by the EMS Division of North Dakota State Health Department, and costs are very insignificant.

Pers., Cm. Pr., Ste.

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EMT (AMB) TRAINING IN SOUTH DAKOTA

South Dakota's Emergency Medical Technician Training is based on the 81 Hour DOT/NHTSA course developed by the American Academy of Orthopaedic Surgeons. It is usually conducted in modular fashion in our state. A 22 Hour Emergency Care Course covering basic life saving procedures is conducted in local communities. It is opened and closed by EMS Staff personnel and coordinated and taught by local medical professional personnel. It is the first module of the total 81 hours and also serves as consumer education in that all citizens can attend. The second 50 hour module is taught in the larger cities allowing the use of a greater number of physician instructors. Nine hours of in-hospital training follow this module. The training has been very popular with more than 8000 citizens completing the 22 Hour Course and nearly 1300 completing the total 81 Hours. First responders have taken advantage of available training; the Department of Transportation have many EMT's and all Highway Patrol field Troopers are certified in the total 81 hours.

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PRE-HOSPITAL CORONARY CARE PROGRAM

In July, 1975, a committee of physicians, nurses, rescue squadsmen, and hospital administrators met at the office of the Capital Area Comprehensive Health Planning Council for the purpose of planning and implementing Richmond's first pre-hospital coronary care program. From this initial meeting, a Pre-Hospital Coronary Care Committee was formed under the auspices of the newly incorporated Central Virginia EMS Council (current applicant for 1203 grant for the Central Va. EMS Region).

Several sub-committees of this larger committee were established to develop both the Cardiac EMT course guidelines and overall guidelines for the coronary care program. After the guidelines were developed and the textbook was chosen, the first Cardiac Emergency Medical Technician course, involving thirty students from three Richmond area rescue squads, was initiated on October 2, 1975, at St. Mary's Hospital in Richmond, Virginia.

One of the Coronary Care Committee's primary goals is to ensure that there is complete coverage of the Richmond metropolitan area by Cardiac EMT's. Since only three of the seven rescue squads serving the Richmond area were represented in the first course, it was imperative that a second course be offered to include the four remaining squads. A problem was encountered, however, in that these four squads did not have the funds necessary to purchase the bio-medical telemetry equipment that will be used by the cardiac technicians. For this reason, the Central Va. EMS Council, through its Coronary Care Committee, decided to conduct a fund raising drive on behalf of these squads (see abstract on Fund Raising).

Though all the necessary funds have not yet been raised, a second Cardiac EMT class is currently in progress. This class, which involves 28 students from the aforementioned squads and one commercial ambulance agency, was started on January 21, 1976, at the Medical College of Virginia.

As a result of the work of the Coronary Care Committee, advanced coronary life support will be available to the citizens of the Richmond metropolitan area by the end of the summer, 1976.

Pers., Cou., Fin.

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EMT-II PILOT PROJECT

The Sierra-Sacramento Valley EMT-II project is unique in the fact that it is taught on-site in the rural hospitals by the Emergency Department personnel. The trainees must be currently certified EMT-A's, actively engaged in patient transport either as employees or as members of a voluntary response unit. They must pass a written and a practical examination. The exam will be subsequently administered to the trainees on-site by the Emergency Department personnel under the supervision of a member of the Regional Committee.

A contract type agreement was made between the involved hospital and the Region. An on-site meeting was held between the Regional Staff and the involved facility personnel representing hospital, medical staff, nursing staff, and representatives of the trainees.

The curricula was developed by the Regional Committee. There was also a Program Coordinator from each of the hospitals involved. The course consists of 4 modules, to be taught on a modular basis, with certification of each module as it is completed.

The didactic section of the course totals 40 hours while the clinical or practical section is approximately 80 hours for a total of 120 hours to be taught over approximately a 4 month time interval. All field work must be under direct radio control of the Emergency Department Physician.

The hypotheses of this program is that the rural areas can afford EMT-II service both in terms of time and available manpower particularly in view of the large numbers of volunteer responders. It is hoped that data may be obtained and confirmed that such "Short Course" training will produce emergency responders who can do perhaps 80-90% of the potential workload of a fully trained "paramedic" type responder.

Pers., PSA, Cons.

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ROLE OF EMS HOSPITAL COORDINATOR

Some of my first priorities as the EMS Hospital Coordinator can best be described as coordination of effort, and bringing uniformity of service and patient care to the area. My area of responsibility encompasses three counties in Upper, Michigan. There are eight hospitals and twenty ambulance services. Huron Memorial has been given a general categorization rating and has been designated as our medical control point.

Many animosities have developed over the years between hospitals and staff. The cooperative efforts of these institutions were almost nil. I felt my first effort should be to heal these misunderstandings so that they could work together. I personally met with all the hospital administrators and ambulance operators. I found that many of the problems stem from a lack of communication between them, and defensiveness on the part of the smaller institutions relative to the feeling that the larger institutions meant to close them. We have now begun to dispel this feeling and to work towards improving patient care. I have also begun to bring uniformity into our EMT program for our ambulance personnel.

A communication system will soon be completed in this area, enabling all hospitals and ambulances to be in direct communication with each other. Referral patterns are being established for seven critical care areas. At the present time, we have referral patterns in use for neonatal, burn, and head and spinal cord injuries.

Ongoing education for physicians has been established in our area. Of fifty-two physicians in the three counties, over thirty-five of them have enrolled in these programs. Education of both consumer and provider is the key to a viable, working EMS system.

Pers., Comm., Adm.

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Trauma Training Materials Development Program

The University of Washington Department of Surgery and Health Sciences Learning Resources Center have initiated a three-year project in trauma training. Since one of the realities of physician training in emergency care routines and trauma procedures is the inability to predict and plan for the occurrence of any given trauma or event, investigators are seeking to augment the random experiences of students and residents. Their goal is to develop a highly organized and effective educational program which utilizes the vast resources of a major Emergency Trauma Center (at Harborview Medical Center, Seattle) and a number of multi-media instructional materials.

After surveying the needs for material as perceived by students and residents, a videotape monitoring system was installed and a thorough search for available instructional materials was conducted. Relevant programs were evaluated by project staff. Appropriate materials have been purchased for placement in a newly created study carrel within the trauma center, and faculty members have agreed to author programs in the several remaining areas. Realistic representations of actual trauma victims filmed in the Emergency Trauma Center are being emphasized in the productions.

Three formats are being utilized: slide/tape for background information, videocassette for skill and technique films, and CAI programs for patient management and decision-making. The coupling of computer problems with videotape sequences or slides will provide more realistic simulations and give the student instantaneous visual and auditory feedback on his decisions. Plans are currently being formulated for final implementation and evaluation.

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THE CONCEPTION AND DEVELOPMENT OF A COMMUNITY INITIATED EMS

A community of 90,000 located in a 150 square mile area of North Harris County, Texas needed responsive and adequately staffed EMS. The administration of the local hospital agreed to endorse a three month trial program where EMS would be provided on weekends free of charge by the Harris County Emergency Corps. (HCEC). The HCEC is a well established, independent Houston-based, volunteer EMT group, supported by contributions. The HCEC program was favorably evaluated by hospital officials, staff and local residents. In May 1975, the Hospital, HCEC and interested residents brought together representatives of the 35 local subdivisions to discuss community EMS problems and needs. The representatives voted to incorporate to form the Cypress Creek Emergency Medical Association (CCEMSA), a nonprofit community EMS. CCEMSA goals were established: to deliver first class EMS, comparable to the City of Houston in response time, equipment and services. These goals required HCEC services, with community assistance and participation. A local fund raising drive with a goal of \$106,000 was established to secure full-time HCEC services, develop an operational base and communications network, purchase a fully equipped modulance, and provide courses in advanced first aid for residents. As of February 1976, \$100,000 had been raised; two ambulance bases were operating; a modulance was purchased; and with HCEC ambulances and personnel, 24-hour services were being provided. The courses organized by CCEMSA and taught by the American Red Cross/State of Texas certified HCEC EMT's has graduated 80 area residents. These individuals comprise "First-Out" terms, providing immediate care to victims while an ambulance is en route. First-outers assist HCEC EMT's on ambulance runs and attend monthly lectures arranged by the HCEC and the local hospital. The CCEMSA sought University of Texas Medical School at Houston cooperation in advancing the EMS program to include the use of paramedics, University house staff, and educational capabilities.

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TELEMETRY PROJECT

A telemetry project is now in process in Rhode Island with the cities and towns of Barrington, Cranston, East Providence, Providence, West Warwick and Warwick participating along with Rhode Island Hospital and Kent County Memorial Hospital. A total of selected seventy-seven emergency medical technicians were trained as Advanced EMT's.

An evaluation is being made to determine any weakness in the system and to find preliminary results. Recommendations based upon this evaluation will be made for this modification or possible extension of the system. As of now, all other Rhode Island communities have been requested to refrain from independent implementation of telemetry capabilities and to concentrate upon assuring that all first responders, and as many of the general public as possible, are fully qualified in the proper administration of cardiopulmonary resuscitation and other basic life support techniques. It is felt that these skills should always take priority over the purchase of equipment and the implementation of a system that has not been fully proven. The mechanical and procedure difficulties experienced in the telemetry project so far have served to make many of the agencies involved in the EMS system sensitive to the need to place equipment and program needs within a framework of specific objectives and expectations.

An additional training program for fifty-two emergency medical technicians to be trained as Advanced EMT's is in preparation to commence in the month of April 76. There will be slight variances in the course curriculum from the previous course.

A refresher course is in the process of development for the Advanced EMT's previously certified.

This training project is subcontracted to the Rhode Island Junior College and the tuition cost is paid by the Department of Health to those engaged in emergency medical services in the designated cities and towns.

Pers., Comm.

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PREHOSPITAL COORDINATION

Prehospital coordination involves all emergency medical service activity prior to the emergency room. Areas that are dealt with on a consistent basis with the prehospital coordinator and the subregional area coordinators are communications, transportation, and prehospital training. Communication control points have been established at each subregion. There is one hospital designated at each subregion for communication control for medical referral information. Each medical control point hospital must be equipped with the frequencies 155.280 and 155.340.

Communication seminars are given to all personnel involved with the use of communication equipment. Transportation service areas are well defined, and central dispatch is performed by the Sheriff's Department on a countywide basis. Pertinent areas of activity and emphasis in transportation are the development of additional mutual aid agreements, prioritizing vehicle "need" requirements, ambulance response survey, guidelines for air transportation, and a mutual aid agreement between the U.S. Coast Guard and Sheriff's Departments in the Thumb Areas.

EMT-A courses, EMT-A refresher courses, CPR courses, and First Aid courses for consumers have been ongoing and/or developing throughout East Central Michigan. There are six EMT-A courses in East Central Michigan, which are based at hospitals, colleges, and county facilities. Board adopted EMT criteria are used for course review and comment by the EMS Committee. Special areas of emphasis unique to East Central Michigan are water rescue techniques, psychological intervention (6 hours minimum), refresher course requirement, \$25 or less tuition fee recommendation, and instructor qualification standards.

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IMPACT OF MEDICAL TRAINING ON AMBULANCE DISPATCHING

This study was designed to determine if ambulance dispatch could be more appropriately and safely accomplished with operators highly trained in medical matters screening the calls. Sixty-three calls for assistance were recorded during a 2 month period. The recordings of the calls were presented to three physicians who were asked to indicate independently on each, the degree of urgency. A designation of the calls as emergent (response in 6 min.), urgent (15 min.) or nonurgent (60 min.) was recorded. Subsequently, hospital records were reviewed by an additional two physicians for degree of urgency, level of severity of morbidity and diagnosis. The cases divided into four main categories: automobile accidents, chest pain, sudden unconsciousness and miscellaneous. For the 18 automobile accidents, the dispatchers called 11 emergent 5 urgent and 2 nonurgent. The physicians unanimously considered 9 emergent and every case was considered emergent by at least one physician. However, in the 18 cases there was no serious morbidity, and no patient was admitted into the hospital. In the category "unconscious" there were 13 patients. Dispatchers called 7 emergent, one physician called 8 emergent and the remaining two physicians called all 13 emergent. There were 7 patients with significant morbidity or mortality in the group. For patients with chest pain, the dispatcher designated 6 of the 9 as emergent, 2 as urgent and one as nonurgent. The physicians considered 6 as emergent. Three of the 9 patients were having cardiac pain. In the miscellaneous group, there were 23 cases of which 21 were designated emergent or urgent by dispatchers and physicians alike. Included in the "emergent" group were patients with diagnoses including constipation, chronic weight loss, hip fractures and viral gastrointestinal syndromes. Physicians, like untrained dispatchers, categorized most cases as emergent in spite of the fact that only a very small proportion of patients receiving emergent care had significant morbidity. Physicians therefore were unable to separate severely ill or injured from other patients significantly better than did the dispatchers.

Pers., Trsp., Comm.

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SELF INSTRUCTION/TUTORIAL EMT PROGRAM

Prior to April 1974, adequately trained emergency medical technicians in geographically remote areas of North Carolina were almost non-existent. Since that time, one basic Mobile Emergency Medical Technician (MEMT) Training Program has been providing training opportunities for ambulance personnel in several remote areas of the state on an experimental basis.

The first step was to conduct a task analysis. Behavioral objectives consistent with these identified outcomes were written. Criterion-referenced test items were developed. The fourth step was to select already available media such as (a) a textbook, (b) 16 M.M. films, and (c) a 35 M.M. slide series. The instructional strategy to accomplish desired learnings was determined and presented in the form of Learning Activity Modules.

One hundred sixty eight students completed the MEMT course and took the OEMS Certification Exam. All passed the OEMS psychomotor exam. One hundred sixty five passed the OEMS cognitive exam for a 98.1 percent success. A mean score of 90.88 was achieved by students taking the OEMS cognitive exam, with a standard deviation of 7.53. Emergency medical technician (EMT) skills have traditionally been taught to students in a lecture/discussion setting and the length of the conventional classroom has been 71 hours. The mean number of classroom hours that it took students to achieve EMT skills in the individualized MEMT program was 32.2 hours. The pretest, mean score of 45.89 showed that the students did have some knowledge of EMS skills.

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TRAINING PROGRAMS FOR EMS MANPOWER AND IN RELATION TO FEDERAL FUNDING

Training of EMS personnel and related Federal funding is in a tenuous state. Accordingly, it is indeed difficult to speak in any specific terms to issues as standards, costs, credentialing, and the quality of training and services provided. Equally true is the nonavailability of earmarked funds for EMS training during the current fiscal year. In recognition of these many unknowns, I view the charge, then, to present the selected Federal resources which can be brought to bear to assist in maintaining a resource pool of trained personnel.

With the enactment of the Emergency Medical Services Systems Act of 1973, comprehensive authority for support of total EMS systems became available. This Act mandates 15 systems requirements with manpower and training being two of these. The EMSS Act amended Title VII of the PHS Act to emphasize training in emergency medicine (Section 776). This was assigned to the Health Resources Administration, Bureau of Health Manpower, which is responsible for administering other sections of Titles VII and VIII.

Over \$6 million was funded, and 78 grants and contracts were awarded to help support training for approximately 36,500 emergency health service personnel. In fiscal year 1975, although specific authority was not continued, the Bureau of Health Manpower did provide funds for training in the field of EMS under other sections of Title VII, and a total of 48 grants and contracts were awarded (Sections 772-774).

In summary, a great deal has been accomplished to improve the awareness and the delivery of emergency medical services personnel.

Pers.

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THE PHARMACIST: AN ESSENTIAL COMPONENT OF EMS

Since the use of therapeutic agents is clearly indicated in many emergency situations, policies must be developed for the selection, use, control, and distribution of such agents. Because of the training and knowledge of drugs, the pharmacists play an essential role in the planning and provision of emergency medical services.

A description is provided of the experiences in the Emergency Medical Services Demonstration Project (Region III) which led to the development of the use of an emergency drug kit by emergency medical technicians in the field. After regulations enabling advanced EMT's to administer drugs under prescribed conditions, a pharmacist was appointed to the EMS Advisory Board. While the State Department of Public Health Regulations permit the advanced EMT to administer drugs, the State Board of Pharmacy regulations control distribution of drugs. Therefore, the pharmacist was initially concerned with developing mechanisms whereby drugs could be available for use in emergency medical situations. After such procedures were approved, pharmacists worked in conjunction with EMS physicians to select specific drug agents and optimal packaging sizes. Information is provided explaining initial issue and re-supply of drug kits.

Overall control is discussed emphasizing functions of the hospital Pharmacy and Therapeutics Committee and purpose of site visits by the pharmacists. The importance of standardization of drug kits is stressed.

Pers., Leg.

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I.E.C. EMERGENCY MEDICAL CARE TRAINING CENTER

The purpose of this project is the establishment of a permanent center for the training of Emergency Medical Technicians. The Institute of Emergency Care, Inc. has been involved in training EMT's since its' founding in 1971. However, its' courses have been at other institutions utilizing borrowed equipment. That method of operation proved inadequate.

Our approach to the problem was to first locate a suitable building which we renovated to fit the specialized needs of our program. A problem in this area was that we required a facility large enough to allow 40-50 students to participate in lecture and practical work with little disruption. We also required an access to the area for vehicles used in extrication practice. The building we acquired was a former firehouse on the grounds of the Veterans Administration Hospital in St. Albans, New York City. We converted the garage into a classroom and the quarters into an office and student lounge. The conversion and renovation was primarily a voluntary effort by Institute staff members. After this was completed the only remaining problem was the evaluation and purchase of audio-visual training aids. That task has proven to be a continuing effort due to the constant redesigning of equipment and introduction of new designs.

To date we have completed one basic EMT course and two refresher programs in the new center. By June (the completion of the first year of the project) we will have completed 2 more basic EMT courses. Currently we have prepared a project proposal to do research on the effectiveness of this training on the eventual performance of the EMT on the job.

Pers.

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Paramedic Ambulance Service

The Beekman Downtown Hospital of New York City operates a paramedic ambulance as part of its pre-hospital emergency care program. This unit articulates with the EMS system of the City of New York and compliments the hospital's conventional ambulance service. Protocols have been established which enable the paramedics to respond to high priority calls in concert with the City's ambulance service of which Beekman is part. This provides a high degree of flexibility in the responses to calls. If not needed, the paramedic ambulance can be reassigned to work in tandem with another unit or on its own. This approach points the way to an urban formula for the use of paramedic ambulances equipped with bioelectronic telemetry heretofore untested in a vertically oriented densely populated urban environment of over half a million working adults in Lower Manhattan.

Data gathered over the first eight months of operation relating to logistics, deployment, response time, types of calls, treatment outcome and other factors have revealed patterns which merit further study.

Pers., Trsp., Urb.

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PROJECT FOR EMS SYSTEM ADMINISTRATION EDUCATION

The Association of University Programs in Health Administration (AUPHA), a consortium of 74 university programs, is currently developing curriculum for EMS System Administration. Goals of the educational program, which is primarily aimed at the continuing education of local EMS administrators (eg. ED and field rescue, EMS planner) include: (1) to establish an understanding of current trends in EMS including its relationship to the broader health delivery system, (2) to sharpen management and planning skills, and (3) to facilitate interaction and cooperation among individuals and agencies involved in establishing EMS systems (eg. EMS Councils).

The project is funded by the Bureau of Health Manpower, DHEW (contract # 231-75-0602) and is carried out with the assistance of a national Advisory Committee with expertise in EMS administration and education.

AUPHA will field test its curriculum in the fall and winter of 1976. An initial pilot educational program has been successfully completed under the cosponsorship of Florida International University in Miami.

EMS agencies interested in offering this educational program in their region should contact:

Pers., Adm.

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EMT TRAINING - UNIVERSITY OF ALABAMA IN BIRMINGHAM

The Regional Technical Institute, School of Community and Allied Health Resources, Univeristy of Alabama in Birmingham offers four levels for Emergency Medical Technicians, and one area for Allied Health Specialists. Instruction is provided by a staff of E.M.T.'s, R.N.'s, M.D.'s, and educational specialists.

The four levels for E.M.T.'s provide a curriculum where students can track into separate standing modules that offer licensure after each area, or a continuous training until the Associate Degree in Emergency Medical Technology is obtained.

Allied Health Science 100, Emergency Medical Procedures for Allied Health Sepcialists, is designed to provide allied health specialists with lifesaving techniques that can be accomplished without specialized equipment. This is a true core curriculum course in which students in P.T., O.T., X-Ray, Med. Lab., etc., are taught by E.M.T. instructors.

Pers.

Alan R. Dimick, M.D.
Associate Professor of Surgery
David Markem, EMT
Department of Surgery
UAB, University Station
Birmingham, Alabama 35294

SKYSCRAPER SURVIVAL PROJECT: NEW YORK CITY

Determined to coordinate the city's fragmented, politicized emergency medical services into a unified, effective health care delivery system, the Council acted to improve each element in the continuum of care so as to strengthen the whole.

As catalyst and coordinator in a metropolitan mix of high-rise office and residential structures, and sprawling suburban-like boroughs, the main task was to develop a "first responder" capability to provide life support before the ambulance arrives.

With New York the headquarters city for 20% of the nation's top corporations, employing more than half a million people, the Council organized complete building-wide emergency medical service systems on the model of proven fire-warden systems. Corporate executive, secretarial and security personnel are trained on-site in 21-hour life-support and CPR programs. Access to medical ambulatory personnel and extrication are part of the program. Occupational physicians and industrial nurses are also receiving specially designed programs.

With only municipal ambulances responding to a 911 call, the Council is designing a one-tier system to include all ambulance services and will offer advanced EMT training to personnel in all segments.

The Council is the first in the nation to sponsor implementation of the EDNA Core Curriculum for ED nurses. A completed pilot project in management of multiple trauma for 35 participants, will be followed by the full curriculum for 500 ED nurses.

Despite serious cuts in Police Department manpower and training due to fiscal crisis, the Council is engaged in a series of negotiations to re-emphasize EMS needs of front-line rescue personnel.

The Council's visibility through print and electronic media has meant coverage of EMS problems and needs unprecedented in New York.

Pers., Urb.

WALTER F. PIZZI, M.D., Chairman
The Regional Emergency Medical Services
Council of New York City
40 West 57 Street
New York, N.Y. 10019

RURAL EMS TRAINING

The training of Rural EMS personnel presents unique problems which must be considered in achieving consistently high quality of personnel. The most important objective is to maintain the quality of the Program and the graduates. Poorly trained EMS personnel are dangerous. In order to provide the necessary quantity of trained EMS personnel, a program must:

1. Provide Easy Availability of Training.
2. Train Instructors for Support.
3. Determine Priority of Students in the Classes.
4. Have Available Sufficient Equipment to Effectively Teach.

Types of Training Programs

- | | | |
|----|------------------|--|
| 1. | "Crash" Course | 3 Days |
| 2. | "Spaced" Course | 2 times Per Week |
| 3. | "Modular" Course | Total Course Divided into Complete Topic Segments. |

Location of Training

Community	- 1,000 -	3,000 population
Regional	-	Health Facility and Community College
Central	-	Major Medical Complex Associated with a Medical and Nursing School

1. Professional curriculum development.
2. Central coordinating and approving authority.
3. Central Instructors training.
4. Central Testing Coordination.
5. Regional Training Centers - Backbone for Multiple levels of Training.
6. Community Instruction by Regional Trainers.
7. Isolated Community Instructors.
8. Limited Central Instructors for "Trouble Spots".
9. Physician Supervision -- All Levels.

Pers., Rur.

Frank L. Mitchell, M.D., F.A.C.S.
 Professor of Surgery
 Director, Emergency Medical Services
 M 580 University Medical Center
 Columbia, Missouri 65201

Emergency Medical Training System (EMTS):
A Model for Urban Centers

The EMTS consists of four (4) elements: 1. A joint Associate degree (New Jersey Medical School and Essex County Community College) for "Advanced Emergency Medical Technician". 2. Advanced didactic courses for EMT in the five pilot designaged areas. 3. Nurse Trauma Course (150 hours), and 4. A physician's Emergency Medical Course.

Each is developed around the team concept in emergency care. Evaluation is essential and draws attention to: a) program direction, b) program objectives, c) program components, and d) uniform curriculum.

Pers., Urb.

W. Harmon, MA, et. al.
College of Medicine and Dentistry
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100 Bergen Street
Newark, New Jersey 07103

A Core Curriculum for Continuing Education in Emergency Care

A core curriculum for continuing education in emergency care is now available to adapt to your needs, your designs, your capabilities, through a grant made possible by the Nebraska Regional Medical Program. This 75 page curriculum outlines basic information that should be incorporated when dealing with the wide variety of topics pertaining to emergency care. It is ideal to use in preparation of work-shops, emergency courses, or as an individual study guide.

It deals with General Information (charting, legal aspects, history taking, etc.), Respiratory and Cardiac Emergencies, Trauma, Medical Emergencies, and Special Categories (Burns, Pediatric, OB, and Psychiatric Emergencies).

Pers.

Bryan Memorial Hospital
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Lincoln, Nebraska 68506

A BRIEF OUTLINE OF THE USE OF A DOG
LABORATORY IN A RURAL AREA FOR TRAINING

The following are a list of the uses of a dog laboratory in a rural area for week-end training sessions without intending to do basic research:

1. Training of hospital and ambulance personnel to do intubations.
2. Training of all para-medical and medical personnel in the crico-thyroid stab procedure.
3. Utilization of the same animal while under anesthesia for training of surgeons in new techniques, such as a pariental cell vagotomy and for H graft shunts with pressure measurements.
4. Training of hospital, para-medical and surgical personnel in the use of the Gotts shunt tubing for emergency bypass procedures.
5. The training of medical personnel in the insertion and use of the Swan-Ganz catheter.
6. The use of the Swan-Ganz catheter in measuring cardiac outputs.
7. The training of hospital and medical personnel in the use of the balloon tipped Swan-Ganz pace maker.
8. The training of nursing and medical personnel in the use of the bypass balloon catheter procedure in the vena cava for liver trauma.
9. The training of hospital and medical personnel in the use of Dopler monitoring of peripheral vascular circulation.
10. The training of hospital personnel in the monitoring of a patient through resuscitation with open chest massage measuring cardiac output, and demonstrating the advantages of cross-clamping the aorta.
11. The use of muscle surface PH meter in evaluation of changes in the metabolic state of the animal, and also in determining changes secondary to arterial obstruction controlled (and partial) and evaluation of the modality for use in monitoring of blood flow during and post-operatively in an extremity.
12. The training of OR personnel and ICU nurses in the use of and monitoring of pace makers, both epicardial and endocardial.
13. The training of EMT's and nursing personnel in Cardiac resuscitation.

Pers.

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EMERGENCY PHYSICIAN TRAINING IN HAWAII

Hawaii Medical Association (HMA) - Emergency Medical Services (EMS) Program has conducted semi-annual Hawaii Emergency Physicians Seminars (HEPS) for physicians staffing Emergency Rooms in Hawaii due to a lack of emergency medicine residencies and other emergency medicine continuing education programs in Hawaii. A typical 2 day session has included:

Fourth HEPS (1/26/75 - 1/27/75) With Lab Sessions (1/28/75 - 1/29/75

Hawaii MICT's Experience, Ankle Injuries, Head/Neck/Facial X-Rays, Interesting ER Cases, Pediatric Respiratory Emergencies, Low Back Pain, Eye Emergencies, with Laboratory sessions in 7-Plasty/Suturing, Ankle Taping, Peritoneal Lavage, Endotracheal Intubation, Tracheotomy, Twist Drill, Chest Tube Insertion, Fiberoptic Bronchoscopy, Swan-Ganz Catheterization, and Transvenous Pacing.

Sixth HEPS (11/17/75) - 11/20/75

ER Cases, Endocrine Emergencies, Legal Medicine, Dermatologic Emergencies, Pediatrics Meningitis, Chest X-Rays, Medication Adverse Reactions, Heart Blocks, Brain Death/Transplants, Pericardiocentesis/Thoracotomy, Pediatric Acute Abdomen, Facial Fractures.

The average seminar physician attendance is 35 (95% from Oahu), with hour/hour CME credits (ACEP, AAFP, AND AMA) and topic references provided. Seminar conduction on neighbor islands is needed.

Pers., Ste.

J. K. Sims, M.D.
Training Coordinator
Hawaii Medical Association -
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1301 Punchbowl Street
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OCEAN LIFEGUARD EMERGENCY MEDICAL CARE TRAINING IN HONOLULU

The ocean lifeguard is the primary medically-trained person in the immediate vicinity of aquatic recreation facilities, with a first-responder precinct consisting of the beach, the water, near-by docks, beach parking lots, beach dressing rooms, and beach access roads. Recreationists' pre-existing medical problems or acute emergencies cause a lifeguard's emergency medical care responsibility to include: near-drowning, diving emergencies, marine organism stings/trauma, burns, automobile accident injuries (including pedestrian), motorboat induced trauma, board/body surfing trauma, epilepsy, diabetic ketoacidosis, insulin shock, strokes, heart attacks, eye emergencies, fractures, lacerations, behavioral disorders, drug overdose, airway obstruction, emergency childbirth, cardiopulmonary arrest, et. al.

All of the above disorders (excepting childbirth) have been seen in Oahu's lifeguard precincts, so HMA-EMS designated a 40-hour Lifeguard Emergency Medical Care course.

The 80 full-time Oahu lifeguards have been trained, with integration of the EMSS concept, 911, EMT/MICT ambulance backup, MAST (beach pickup capable), helicopter direct water extrication, improved medical kits, and improved report forms. Part-time lifeguard training and effectiveness statistics are pending.

Pers., Urb.

J. K. Sims, M. D.
Training Coordinator
Hawaii Medical Association -
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Training of emergency medical technicians in advanced life support skills has evolved in this country as a largely disparate and uncoordinated venture--reflecting local needs, predilections and resources. Up to this time, standardization of skill and knowledge objectives, achieved at the EMS-basic level through the National Registry, has not been accomplished for the advanced level emergency medical technician (paramedic). The development of a federally endorsed, model curriculum is seen as a first step toward such standardization.

In July, 1975, the University of Pittsburgh was awarded a contract from the United States Department of Transportation to develop a model curriculum for the training of paramedics, based upon:

- (1) a review of USDOT interim materials;
- (2) a review of curricula currently employed in major U.S. EMS systems; and
- (3) the recommendations of the National Academy of Sciences/National Research Council Task Force on Emergency Medical Technicians.

The contractors also sought the input of a variety of national EMS experts, ten of whom were appointed to an Advisory Committee to review materials in preparation.

The curriculum, completed in April, 1976, is structured into self-contained modules, permitting scheduling flexibility and definition of intermediate levels of training. Successful completion of the course is defined in terms of competencies rather than hours. The curriculum consists of three components:

- (1) A Course Guide, providing information required by those administering the curriculum;
- (2) Instructor Lesson Plans, providing instructional and evaluation materials for each of the instructional units;
- (3) A Student Study Guide, providing a reference textbook for the student.

These curricular materials will be available through regional offices of the National Highway Traffic Safety Administration.

Pers, Fed. \$

Nancy L. Caroline, M.D.,
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Pittsburgh, Pa.

THE UNIVERSITY HOSPITAL EMERGENCY DEPARTMENT
AND SUBURBAN AMBULANCE SERVICES

The University of Colorado Medical Center Hospital relates both to the City and County of Denver and several surrounding independent suburban townships. A city-funded and controlled ambulance service has been run from the city hospital for several years. The rescue units of surrounding townships have been loosely organized and lacking in crisp medical direction. An 81-hour EMT course sponsored by the University hospital's Emergency Department serves as a starting point from which surrounding suburban rescue units could be organized.

During the EMT course, close relationships were developed between Emergency Department staff members and members of suburban rescue units. Following the course, members of the Emergency Department staff pursued this relationship by becoming medical advisors to the suburban units, and met with the squads regularly at bi-weekly intervals. Skills beyond those taught in the 81-hour course, were taught at these sessions. Attendance at these continuing education sessions by rescue unit personnel was high. Pre-hospital emergency care in the suburban areas improved.

Pers., Md.C.

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E.M.T. AND THE FIRE FIGHTER

It is necessary, in a consideration of the subject of emergency medical services, to look carefully at the impact upon fire fighters who may be called upon to provide this service.

It is generally felt that fire fighters are the logical individuals to provide emergency medical services. There are several reasons for this feeling, among them the fact that fire fighters are men who have an unusual interest in helping other people. The nature of their work calls for a selfless dedication to other people. Indeed, this selflessness results in the highest rate of deaths in line of duty of any workers in the country.

There are many fire departments today in which emergency medical services are included, but there are certain drawbacks for the fire fighters, in considering whether such services ought to be added to those already borne by the fire departments. Among these aspects of such additional responsibility there should be a careful consideration of whether the assumption of emergency medical service will be undertaken without addition of new personnel in the department. This is a real concern of fire fighters because, in so many cities today, fire equipment is already grossly undermanned. This results in fire equipment being dispatched with two or more fire fighters short and thus increases the dangers to themselves as well as to the public which they serve.

Pers., Org.

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UTAH EMERGENCY MEDICAL TECHNICIAN TRAINING

The high standard and state wide consistency of performance displayed by the Utah Certified Emergency Medical Technician, is the direct result of legislative action placing their training under state control. Utah has established a state wide instructor training and certification program, which is directed from the state level. Utah requires all state certified EMT's to be registered with the National Registry of Emergency Medical Technicians. While supportive of the National Registry the training and skill requirements spelled out for Utah certification exceeds the standards established by the National Registry. The acceptance of National Registry standards by the state is beneficial in that it offers the EMT mobility and recognition in other states. At the same time it gives the state of Utah broad control standards against which training quality can be monitored.

Training is made available to all areas of the state through two training concepts: (1) outreach courses conducted by the state in the rural areas and (2) institutional courses conducted through the urban colleges. To assure a continuous high quality emergency medical technician training effort the state of Utah signs a letter of agreement with institutions of higher learning spelling out the standards which must be met for Utah certification. The state of Utah has established recertification standards in accordance with the National Registry's guidelines which require constant participation in in-service training programs that the state provides. The refresher training courses broadcast over public television and a professional training staff working with local communities in developing workshop and seminar materials advances the emergency treatment of the sick and injured.

To meet the needs of the vast rural areas of Utah, the state legislature has authorized the training of select emergency medical technicians in intravenous transfusion. Training in this advanced module assists the EMT in treating shock and maintaining avenues that can be used for more advanced treatment by the physician. Certification and de-certification of emergency medical technicians is accomplished by legislative action through the Utah State Board of Health with joint approval of the Utah State Medical Association.

Pers. Ste.

Utah State Division of Health
Bureau of Local Health Services
EMT Training Program
James L. Hendrickson, Coordinator
44 Medical Drive
Salt Lake City, Utah 84113

UTAH MICU PARAMEDIC PROGRAM

The paramedic program in Utah has its roots in the strong legislative directives of the "Utah Mobil Paramedic Act" and in Regulations and Standards passed by the State Board of Health. The Regulations and Standards requires the establishment of an advisory committee that is intimately related to the overall paramedic system and provides consumer input as well as provider and administrative direction.

One unique aspect of the paramedic system is the selection process where, in addition to the college entrance exams in academic fields, prospective trainees must pass a skills oriented physical agility test to determine how quickly a person can recover from physical exertion and be fully able to perform life saving activities.

Utah has decided to have all paramedic training done in an academic setting at Weber State College and beginning with fiscal year 1977, an associate degree will be awarded to personnel successfully completing the training. The college, under contractual arrangement, certifies to the State Division of Health that upon completion of the training period the paramedic has demonstrated the ability to perform patient assessment and evaluation, esophageal intubation, intravenous infusion, and a full range of pre-hospital cardiac care including drug intervention and definitive treatment of trauma victims.

An extensive inservice program exists under local jurisdiction and a two year recertification examination is required by the state to insure the maintenance of knowledge and skills.

Pers., Ste., Leg.

Utah State Division of Health
Bureau of Local Health Services
Emergency Medical Services
Richard W. Abbott
Paramedic Coordinator
44 Medical Drive
Salt Lake City, Utah 84113

Community Health Aides
as
Primary Health Care Providers

The Alaska Native population, numbering 75,000, is the largest ethnic minority group in Alaska and bears the burden of being "disadvantaged" by practically all criterion. The high incidence of disease and the inability of professional health personnel to travel to villages or to communicate with the villages on a regular and frequent basis because of weather conditions, staffing, distances, and/or time makes it imperative that some other source of health care be provided. Therefore, to meet the needs of the health care in these communities, currently Alaska health care in the villages is provided by a Community Health Aide, functioning under the direction of the medical officer of the Alaska Area Native Health Service or his designee. These Community Health Aides are predominantly female and reside in the villages where they provide their services. They are a vital link where the knowledge of the health professional is conveyed to the village people and play a key role in the development of health sophistication of the people. They currently receive up to ten weeks of training over a two year period under the auspices of the Indian Health Service.

There are presently approximately 150 villages who utilize this type of service. Clearly, physicians are not only unavailable, but largely inappropriate for rendering primary care in this environment. There is also general agreement that the current aides need additional training.

The present training includes:

- a. 593 hours of didactic material
- b. 592 hours of practical and clinical work

Pers., Rur.

Joe Notaro, Deputy Director
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670 West Fireweed Lane
Anchorage, Alaska 99503

EMERGENCY CARE NURSING EDUCATION

Basic 81-hour E.M.T. training began in Memphis in 1972 with the Memphis Fire Department ambulance personnel receiving instruction in lifesaving procedures. This course made it possible for victims of injury and illness to receive initial emergency care. In 1974, a 480-hour E.M.T.-Advanced Training Program was implemented at Shelby State Community College. The next step in training was the Emergency Department Nurse.

The 120-hour Emergency Care Nursing Course was funded in part by the Memphis Regional Medical Program. Patient teaching techniques include a description of principles of the teaching and learning process, recognition of patients' needs for teaching and the skills utilized in patient education. Clinical practice is provided in the areas of emergency departments, intensive care units, anesthesiology, out-patient laboratory, respiratory therapy and electrocardiogram departments.

Registered nurses and licensed practical nurses providing emergency care in hospitals, schools and industry are given priority for admission to the course.

The Emergency Care Nursing Course has been awarded 12 quarter hours of credit by Shelby State Community College. The Tennessee Nurses Association awarded 917 T.N.A. Recognition Points for the course and the Program is being evaluated for endorsement by the Emergency Department Nurses Association.

Pers.

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Coordinator
Emergency Department Education
Shelby State Community College
Allied Health Division
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THE MINNESOTA MEDICAL SERVICES TRAINING GRANT

This report is written to describe Minnesota's State Plan for training Emergency Medical Technicians through the Minnesota Vocational Technical Education System.

The problem was to provide the same level of expertise in the training of Emergency Medical Personnel in the rural areas of Minnesota as could be easily provided in the metropolitan areas. The State of Minnesota has many very highly developed medical centers, which house experts in most areas of trauma treatment. But these centers are remote from all of the rural areas. Minnesota's solution to this problem was to develop an 81 hr. EMT training program, utilizing the D.O.T. guidelines in an individualized instructional program. The program was designed specifically to provide a uniformly high quality program for all EMT personnel throughout the State. The result has been the establishment of seven permanent training centers.

The primary objective of the grant was to provide training to 1120 emergency personnel. As of June 30, 1975, these centers have provided for the training of over 1100 emergency personnel. Permission has been granted additional funding for 1975-76 to continue the current program and to add four additional training sites.

Pers., Fed. \$.

Dr. Ron Gilsrud
Manager, Adult Extension
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AN EXPANDED ROLE FOR THE NURSE

EMERGENCY MEDICINE*

An Emergency Nurse Practitioner Program has been developed at the University of Virginia to provide the nurse with the necessary knowledge and skills needed to deliver primary and emergent health care in the two-semester. The first portion of the program is primarily didactic with selected clinical correlates; the second consists of concentrated clinical rotations with preceptor guidance; and the final portion is a three-month preceptorship in an emergency health care center arranged by the student.

All graduates of the program are certified instructors for Emergency Medical Technician and Basic Life Support courses.

The program is approved by the Virginia State Boards of Nursing and Medicine. Graduates of the program apply to these Boards of certification. Upon certification, they are licensed to work as a nurse practitioner in Emergency Medical Services under the direction of a designated physician.

Continuing education will be a clinical option open to the student who meets graduate requirements and is accepted into the Medical-Surgical Nursing Graduate program, thereby providing a course upon which master's level content and skill could be built for the master's prepared clinical practice.

Frank Block, M.D., Frederic Berry, M.D., William Watson, M.Ed.,
Richard F. Edlich, M.D., Ph.D.

*From the University of Virginia School of Nursing and the School of
Medicine
Charlottesville, Virginia 22901

Pers.

SELF-INSTRUCTIONAL TRAINING PROGRAM FOR THE EMERGENCY MEDICAL TECHNICIAN

Every "first responder" to a critically-ill patient must be able to care for and transport the critically-ill and injured patient. The care of the patient necessitates that the health care deliverer execute a variety of practical techniques (i.e., CPR, application of Thomas splint, etc.). While there are several comprehensive training programs with lesson plans, they do not give detailed recommendations regarding the practical aspects of training.

For that reason, we have developed a self-instructional training program utilizing videotapes that demonstrate the recommended techniques of delivering care to the critically-ill patients. As the students view the tapes, they perform the practical techniques until they are mastered.

The benefits of this self-instructional program are obvious. It allows the students to learn at their own pace. The size of the classes do not have to be limited because of insufficient number of instructors to teach practical training. Utilizing these training aids, we have incorporated emergency medical technician training as part of the academic curriculum of medical and nursing students at our medical center. Finally, it is a method of continuing education to ensure that the practical performance of the Emergency Medical Technician is optimal.

Pers., CC.,

Frank Block, M. D.
Frederic Berry, M. D.
William Watson, M. Ed.
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Emergency Medical Service
University of Virginia Medical Center

ROCKY MOUNTAIN EMT SATELLITE REFRESHER COURSE

During the spring of 1975 Colorado EMT's shared with EMT's from seven other Rocky Mountain states, the unique experience of participating in a satellite communications EMT refresher course. One hundred EMT's from Colorado, some travelling up to four hours, attended the seven Saturday morning classes. The NASA ATS-6 satellite had been originally utilized to broadcast educational programming in eight mountain states to 56 rural isolated communities and 11 Public Broadcasting Stations. The EMT refresher course piggybacked onto the existing system and was able to provide quality EMT refresher instruction to Colorado EMT's in dire need of this supplemental training. The achievement of the satellite program was the utilization of top level EMS people from around the Rocky Mountain region. These experts were brought to Denver where the program was broadcasted and videotaped. Rural mountain towns in remote locations were able to share the knowledge and experience of known experts directly in their own small communities. The potential for training health personnel by satellite is infinite. This was only a demonstration project, but the concept of broadcasting EMS training programs via satellite to small isolated communities in Colorado, as well as other Rocky Mountain states, holds a brilliant promise and hopefully a future for this region.

Pers., Comm.,

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COMMUNICATIONS

The concept of a 911 single number access is an integral and essential component of a viable EMS system. However, when 911 is a physical impossibility at the time in question, there is a workable alternative for the single medical access number for a large region.

The Panhandle of Texas comprises 24,900 sq. mi., twenty-five counties, 330,316 population, with seven telephone companies. With some thirty-six ambulance services in the Panhandle dispatched through every conceivable public agency, not necessarily on a twenty-four basis, the citizen was confronted with a myriad of access numbers for medical help.

Consequently, the Panhandle Emergency Medical Services System officers and communication consultant met with all telephone companies in anticipation of implementing a 911 system. After due analysis, it was agreed that 911 was completely unfeasible in the near future due to antiquated exchange equipment, but there were alternatives.

Obviously, to provide access to the EMS system for both the resident and non-resident, a pseudo 911 single number was of prime importance. After due exploration, the most feasible and least expensive solution was to secure a single in-WATS number for medical emergencies. Negotiations were concluded with the Southwestern Bell Telephone Company to secure a toll free 800 number.

To inform the citizens and non-residents of the Panhandle, a comprehensive publicity campaign was prepared including newspapers, radio, television spots, and a half-hour live television show; in addition to the use of bank, motel and restaurant neon signs explaining the system and publicizing the number. All seven telephone companies are listing the EMS number on the inside front cover of their community telephone books. Telephone stickers and flyers are being prepared for distribution throughout the area.

February 1, 1976, the toll free 800 number was operational with a central communications dispatch center established to receive incoming calls in addition to dispatching some sixty-four ambulances throughout the Region via the UHF communications equipment installed for medical use and VHF equipment for police, sheriff and fire and other public service agencies.

911 will be available to the urban community of Amarillo in the near future, but for the rural communities the in-WATS number will be the only alternative for many a year to come.

Comm., Rur., Acss.

BETTY O'ROURKE
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EMS COMMUNICATIONS:
STATEWIDE STANDARD OPERATING PROCEDURES
FOR EMS RADIO NETWORKS

In the past, EMS providers in Massachusetts have frequently acquired radio equipment without concurrently establishing any standard operation procedures to be shared with other system users leading to ineffective use of the systems due to confusion over the meaning of traffic transmitted and the start and conclusion of separate conversations. No protocols had been developed to allow implementation of medical point-of-entry plans and the transmission of essential patient condition information from EMT's in the field to hospital facilities.

OEMS early in 1976 developed and distributed a set of statewide standard operating procedures (SOP) for EMS radio networks. Included in this document are: (1) Identification and designation of Medical Emergency Radio Networks (MERN) to implement the SOP; (2) Standard Vocabulary (Radio Terminology); (3) Call-up and Sign-off Procedures; (4) System Testing Procedures; (5) Standard Transmission Formats and Medical Information Formats; and (6) "Emergency" Break-in Procedures.

This set of statewide SOP will be utilized by Massachusetts EMS providers as they continue to implement EMS radio systems. Although the use of codes is not recommended statewide, local codes peculiar to certain areas may be retained by those providers to continue relationships established previously and used in conjunction with the statewide SOP.

Comm., Ste., Acss.

Russ Kulp
Massachusetts Department of Public Health
Office of Emergency Medical Services
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EMS COMMUNICATIONS: BOSTON

EMS communications in Boston have been fragmented and ineffectual in improving patient care in the field and in transit. The fourteen acute care hospitals have tried to use a single-channel, VHF radio network for inter-hospital communications. This network for several years has been underutilized due to much radio interference from non-EMS systems, aging equipment, and a lack of effective operating procedures. As a completely separate network, the City's officially-designated emergency ambulance service, operated by the Department of Health and Hospitals, had utilized a single-channel UHF radio dispatching system with its vehicles. This system had been operated within cramped quarters at an ambulance garage with unreliable direct land-line linkage to the Boston Police Department's Communications Center, where EMS request calls were answered by "911" operators. Few City ambulances had direct voice contact with any of the hospitals. "911" system operators lacked effective specific instructions to refer ambulance requests quickly and on a priority basis to the DHH ambulance dispatching personnel.

Boston EMS providers are implementing a consolidated, coordinated EMS communications system. Centralized in an EMS Communications Coordinating Center (CCC) all requests for ambulances from the "911" service will be answered by qualified EMS dispatchers at the CCC. Vehicles will then be dispatched from various locations in the City with the assistance of the Police Department's Computer-Aided Dispatch system. CCC personnel will also coordinate the use of a new UHF medical consultation and control radio system for direct voice contact between field personnel and any hospital. This network will utilize consolidated base station equipment connecting all hospitals and transport services, with the capability (1) to cross-band conversations on the UHF system with any existing VHF equipment, and (2) to monitor continuously the status of hospital and transport resources in the Greater Boston area.

Comm., Urb., Pers.

Russel Kulp
Massachusetts Department of Public Health
Office of Emergency Medical Services
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Boston, Massachusetts 02111

EMS COMMUNICATIONS: FALL RIVER

Until 1975, no direct radio communications was possible between emergency transport vehicles and the three hospitals serving the Fall River Area, in Southeastern Massachusetts.

Assisted by federal funding, the Greater Fall River EMS Committee is implementing an area-wide UHF radio system incorporating the elements compatible with the preliminary engineering design of the statewide EMS communications backbone system. From a consolidated base station location any emergency transport vehicle with appropriate equipment will utilize assigned MED channels to talk with any of the hospitals. Channels will be assigned from and established by personnel at the EMS Communications Coordinating Center (CCC) located at the Fall River Fire Department's alarm facility. The CCC will also monitor the status of the area's EMS resources. In addition, local hospitals are working closely together through their Area Hospital Committee to develop and implement procedures which will facilitate medical advice and direction to EMT's in the field, in accordance with agreed-upon point-of-entry plans.

To manage and operate this system on a cooperative and on-going basis, the area's EMS providers have formed a non-profit corporation. That corporation will hire personnel for the CCC, provide funds to maintain common equipment, and supervise the utilization of the radio network and related EMS system matters administratively and operationally.

Comm., Urb., Pers.

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STATE OF MAINE EMERGENCY MEDICAL SERVICES COMMUNICATIONS

In 1969 only a handful of hospitals and ambulances were linked via radio communications. It was in that year that efforts began which resulted in a WHF system that now covers 46 of our 52 hospitals, linking them with over 100 of our 142 full time ambulance services. This effort was launched by a consultant's system design study done for the Maine Hospital Association (MHA). This initial interest by MHA was politically important.

The system was to be implemented with varying success by each of Maine's five (b) agencies. Each region was assigned one frequency (155.325, 155.340, 155.355, 155.385, and 155.400 MHz). 155.280 MHz was assigned one hospital in each region. Unfortunately, it was never licensed nor used. Initially, there was little need for interregional or interstate communications (with New Hampshire) by either hospitals or ambulance services. Only one (b) agency required its border hospitals and ambulances to acquire multi-frequency equipment. With increasing interregional critical care referral patterns, more units are now adding a second and third hospital frequency. Because of the five frequencies, there is minimal traffic and interference. We also maintain close frequency coordination with New Hampshire. Because these are mainly tertiary frequencies, licensure was a problem in part of one region. While the initial study overlooked some topographical problems, a repeater system, which will piggyback onto the new statewide law enforcement system, is in the design stages and should eliminate blindspots. Like elsewhere, two of the biggest initial problems were the vendors and the lack of qualified objective engineers to provide technical advice (unfortunately, the study did not supply enough). Once systems were installed vendors were quick to sell nonemergency portables and pagers. In 1973 the (b) agencies, MHA, and the State distributed a joint letter which ended the abuse of emergency frequencies for nonemergent purposes. Most pagers have since been switched to business frequencies.

VHF is working well and it is envisioned it will remain the backbone of the new communications system, the design of which will be completed later this year. UHF will serve us, but strictly in a telemetry capacity.

Comm., Ste.

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EMS COMMUNICATIONS IN MASSACHUSETTS

Until recently, EMS communications capabilities in Massachusetts were largely undeveloped and uncoordinated.

OEMS is now completing final work on a statewide EMS communications design which will provide for a coordinated, consolidated system, incorporating both VHF and UHF installations. This would be accomplished through (1) implementation of a State Frequency Plan and Statewide Standard Operating Procedures, and (2) the establishment of a statewide "backbone system" capable of automatically linking any provider with any other provider within the same local system or another part of the state. The "backbone" would be made up of a series of communications coordinating centers (CCC's) linked into a statewide network through a permanent microwave connection. CCC functions will include, at a minimum, channel management (for UHF), crossbanding between UHF and VHF, operation of remote base stations, disaster coordination and other functions. OEMS has made available funds, from its federal EMS grant monies, to selected areas of the state to support the acquisition of basic hardware, e.g., consolidated base stations and CCC equipment. Local funds are being raised to complete and operate the systems. In addition to providing final site engineering and equipment specifications for each CCC through a statewide consultant contract, OEMS is working with each group of sub-grantees in the planning and implementation of their local systems. This process includes the development of a locally funded and managed self-sustaining mechanism which would assume responsibility for the on-going operation of the system.

Comm., Fed. \$

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STATEWIDE EMS FREQUENCY PLAN

In the past, Massachusetts EMS providers have had no guidance on which frequencies to utilize in their EMS radio systems.

With the assistance of the statewide Emergency Medical Care Advisory Board's Communications Committee and other interested parties, OEMS early in 1976 issued a Statewide EMS Frequency Plan. Included in the frequency plan are: (1) pre-assigned codes for each acute-care hospital in Massachusetts to be used with selective signalling components on EMS radio systems, along with a coding scheme to accommodate other public safety agencies and to ensure compatibility and avoid duplication with neighboring states; (2) pre-established statewide radio frequencies for EMS communications in VHF and UHF; (3) identified "medical emergency radio network" (MERN) areas for utilizing standard operating procedures on a daily working basis; (4) pre-assigned primary and secondary working channels for medical consultation and control in VHF and UHF frequencies corresponding to "MERN" areas; and (5) pre-assigned tone-coded squelch frequencies corresponding to MERN areas.

Guidance in these areas was repeatedly requested by providers. The provisions of the frequency plan have now been adopted in several areas and are already providing effective in improving emergency medical communications in those areas.

Comm.

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MEDICAL HOTLINE

Air Guardsmen from Utah's 130th Elect Inst Sq in Salt Lake City recently completed work on the state's emergency medical communications network.

Officially known as the Intermountain Regional Medical Program (IRMP), the communications network is believed to be the first state-wide system in the country. It consists of six "repeater" stations constructed atop mountain peaks across Utah. The stations provide the vital communications link between paramedic units in rural areas and the hospitals in the Salt Lake City metropolitan area.

Utah Air Guardsmen volunteered for the project in July 1973. Since then they constructed the six repeater stations, the last being the Farnsworth Peak station atop the rugged Oquirrah Mountains, west of Salt Lake City.

Although the basic system is complete, the Utah Guardsmen recently volunteered to construct a seventh repeater station in the Henry Mountains of south-central Utah to serve that large recreational area. Because no electricity is available for some 50 miles, the Utah Guardsmen will install a generator, windmill and solar cells to run the station.

Comm., Pers., Fed.Ag., Spec.

THE NATIONAL GUARDSMAN
December 1975, p. 37
(Reprinted by permission of
the National Guardsman Magazine)

STANDARD OPERATING PROCEDURE MANUAL FOR USE OF DEDICATED EMERGENCY TELEPHONE LINES

- I. Purpose - To utilize for medically related calls both of emergency and non-emergency nature.
- II. Location - There is an E.M.S. Red phone located in each of the 20 acute care hospitals in Central Nebraska.
- III. Operating Procedure - The following coding system will be utilized by all persons communicating through the E.M.S. lines: (1) Code Blue--Emergency--All persons requiring medical services immediately to sustain life or prevent any condition which could cause a permanent disability to a body function. (2) Code Orange--Urgent--Non-life threatening but requiring prompt attention. (3) Code Green--Medically related and business calls.

Pre-emption: Code Blue calls are top priority. This means that if you are using the E.M.S. lines for a Code Orange or Green call, the E.M.S. dispatcher may interrupt your call by saying, "I have a Code Blue" and disconnect you. Likewise a Code Green call can be pre-empted by a Code Orange call. The dispatcher will cut into your conversation, stating that this is a Code Orange call and then you will be cut off.

Time: During the hours of 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 10:00 p.m., no Code Green calls will be allowed. This time will be reserved for Code Blue and Code Orange calls. These particular times of the day are heavy traffic times for emergencies and Doctors making consultation calls.

- IV. Persons Designated to Use System - (1) Doctors--all active medical staffs of hospitals, (2) Hospital Administrators, (3) Key Hospital Personnel--to be identified by each individual hospital administrator, (4) Ambulance Personnel--on a medical run, (5) Police and Fire Personnel--Under Code Blue and Code Orange situations, and (6) Persons designated by EMS Director.
- V. E.M.S. Telephone Line Procedure - (1) Identify who you are, (2) Identify code of call, and (3) Identify who you are calling, location, and number.

Conference calls procedure: The same as the single call procedure, except when identifying whom you wish to call, identify all parties up to a total of five. There can be a total of 6 hospitals communicating at one time.

Comm., Pers.

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EMERGENCY MEDICAL COMMUNICATIONS:
A SYSTEM EVALUATION

A direct ambulance to emergency department radio communication system is examined from both hardware and a behavioral viewpoint. The study was performed in Erie County, New York with the participation of eleven ambulance companies and five hospitals. The ambulance companies and hospitals were selected as a stratified sample to include urban, suburban and rural elements. A systems and task analysis was initially done and from these a set of critical behaviors in the man/machine system interface was isolated. These behaviors and the system's hardware were evaluated using several research tools. These were: analysis of repair records, analysis of tapes of the communication channel, a knowledge of use test given to operators, a performance evaluation by physician observers, surveys of both ambulance and emergency department staffs and field observations made by the researchers. The results of this research are extensive and include recommendations for training, uniform terminology, equipment location and equipment maintenance.

Comm., Eval.

by C.G. Drury, Ph.D. and S.G. Schiro
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THE STATE OF TELEPHONIC
ACCESS TO AMBULANCE SERVICES

Health care systems must not only provide manpower and facilities appropriate to the community's medical needs, but must also ensure access to the system when required. Emergency Medical Services (EMS) delivery systems are particularly important in this respect as they are used by unpracticed persons under less than ideal circumstances (i.e. mental and sometimes physical distress).

To infer the western New York population's level of knowledge concerning contacting ambulance services, a one thousand person stratified sample was interviewed via telephone. The main question asked how ambulances would be requested from multiple locations throughout the region.

The many agencies, given as responses, were classified into three categories: direct, centralized and indirect. When areas having centralized methods were compared to areas without such methods, a noteworthy event was observed. Centralized systems did little to improve areas' overall access capability (i.e. increasing the magnitude of direct and centralized while decreasing indirect methods); instead, substitution took place between the categories of direct and centralized. Another important finding dealt with varying the responder's hypothetical location. Three percent reported they "would not know" how to contact an ambulance service at home; this same "would not know" response increased to 14% when the sample predicted their away from home behavior. Similarly, reliance on indirect methods increased away from home.

These results point to two conclusions. First, the current choice of multiple access methods present a confusing set of alternatives to individuals. Second, the presence of "would not know" answers and indirect responses are unacceptable choices given that preferred means exist. It follows that properly configured access systems with adequate public education are necessary if persons are to access EMS delivery systems in a time-effective manner when this contact is critical.

Comm., Trsp., CE&I

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NEW MEXICO EMS "PROJECT MEDIC"

A statewide volunteer Citizen Band (CB) emergency reporting system called PROJECT MEDIC (PM) has been established in New Mexico. The network was initiated after a local CB club expressed interest to the State EMS Division in organizing and managing the project. Program objectives included organization of a widely dispersed yet systematic state-level emergency detection/notification link for the State UHF Communications System, reduction of time from incident occurrence to EMS dispatch, and impact on the state's No. 3 national rating in overall accidental deaths. Project startup costs were all but eliminated by interfacing privately owned CB equipment with the state radio system. A key component of both the communications system and PROJECT MEDIC is a medical crisis and information center equipped with 24-hour (800) telephone for statewide EMS publication information, backup location of the nearest EMS help and ambulance dispatch. Accidents encountered by CB operators are radioed to nearby "base stations" where the message is relayed via (800) telephone to the crisis center. Trained EMT/radio operators then notify and/or dispatch help. Follow-up call reports are filed monthly by base stations receiving emergency requests. Problems confronted include variation among ten-codes; protocol to identify PM base stations, to elicit/validate information; and inclusion of the estimated 15,000 "transient" CB operators daily crossing the state. An inexpensive pamphlet is being developed for CB clubs, truckstops, and tourist centers which lists base stations and divides the state into color-coded sections with road milepost markers and other navigational landmarks. State maps include access information for Cbers as well as the general public.

Comm., Cons.

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NEW MEXICO EMS CENTRAL COMMUNICATIONS (TOTALLY UHF)

A statewide emergency medical radio communications UHF network is operational in New Mexico (1) to link larger medical facilities to the state's sparsely populated rural areas, which have limited or no medical resources and marginal telephone communications; and (2) to assist callers in notifying local medical help, including backup ambulance dispatch capability. Radios have been installed in 95% of all certified ambulance and fire rescue services, virtually all hospitals and many clinics. Three RWJF grantees--the State EMS Division, Presbyterian Medical Services, and the Navajo Health Authority--have coordinated responsibility for UHF equipment installation, operation, maintenance and public education. Centralized telephone access and dispatch is provided through a 24-hour (800) telephone line to a medical crisis and information center located in a major teaching hospital in Albuquerque. Paramedic backup and medical specialist consultation, continuously updated transportation "status" boards, and manpower/hospital capability listings are provided statewide through the crisis center. The center is closely tied via radio and dedicated phone-patch to the communications system's central operational console, which is monitored by paramedics 24-hours a day at the State Radio Communications Department. The radio console integrates local EMS providers by microwave hookup to a series of mountaintop repeaters distributed across the state. Radio Control dispatches for all radio-initiated requests, notifies the State Police, and is in direct contact with the crisis center for information updates and EMT on-scene consultation. Location of the console at the Communications Department also allows constant coordination with radio networks maintained by the State Forest, Fish and Game Departments, extending emergency radio coverage to a large portion of wilderness and rural land served by primitive roads. Finally, Radio Control has the capability to function as a command center for resource coordination in event of a major disaster anywhere in the state.

Comm., Ste., Org.

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MEDICAL EMERGENCY COORDINATION COMMUNICATIONS ASSESSMENT (MECCA) SYSTEM

The District of Columbia Department of Human Resources, as the designated State Emergency Medical Services Agency is implementing a proposal, approved in February 1974 by the Department of Transportation, for a Medical Emergency Coordination Communications Assessment (MECCA) System for the District of Columbia with capability for expansion and/or linkage to the EMS Communication Systems of the surrounding jurisdictions of Maryland and Virginia. The introduction of the Medical Emergency Coordination Communications Assessment (MECCA) System in the District of Columbia will effectively and rapidly provide the means for increasing the efficiency, coordination, and quality of emergency medical care available to residents, commuters, and visitors to the District which in total numbers 14 million annually. This MECCA System utilizing the Nation's Capital as a showcase during the Bicentennial Celebration is to serve as an urban pilot EMS System capable of replication to other urban areas throughout the United States. The system development and implementation will be integrative in nature, to be accomplished through augmentation of increased and improved communications. The MECCA Control Center will provide the means of coordination of all systems through the application and integration of modern techniques of two-way radio communications, telecommunications, physiological data transmission, visual monitoring of EMS operations, and data processing and display for EMS decision-making authorities.

Comm. Urb.

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USE OF CIVIL DEFENSE FACILITIES FOR CENTRAL AMBULANCE DISPATCH

In Oklahoma (tornado alley) there are a number of excellent Civil Defense Emergency Operations Centers. In most cases these centers are jointly used by other functions such as county sheriffs, county commissioners, driver education and testing, public safety, etc., but revert to pure Civil Defense use in time of disaster.

The problem of a centrally located Resource Allocation Center (central ambulance dispatch) for the 15 county area in southeast Oklahoma was solved when the state civil defense director and the city/county civil defense director at McAlester/Pittsburg county encouraged us to use their new emergency operations center. The project coordinator was given office space in the center and the dispatcher will operate from the communications room.

The EMS system in the 15 county area began January 1, 1976 and it is anticipated that approximately 30 emergency calls will be processed daily. In addition to EMS calls the dispatcher also handles calls on sheriff, county commissioner, civil defense and utility frequencies. This procedure provides both economy and better utilization of people and facilities.

Implications for civil preparedness in the 15 county area could be large. Through the use of WATS lines and radio communications the central dispatcher coordinates use of all 32 ambulances in the area. In time of disaster, resources can be quickly placed at disaster scenes and at the same time provide back up coverage for locations vacated.

There are four excellent emergency operation centers in southwest Oklahoma. EMS planners in that area of the state have been invited to make full use of these facilities. It is already known that the center at Lawton will be used; the others are being considered.

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DEVELOPMENT OF PRINCIPAL ELEMENTS OF A
REGIONAL EMS COMMUNICATIONS SYSTEM

Prior to 1976 a fragmented medical communications system existed in Tidewater Virginia. The need for a uniform network to join fourteen hospitals, dispersed throughout a urban/rural region of 3,000 sq. miles, was apparent. Hospitals and rescue vehicles in adjoining political jurisdictions were unable to sustain routine communications.

With impetus provided by the EMS Act of 1973, the Tidewater (Va.) Hospital Council and the Tidewater EMS Council undertook a joint effort to develop and establish an effective EMS system. By mid-1975 all hospitals were linked together on a common frequency of 155.400 Mhz. Costs of a modern HEAR system were shared by participating organizations. Today, all hospitals maintain continuous intra-regional communications capabilities. A designated regional hospital exercises control of the network and conducts operational tests with all facilities three times daily. To ensure uniformity of operations, participants have prepared an Operational Manual which provides instructions, system frequencies, call signs, etc. and lists capabilities of hospitals to treat the different categories of critically ill/injured patients. (The latter is of particular value to EMT's in the field.)

Through a 1203 matching grant awarded the Tidewater Emergency Medical Services Council, all rescue vehicles in the region are now being equipped with new, mobile radios with the capability of communicating on the region's EMS frequency of 155.400 Mhz. Prior to June, 1976 all rescue and hospital elements of the Tidewater EMSS will be joined together in a modern, coordinated EMS communications system.

Comm., Reg.

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NORTH DAKOTA EMS COMMUNICATIONS SYSTEM

The "heart" of the North Dakota EMS Statewide Communications System is the North Dakota State Radio Communications Department, commonly called State Radio. This State agency has been in existence since 1952, when the State Legislature appropriated funds for its existence. It is currently funded biennially through the same mechanism.

State Radio utilizes a statewide low band microwave system. Through one central location, it can and does provide ambulance dispatch on a statewide basis through an ambulance registry kept current by the Division of Emergency Health Services of the North Dakota State Department of Health. WATS lines and a telephone patch allow the ambulance and State Radio personnel to talk directly to any medical facility in North Dakota. A statewide toll free telephone number is available to the public which is answered at State Radio (1-800-472-2121). The agency is manned on a 24-hour, 7-days-a-week basis. Dispatchers have received EMT training. The toll free line does not preclude the consumer from utilizing his local emergency numbers. (Two larger North Dakota communities have 911. Others are following.)

Currently, all hospitals and ambulance services in North Dakota who desire are being provided appropriate high band communication equipment to establish an EMS Communications System. This, at the appropriate time, will become a component part of the newly authorized high band State Radio system. Law enforcement and others as appropriate will be tied in. Hospital channel designations are as follows:

- Channel 1 - Hospital to local ambulance
- Channel 2 - National EMS channel
- Channel 3 - Paging

Ambulance channels as follows:

- Channel 1 - Ambulance to local hospital
- Channel 2 - National EMS channel
- Channel 3 - State Radio and Law Enforcement
- Channel 4 - County Civil Defense
- Channel 5 thru 8 - Spares

Ambulance services currently will continue to use their low band equipment to talk to State Radio and their high band equipment to talk to hospitals and others. When the new State Radio system becomes operational in 1977, the low band equipment will be removed. Emergency Medical Services will then be a corporate part of the total State system.

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TELEPHONE SERVICES IN PEDIATRIC PRACTICE

The telephone has a significant role in pediatric practice, yet little is known about the nature or outcome of telephone communication. A survey of telephone services was conducted in the ER of Children's Hospital to 1) describe the distribution of chief complaints, and 2) provide data on how calls are currently managed.

During the survey period (August 4 - September 21, 1975) 619 or 12% of all calls for medical advice were monitored at all hours of the day and days of the week. Data included information on patient characteristics, presenting problem, and disposition. Analysis showed 12 chief complaints accounted for 57% of all calls: fever, diarrhea, rash, insect bite, abdominal pain, vomiting, URI, skin infection, animal bite, sore throat, ingestion, and head trauma. The survey is being replicated in 3 ambulatory care settings (private practice, HMO, hospital ER) to identify seasonal variations and to compare the nature and distribution of calls in representative pediatric programs. Crosstabulations were used to develop a set of telephone protocols (clinical algorithms) for paramedical personnel.

Data on management of calls showed only 6% requested a particular physician or nurse. 84% were handled by the original provider, with 10% consulting off the phone; 4% required a second transfer. 26% of the callers were advised to seek medical attention, and the remainder were given advice for home treatment. Legend drugs were prescribed in 7% of all calls.

Survey data raised concerns about present management of calls. In 37% the child's age was not obtained, and 10% of the callers were disconnected or hung up. Implications of the survey support the need for a new approaches to providing telephone advice, better education of medical and paramedical personnel for use of the telephone, and research on the efficacy of alternate models for responding to requests for service via the telephone.

Comm., Eval.

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THE LOUISVILLE AND JEFFERSON COUNTY KENTUCKY EMS RADIO SYSTEM

The following is a general description of the Emergency Medical Communications System to be implemented in Louisville and Jefferson County Kentucky. The system consists of four basic parts: a repeater station, the control center, the hospital base stations, and mobile units, all of which operate on the 460 MHz UHF band. Eight channel pairs have been set aside by the F.C.C. for use specifically by the Emergency Medical Service.

The repeater station is located upon a hill top overlooking the metropolitan area. Because of its ideal location and high gain antennas, it can communicate with any base or mobile unit in the city or county. Radio contact to each hospital is accomplished through the use of a tone-coded sequence from the control center.

The hospitals will be equipped with radio units similar to the control center. They will monitor the dispatch channels under normal conditions, but because it has been determined that hospital personnel do not tolerate continuous "chatter" from the receiver, an alerting system is included. The receiver will remain silent until a tone-coded sequence, sent by the control center, alerts the hospital for emergency traffic.

The control center is the focus of all directory traffic. It is capable of monitoring all the channels of the system. This enables the use of a multi-track tape recorder for legal logging purposes. The dispatching of ambulances and the alerting of hospitals center around two dispatch channels. All other channels will be used for ambulance to hospital communications regarding a specific emergency situation.

The radios in the ambulances will have front and rear controls and will be equipped for using telemetry equipment when it is purchased at a later date. Each unit will be equipped with a touch tone encoder to allow for selective calling.

Comm.

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SOUTH DAKOTA EMERGENCY MEDICAL COMMUNICATION SYSTEM

South Dakota's present emergency medical communications are fragmented and in some areas non-existent. In an effort to improve this situation planning funds were obtained under a 1203 Grant. The plan was completed using all existing resources. Implementation funds for approximately one-half the system were obtained from a first year 1203 Grant. This portion is ready for installation. The system when completed will allow toll free citizen access to state radio dispatch centers, the dispatch of ambulances anywhere in South Dakota, direct medical communication from the patient compartment of the ambulance to the hospital, direct physician communication via phone patch and ambulance to ambulance and hospital to hospital communication. This will be a VHF system allowing use of existing resources, minimal total cost and minimal radio traffic interference.

Comm.

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PARAMEDIC COMMUNICATIONS IN L.A. COUNTY

The quality of paramedic communications in L. A. County must be dramatically improved to provide reliable communications between our present 25 paramedic base hospitals and 115 squads. By 1980, we project 200 squads and 30 hospitals. The rapid growth of the Paramedic Program and attendant heavy communications traffic has resulted in recurring instances of co-channel interference. And because of the multiplicity of private and public agencies involved in the program, no one entity is "in charge" of communications.

The Department of Communications is designing an integrated paramedic communications system for the entire County. A major design constraint is the eight (8) biomedical channels allocated by the FCC. These channels are a precious resource which must also be shared with all other counties. We need a coordination center to assign channels on an as-needed, non-interference basis within L.A. County and with adjacent counties. Hopefully, CPRA can perform this function.

We also need administrative coordination with all Southern California counties. As a start, we are using the California Public-Safety Radio Association (CPRA) as a forum in which to discuss mutual EMS communications problems.

The County is presently prohibited from providing services such as equipment maintenance or training to non-County entities (unless the County is reimbursed). Legislation is needed to empower a central agency such as the County to act as both the FCC licensee and the agent responsible for implementing and maintaining all EMS communications within L. A. County. That agency would set standards for the purchase, operation and maintenance of equipment and train all participating personnel to ensure the proper operation of the communications system.

Comm.

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911 CAN WORK!

911 is working and growing in Wyoming due to a public awareness of the need based on two primary programs - public information and public education.

Today, 21 of Wyoming's 30 communities served by a 24-hour dispatch center have 911 integrated into their fire, law enforcement and ambulance communities, with initial development projects started in the remainder. In addition, many of the state's rural areas have single entry numbers in service under a variety of systems ranging from those ringing at a number of different locations, primarily homes of EMT ambulance attendants, to one using a 24-hour operating truck stop as a dispatch point.

Public information and education about the need for a single entry emergency number is the basic impetus for the development. Public information and education also are the basis for continued effectiveness of the system.

Development methods that have proved most valuable include appearances at meetings of civic organizations and news media dissemination of our 911 information, including editorial support.

Following implementation, public information and education, work continues through assuring 911 listing in telephone directories, placement of 911 information instruction cards in public telephone booths, distribution of 911 stickers and telephone covers by area businesses and civic organizations, distribution of 911 bumper stickers to public agencies in the area, members of search and rescue organizations and the general public. Continued news media cooperation through news stories and public service announcements also are a vital element to continued success.

Comm., Ste., C.E.& I.

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THE ROLE OF THE COAST GUARD COMMUNICATION SYSTEM IN EMS

One of the earliest and most traditional functions of the United States Coast Guard is Search and Rescue (SAR). The SAR program objective, stated simply, is to minimize loss of life, injury and property damage by rendering aid to persons and property in distress on, over, and under the high seas and waters under the jurisdiction of the United States. In carrying out this objective, the Coast Guard utilizes a network of rescue facilities, including cutters, boats, aircraft, and shore stations. Their primary mission is to locate and assist persons and property in distress. The successful accomplishment of this objective is dependent on numerous factors including, in particular, the timeliness of distress notification and the accuracy of information relative to location of the distress incident.

In order to expedite receipt of distress alerts by radio, selected Coast Guard facilities guard internationally recognized radio distress frequencies (2182 kHz, 500 kHz, 156.8 MHz). Calls for assistance received over these channels are passed directly to Rescue Coordination Centers for coordination of the search and rescue phases of the operation. Medical information is available via these facilities from the Public Health Service. Depending on the severity of the incident and the opinion of Public Health Service officials, helicopter or boat evacuation of the patient may be required. Several Coast Guard air stations are experimenting with automatic, real time relays of a patient's vital statistics back to ground health facilities. This program holds promise for future improvements to the Coast Guard SAR system.

Comm., Spec.

U. S. COAST GUARD
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RURAL BASIC LIFE SUPPORT COMMUNICATIONS

Development of a Rural Basic Life Support Communications System must be based on three key elements - needs of the residents, capabilities of the health care providers and available finances.

Needs of the Residents: A study of emergency services provided must be undertaken to identify the emergency medical care needs in order of priority for the residents of the region to be served.

Capabilities of health care providers must be identified including the training level of EMTs, nurses and physicians. Medical facilities must be inventoried to identify types and location of equipment in ambulances and emergency departments.

All sources of financial aid must be identified and their support for the project solicited.

These three key steps will dictate the basic system design geared to the needs of the region and based on a level of sophistication capable of being successfully implemented without excessive training.

Phase two of the program is identification of available resources and their incorporation into the system design. Resources include in-place hardware, operational central dispatch agencies, favorable terrain features and "people power".

The actual communications system design and implementation is phase three. This phase includes the adaption of available communications hardware to the region's needs along with utilization of the Federal Communications Commission Rules and Regulations to tailor make your system within the FCC requirements. A special effort must be made to assure the system can "grow" as necessary.

Following implementation, phase four begins. This is the "living" phase - continued training, ongoing evaluation and constant review of the three key elements; needs of the residents, capabilities of the health care providers and available finances.

An effective phase four keeps your system ready to expand as necessary, and to keep pace with the constant evolution of emergency medical services.

Comm., LS, P1.

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SUBREGIONAL MEDICAL CONTROL POINT CONCEPT

As a result of the computerized emergency room abstract study, East Central Michigan Comprehensive Health Planning Council divided the fourteen county region into four subregions. These subregions were in consideration of the natural patient care patterns. The medical control point in each subregion is a hospital that offers a major level of services to the community. Each of the four hospitals designated has both the technical and administrative capabilities needed to serve the area as a subregional focus point.

Technical capability included at each center is radio equipment able to communicate with all hospitals and ambulances in their subregion; the required frequencies being 155.340 and 155.280. They will also have the ability of communicating directly with each of the other control point centers, and will be operational 24 hours a day.

The administrative responsibilities at each control point will be shared by several persons. A medical control physician in each subregion is responsible for medical coordination, and the dissemination of information to area physicians regarding referrals and transfers. A hospital EMS Coordinator will be coordinating the efforts of the ambulance services and emergency rooms in his subregion. There is also a responsible person or persons designated to control the communication equipment and who is informed on the regional referral and transfer mechanism for the seven critical care categories. This designated person will update either daily or more frequently changes in area capability due to overload or physician absences.

Comm., Md.C.

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APPLICATION OF SYNCHRONOUS SATELLITE COMMUNICATIONS
TECHNOLOGY IN EMS SYSTEMS

FCC regulations which allow dispatch and medical coordination in the VHF band and limit telemetry to the UHF band make the implementation of a comprehensive telemetry capability in the rural EMS system economically expensive if not prohibitive. Because of the propagation characteristics of the frequencies allocated by the FCC for emergency medical services, the grid of relay towers needed to provide pervasive UHF coverage must be finer and more costly than that required to provide universal VHF coverage in a given area.

This situation has served as the impetus for several agencies and institutions in rural Southern Mississippi to pursue the development of an integrated EMS communications capability utilizing synchronous satellites and providing comprehensive telemetry coverage to rural service areas. Under funding from several sources, experiments are being conducted which address two possible operational scenarios. One scenario predicated on the fact that many rural EMS systems already have comprehensive VHF coverage for both dispatch and medical coordination envisions only the telemetry links being handled over a synchronous satellite. These experiments utilize an omnidirectional ambulance antenna designed at NSTL. A second scenario is predicated on both voice and telemetry systems being handled by satellite. Experiments in this area have utilized a VHF transponder on the ATS-3 satellite for the voice link. Current objectives are to establish the design integrity of all components in this applications setting, to refine possible operational scenarios, and to determine the medical validity data telemetered by satellite.

Comm.

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A RE-EXAMINATION OF AMBULANCE TELEMETRY BASED ON A MUNICIPAL
SYSTEM'S EXPERIENCE

Patient delay in seeking medical assistance for myocardial infarction (MI) and the incidence of potentially life-threatening arrhythmias en route to the hospital were examined in a twenty-two month community trial of ambulance telemetry. Of 7,654 patients transported, 179 who had electrocardiograms (ECG's) transmitted were found to have had acute MI's or acute myocardial ischemic events. Fifty percent of these patients summoned an ambulance within 30 minutes and 72 percent within two hours after the onset of acute symptoms. Fifty-eight patients had potentially life-threatening arrhythmias. Intervention with drugs and/or defibrillation was required in 26 patients, some of whom also require cardiopulmonary resuscitation (CPR). Eleven of these 26 patients survived through hospital admission and nine were alive at three months. The relatively low outcome/input ratio of this experience necessitates re-evaluation of the epidemiological characteristics and patient selection criteria in populations considered for telemetry.

Comm., Trsp., Urb.

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9-1-1 TELECOMMUNICATION SYSTEM

IN A RURAL COMMUNITY*

The universal emergency number 9-1-1 provides immediate access of the public into the emergency system. Installation of this system into a rural community is considerably less difficult than in an urban center.

As a result of our experience in planning and implementing 9-1-1 telecommunications systems in rural communities, we have identified four programmatic steps toward this goal:

1. A task force should be formed for planning the rural telecommunications systems.
2. Decisions should be made regarding areas and jurisdictions to be served in the 9-1-1 system.
3. An inventory of all emergency services should be made.
4. At end of the planning phase, a formal request should be made by the local governing body (board of supervisors) to the appropriate telephone companies.

The monthly service charge by the telephone company for this system in rural communities can be as little as \$55.00 per month. The benefits of the 9-1-1 system to the acutely ill patient or distressed caller more than justifies this small additional charge.

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Comm., Rur.

SCOPE AND PRESENT STATUS

Lebanon County, Pennsylvania, Civil Defense was one of the grantees under the Robert Wood Johnson Foundation Grant program. Our grant of \$197,800 was earmarked principally for communications hardware for an EMS network.

Our County had in existence a well established centralized communications center for the dispatch and control of emergency services. We have taken advantage of the ability to overlay the EMS equipment as a subsystem on this integrated response network.

Contracts have now been let and some construction has started to provide a mountain top transmitter site with UHF medics channels and VHF dispatch frequencies controlled by a microwave link. This will enable complete duplex operation between ambulances, hospitals and the control center, with the ability to patch into any telephone. The system is expandable to become integrated into a multi-county regional system now in various stages of development and for the inclusion of telemetry as soon as enabling legislation is passed in Pennsylvania which clarifies the role of EMT's.

A 911 telephone system has also been contracted for and has been scheduled for operation starting in March of 1977.

Comm., Org.

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Technical Assistance in Communications Planning

Four electrical engineers from Kansas State University have been contracted to plan the statewide EMS communications system for Kansas. The engineers are working with the Bureau of Emergency Medical Services and staffs of seven regions (three in Missouri which include Kansas counties) in gathering data to develop specific plans. Each regional council is to provide KSU with a schema outlining the communications linkages which need to be developed, including medical control points. University engineers will develop a specific plan and ultimately develop the specifications for equipment purchase. Detail of the contractual tasks is attached.

Comm., Md.C.

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TELEMETRY UTILIZATION IN EMS SYSTEMS

With reference publications dealing with emergency medical services, there are numerous opinions expressed in regard to the issue of telemetry utilization. Since the use of telemetry in EMS systems is a relatively recent concept, many of these opinions are based upon limited experience in the actual operation of telemetry systems. Furthermore, many of the published statements concerning telemetry tend to view the utilization of telemetry from a localized standpoint--i.e., its necessity is viewed as being dependent upon various environmental factors in the writer's own locality. Hence, the statements encountered may or may not be applicable to the individual reader's EMS system.

Based upon a review of relevant literature, HSRC developed a planning Guide describing the primary factors which should be addressed when considering the use of telemetry. The factors discussed include the potential demand for telemetry, legal aspects, physician attitude, receiving personnel, transmitting personnel, and geographical and population characteristics. These factors are presented in a manner which allows the reader to apply the information contained in the Guide to most individual EMS systems. Also discussed are various systems design considerations, including continuous versus intermittent monitoring and transmission, channelization, single versus multiple receiving stations, frequency utilization and availability, reliability, and costs.

The Guide contains narrative sections and a programmed methodology through which the user is instructed to proceed in an orderly and logical fashion. Tabulation space is provided, and through a step-by-step process, information furnished by the user is employed to determine the desirability, possibility, and necessity of using telemetry in order to achieve an effective level of emergency coronary care. While the Guide makes no attempt to dictate the use or non-use of telemetry for specific EMS systems, it does provide the EMS manager or planner important information which should aid in making this decision. (The Guide is entitled Telemetry Utilization for Emergency Medical Services Systems, and is available from NTIS.)

Comm.

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THE IN-WATS CALL RECEIVER SYSTEM, A STEP TOWARDS 911-CENTRAL DISPATCH

Attempts to implement a 911-Central Dispatch System are often met with resistance for three reasons: lack of funding, undemonstrable benefits, and unwillingness of various public and private EMS providers to allow their units to be dispatched by anyone else. This resistance does not categorically oppose the concept, but rather condemns the proposal to interminable study and planning programs.

An in-Wats Call Receiver System can be quickly installed to supply single telephone number EMS access over a very large area at minimal cost, and is often an acceptable compromise to those providers who are reluctant to share dispatching duties. Such a system can serve as a first stage of development towards 911-Central Dispatch, and continue to function while funds are raised, benefits documented, and "turf" problems resolved between fire, police and private EMS providers.

... In order to implement an In-Wats Call Receiver System, a service area is first outlined that is as large as possible while allowing the "call receiver" to know the territory. One of the 24 hr. dispatching capabilities is designated as "call receiver". Often EMS traffic (1 call/10,000 population/24 hours) can be handled without adding staff or equipment. All providers agree on written ground rules regarding when & where the "call receiver" is to distribute the calls. A procedure for hearing grievances should also be established.

The major telephone company will establish the In-WATS service to the "call receiver" and a terminal instrument with "In-Out Conference" capability. The EMS number is publicized and single number EMS Access is established.

The person requesting aid then calls, toll free, on the WATS number to the "call receiver". The "call receiver", working from the ground rules, transfers the call to the appropriate dispatcher and stays on the line long enough to assure that the request is answered. The dispatcher then works the request as he always did before (but with a slowly growing understanding that there might be a better way--"suppose there was just one dispatch center for the whole.....".)

Comm,

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ADVANCED EMT - A BIOMEDICAL TELEMETRY TRAINING IN COLORADO

Since November, 1974 the Interhospital Education Association located in Metropolitan Denver has developed and implemented, with funds provided by IHEW, a 400-hour Biomedical Telemetry training program for Advanced Emergency Medical Technicians (ambulance personnel, fire rescue personnel and other allied health professionals directly related to emergency medical services). This program at its inception was one of the few advanced EMT courses being given in the nation. The program developers had no nationally accepted standards or guidelines to work with so it was incumbent upon the state to develop a program curriculum which would adequately cover the necessary didactic and clinical experience needed by Advanced EMT's in the field. More than 200 hours of the clinical experience is divided between the emergency department of three Denver-Metro hospitals, intensive care unit, coronary care unit (as a team member observing and utilizing skills commonly employed by the appropriate department personnel) and as a participant in the Denver General Hospital Ambulance Service when it responds to emergency events within Metro-Denver.

In December of 1975 it was announced that the Department of Transportation (DOT) was ready to release the first national recommended standards and curriculum guidelines for the Advanced EMT. The program guidelines released by DOT closely follow the program which has been on-going in Colorado for two years. It is a pleasure to discover that Colorado on its own initiative has established a training program very much in keeping with the national philosophy.

Comm., Pers.

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SAN LUIS VALLEY EMERGENCY MEDICAL SERVICES RADIO COMMUNICATIONS NETWORK

Through the cooperative efforts of state and regional agencies the first functional, regional EMS Communications Network was established in the San Luis Valley of Colorado this past fall. The major thrust of the communications system was to link ambulance services to local hospitals. During this initial phase, equipment has been installed in the four hospitals of the Valley plus six ambulances which are located throughout the region. In addition, the network provides for interface with existing radios in two community clinics and one ambulance service. This particular geographic portion of Colorado relies heavily on medical services available in Albuquerque and Santa Fe, New Mexico. The system is designed to permit communications with New Mexico hospitals. Later phases of implementation will provide for these communications link-ups with New Mexico. In addition with the placement of a repeater station on La Veta Mountain Pass, communications will be possible with Pueblo, Colorado, which has physician coverage in an Emergency Department 24 hours a day. Technical assistance for the development and establishment of the San Luis Valley Communications system was provided by the Colorado Division of Communications and the U.S. Forest Service. Funding was made possible through a grant from the Colorado-Wyoming Regional Medical Program. Assistance in local network planning was supplied by the San Luis Valley Emergency Medical Services Council composed of providers and consumers.

Comm., Reg.

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DEVELOPMENT OF EMS COMMUNICATIONS IN WYOMING

A Robert Wood Johnson Foundation EMS grant was awarded to the Wyoming Hospital Association.

The development of a system for Wyoming was begun by listing the needs, assets and limitations found throughout the state. The System must interface with other public service agencies. The System must be sufficiently sophisticated to do the job but not so complex that it can not be operated by casual users. The System must be capable of the highest degree of reliable operation in mountainous terrain and weather. The System should take advantage of mountain top communication relay site possibilities. The System must be designed within available funding but capable of continued expansion and upgrading without making in-use components obsolete. The System must interface with adjacent states. The basic system developed and now in operation in the five Robert Wood Johnson Foundation grant counties meets the above criteria.

Interface with public service agencies is assured by use of High Rank VHF frequencies. Use of Touch Tone encoding provides needed sophistication without making operation too complex. Reliability is assured through use of fully solid state equipment. Future expansion of the system is possible into the UHF spectrum or into the microwave area as required by the growth. Development of a list based on need, assets and limitations is the first step toward providing effective EMS communications in a rural area. The second step is constant revision of the list as needs, assets and limitations change through population growth, increased funding, communications hardware development and technological improvements. The most important overriding consideration is "be realistic." Your system must fit your needs.

Comm., Org., Ste.

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The Emergency Medical Services Division, established within the Arizona Department of Public Safety by the State Legislature in 1972, was mandated the plan, establish, and maintain a statewide emergency medical services communications system that would provide the rapid communications between various entities, responsive to the needs of the citizens, that is essential to the delivery of quality first care.

In partial response to this directive, the Department of Public Safety was the recipient of a grant from the Department of Health, Education and Welfare (HSM 110-73-361) to perform a demonstration communications project in the five northern counties of Arizona. The area of these counties combined which comprise 53% of the total land area of the state, is larger than the State of Illinois. The third phase of the project, designated EMSCOM, provided for the installation of eight hospital base stations and eighteen mobile units, together with related mountaintop and console equipment which would provide voice communications capabilities between law enforcement agencies, hospitals and ambulance personnel. This project was designed as a prototype for the statewide system, if it proved successful.

Early success was evident and plans proceeded for the inclusion of Yavapai County into the system and the conversion of the EMSCOM prototype to EMSCOM-S, the statewide emergency medical services communications system. Funding was received from the Department of Transportation for the Yavapai project, which is already underway. Currently, requests are before the Arizona State Legislature for the implementation of EMSCOM-S over the next several years.

Comm., Ste., Trsp.

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TRANSPORTATION

AMBULANCE RUN REPORTING SYSTEM IMPROVES RESPONSE
TIME AND TRAFFIC SAFETY

Using ambulance run data collected and processed through the Massachusetts Ambulance Run Reporting System - MARRS - a large city fire department has been conducting studies of ambulance response times to various locations throughout the city. By plotting call locations and response times on a color coded map, the city is able to identify ambulance call patterns and evaluate ambulance response times with respect to base station locations throughout the city. As a result it has been possible to identify alternate station locations to achieve improvements of overall response time patterns.

Made possible was the identification of a particular section of the city to which response times were substantially longer than to other parts of the city.

Using this information, it was determined that a majority of the ambulance runs in this area were being routed through an especially congested area. Although it appeared to be the most direct route, the ambulance data furnished by the reporting system was able to demonstrate the loss of response time, and, in addition, the field observations indicated that the ambulance routing through this area contributed to a safety hazard for pedestrians and vehicular traffic. At the present time, departmental orders have been implemented to change the ambulance routing in this part of the city.

Briefing of the ambulance personnel on objectives and benefits which can be achieved through the use and application of a reporting system such as MARRS have been remarkably successful in obtaining the enthusiastic support and cooperation of individual attendants and ambulance crews in implementing improvements in the delivery of patient care.

Trsp., SMRK

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AMBULANCE DISTRIBUTION PROGRAM REVIEW PROCESS
THROUGH FEDERAL FUNDING

The Office of Emergency Medical Services and the Governor's Highway Safety Bureau began a cooperative effort to assist communities in conforming to new minimum standards for EMS transport services. The Ambulance Distribution Program not only provides funding for the emergency service ambulance, but also provides other resources to the selected applicant, including priority consideration for EMT training, assistance in communications planning, assistance in arranging equipment exchange with hospitals, and a public education program to support the use of the new emergency ambulance.

OEMS developed policies for the program and draft criteria for the distribution process. OEMS then convened a task force. Application kits were developed and mailed to the chief municipal official of each city and town. Both OEMS and regional EMS project staffs were available for assistance to the communities in completing their applications.

Two types of applicants were eligible to participate: first, a municipality; and second, a private nonprofit entity which has been formally designated by a municipality or group of municipalities to provide the first line emergency ambulance service for that area. OEMS staff recommend applicants be awarded funding who were (1) in critical need of an ambulance in their service area and/or (2) were developing a regional ambulance service to be used by two or more adjacent municipalities.

With the awarding of the ambulances, the selected applicants were required to sign an agreement detailing EMS program and fiscal commitments to OEMS-GHSB regarding the acquisition and use of the ambulance.

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**AMBULANCE RUN REPORTING SYSTEM AIDS IN IMPROVING COMMUNICATION AND
COOPERATION BETWEEN EMERGENCY DEPARTMENTS AND AMBULANCE SERVICES**

An ambulance run reporting system has been implemented and is currently being used by about 70 ambulance services throughout the state.

The Massachusetts Ambulance Run Reporting System - MARRS - involves the use of a three-part trip ticket, with one copy furnished to the receiving emergency department by the ambulance crew. The trip ticket collects detailed information to describe patient status and condition, and aid rendered both at the scene and enroute to the hospital. Based on our experience with MARRS to date, two major contributions have developed.

First, the trip ticket provides a standard format for recording patient vital signs taken at various times during a run, and this information can be scanned by the nurse or physician in the receiving emergency department.

The second major benefit that has developed has been the use of the MARRS ambulance run report in conducting mortality and morbidity conferences.

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AMBULANCE DISTRIBUTION PROGRAM

To develop a Massachusetts ambulance specification for the Ambulance Distribution Program, a task force of persons knowledgeable about emergency medical services in the Commonwealth met with the Office of Emergency Medical Services and the Governor's Highway Safety Bureau staff over a period of three months in Spring 1975. The specification which was developed and approved by the regional DOT, was based on GSA Ambulance Specification KKK-A-1822.

Twelve manufacturers responded to the request for proposal. Six of them responded with proposals to build vans, and 11 responded with proposals to build modular ambulances. Every manufacturer had been asked to provide information about the price of the ambulances to be built in increments of five, up to a maximum of thirty modulars and ten vans. In addition to other items, they were asked for a firm delivery schedule for the various groups of ambulances; for information about their warranty policy and the availability of repair and maintenance in the state; and for documentation about their conformance with all of the quality assurance tests set out in the ambulance specification.

Conformance with the quality assurance tests set out in the specifications was given special attention.

After considering all of the factors, one manufacturer was recommended to the State Purchasing Agent as the lowest acceptable bidder for both modular or van ambulances.

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MASSACHUSETTS IMPLEMENTS STANDARDIZED, UNIFORM
AMBULANCE RUN REPORTING SYSTEM

Massachusetts has successfully placed into operation a computerized reporting system through the cooperation of about 70 municipal, private and volunteer ambulance services throughout the state. MARRS, is an acronym for the Massachusetts Ambulance Run Reporting System. The resulting data is then processed on a regular processing cycle, for each service: detailed descriptions of individual runs; periodic (weekly, bi-weekly, monthly) statistical reports; cumulative (monthly, quarterly, semi-annually) statistical reports covering all ambulance runs to date.

In addition, the computer system is used to prepare overall statistical reports for ambulance runs and patient care in multi-service coverage areas as well as statewide.

During the initial phases, most efforts were concentrated on logistical aspects of operating the system, such as ensuring adequate trip ticket supplies at each service location, conducting in-service training sessions, and developing a set of operating guidelines, which have proven to be essential in maintaining a smooth flow of information to and from ambulance services.

The types of MARRS reports which are made available to individual services include: number of calls for ambulance service by time of day, and day of week; summaries of incomplete calls; distribution of elapsed times for ambulance trips; types of patient conditions encountered at the scene; summaries of the types of aid rendered; summaries of vehicle utilization by number and type of runs.

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EMS TRANSPORTATION PACKAGE

Ambulance services throughout Massachusetts are in a period of phasing-in to complete conformance with minimum standards set forth in the 1973 Massachusetts Ambulance Law. There is substantial demand for technical guidance in addressing the issues.

OEMS and Regional EMS staff have been providing technical assistance to providers and municipal officials for the past two years on these issues, not only to meet the standard requirements of the Ambulance Law but to develop area EMS transportation networks to insure a coordinated pre-hospital emergency medical care system in all areas of the Commonwealth. The technical assistance has included both staff assistance to communities and committees, and also written materials pertinent to specific local situations.

Many ambulance service providers, municipal officials and legislators have expressed the need for a comprehensive written package of information on pre-hospital emergency medical care, EMS is in the process of preparing a package of this type.

The package covers such areas as (1) identification of pre-hospital emergency medical care needs; (2) steps in forming an emergency ambulance service including discussions of various types of service approaches; initial and maintenance costs; revenues including health insurance reimbursement; mutual aid and backup agreements; and insurance for EMT liability; (3) standard operating procedures for ambulance services; (4) discussion of the role of EMT's and first responders as well as EMS system coordination; (5) fund raising activities; and (6) compilation of Massachusetts EMS-related laws.

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THE ASSETS AND LIABILITIES OF HELICOPTER EVACUATION IN SUPPORT OF EMS

Introduction: Physician participation in the North Carolina MAST program offers an opportunity to assess the helicopter's effect on patient morbidity and mortality. One hundred and ten patients provide the basis of this report. Referral data, flight logs, and receiving hospital charts were reviewed. Complete data were available for 91% of the patients.

Results

<u>category</u>	<u>distribution of cases</u>	<u>% mor- tality</u>	<u>% morbidity reduced</u>	<u>% morbidity increased</u>	<u>% morbidity indefinite</u>
Trauma	50%	27%	29%	4%	40%
Cardio-vascular	23%	24%	71%	0%	5%
Newborn	7%	33%	33%	0%	33%
Misc.	<u>17%</u>	<u>27%</u>	<u>20%</u>	<u>0%</u>	<u>53%</u>
Average	--	28%	38%	1%	33%

The total time from mission request to patient off-loading (119 + 43 minutes) was less ($p < .001$) than the driving time to the receiving hospital (163 + 43 minutes). Patients were accurately diagnosed 83% and adequately prepared for evacuation 55% of the time. Three patients were probably saved and four patients probably expired as a result of using the helicopter.

Conclusion: The overall mortality of 28%, of which 52% were associated with CNS injury, reflects the severity of cases evacuated and the fatal nature of many CNS problems. No net effect on mortality was noted. The 38% reduction in morbidity is encouraging but not as spectacular as some have claimed. The 71% decrease in morbidity in cardiovascular cases emphasizes the value of the helicopter in these cases. In all cases in which an effect on morbidity or mortality could be determined, evacuation time was the sole or major factor.

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THE INCREASING ROLE OF THE HELICOPTER IN EMS

Aeromedical evacuation experience gained by the military in Vietnam and Korea has given rise to various helicopter evacuation programs throughout the United States. While there are considerable differences between the civilian peacetime community and a battlefield, many principles of an areawide trauma systems design for accident patient care are transferable and can be successfully implemented into statewide and regional programs for the comprehensive care of the injured.

In Illinois, the Statewide Trauma-Emergency Medical Services (EMS) System, with its concept of "successive triage" between local, areawide, regional, and specialty centers across the state, has demonstrated the need and applicability of the helicopter for rapid transport of the critically ill. During the past two and one-half years, air ambulance transport of the critically ill and injured has been provided as a public service by the Illinois Department of Transportation (IDOT) and Chicago Fire Department.

Since the implementation of the Trauma-EMS System in July, 1971, IDOT has provided 24 hour helicopter air ambulance standby coverage with two Bell 206A helicopters. One hundred twenty-seven patients were transferred by this mode in the first 24 months of operation, and in the three-month period from July to October 1973, there were 63 patient transfers. A survey conducted by IDOT among physicians receiving patient transfers between July 1971 and September 1973 indicated that, of 96 patients transferred from one hospital facility to another providing a higher level of care, the helicopter was instrumental in reducing morbidity and/or mortality in 71 instances. Helicopter transfer was considered unnecessary in only 7 of the 96 cases.

The continuing demand for quality aeromedical transport, primarily in rural areas has become increasingly apparent throughout the country. In Illinois, utilization of existing air resources, and coordination of these resources into one response system now provides 24 hour emergency air support to the entire state.

Trsp.,Trfr.

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EMS TRANSPORTATION COMPONENT

When we examine current military EMS transportation and initial critical care capabilities, and the demonstrated record of survival associated with their effective use, it is clear that current state-of-the-art generally exceeds ability of the civil sector to employ it. A significant indictment of our civilian system is the fact that many a Vietnam jungle battlefield casualty was in a M.A.S.H. unit surgical theater in shorter time following injury that it takes the average metropolitan freeway rush hour traffic accident victim to reach a medical center emergency room.

Success in design, implementation, and continued operation of an EMS transportation initial critical care component is heavily dependent on careful attention to the following considerations: 1) What is possible, on the one hand, with respect to state-of-the art; and on the other hand, with respect to available financial resources; 2) What kind of coordination can be accomplished among existing (civil and military) emergency services special units, thus taking advantage of limited resources; 3) What modifications of and additions to "standard" components are required, with respect to special local geographic needs; 4) How local and regional vested money and power interests will encourage or retard the actual implementation of "the system everyone recognizes is really needed."

To realize maximum effectiveness in EMS transportation/initial critical care components, we must take a hard look at our ability and willingness to coordinate and share existing resources, to commit additional funding as necessary, to save "the other guy," to be flexible enough to respond to special geographic demands; and particularly, to design systems whose priority is to save dying people rather than determining which "vendor" will make the buck and take the credit!

The record to date would indicate that - in EMS development (as with many aspects of life) - technical state-of-the-art has exceeded our ability to respond socially and politically. We are still short of currently defined and technically achievable goals.

Trsp.,LS.

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SIMULATING MEDICAL TREATMENT AND
EVACUATION OF COMBAT CASUALTIES

The Naval Research Laboratory NAMES (Navy Amphibious Medical Evacuation Simulation) Model has been developed in order to provide a computational tool for the comparative analysis and evaluation of different medical treatment and evacuation systems which may be under consideration by the Navy and Marine Corps for supporting future amphibious operations. The NAMES Model has been designed to demonstrate the sensitivity of various medical evacuation systems to the resources of those systems. The model follows the flow of each patient through the entire evacuation chain, from the time the patient enters the chain in the combat zone until the patient leaves the evacuation chain by returning to duty, by dying, or by being evacuated out of the theater. The model is capable of simulating various configurations of evacuation chain, ranging from land-based support facilities to sea-based support facilities or combinations of both. The model will accept any specified casualty admission rates, and is designed to demonstrate the effect of the interdependencies among the various elements comprising the amphibious medical evacuation system: casualty receiving facilities, patient movement vehicles, logistics, medical technology, command control and communications, and operational or tactical concepts, requirements and doctrine. The NAMES Model computes a considerable amount of output data which can be used to determine the sensitivity of different medical evacuation system configurations to the important design parameters of these systems, to the patient loads imposed upon the system, and to the evacuation policies which control the period of convalescence which is allowed patients within the system. The model does not require historical data inputs for its operation.

The NAMES Model is currently operational on a CDC 6600 computer configuration, but may be made operational on many other standard computers with minor modifications. The computer program is written basically in the SIMSCRIPT I.5 simulation language.

This report presents an overview description of the NAMES Model - how it works, its inputs, and its outputs. The report describes an illustrative medical evacuation system simulation in detail, and also discusses the interpretation of the output variables obtained from several comparison simulations.

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FLORIDA'S MOBILE AMBULANCE DEMONSTRATION AND TRAINING TEAM (MADTT)

In 1974 Florida saw a need to stimulate county officials to allocate sufficient local tax monies for the development and maintenance of emergency medical services in their regions. One solution to the problem of impressing county officials with the need for EMS in their regions was to show them what adequately equipped vehicles and well-trained personnel could do in their own area. With this goal in mind, the Florida Division of Health and Florida Regional Medical Program, Inc. purchased a vehicle which not only met all federal specifications, but also incorporated other desirable features. This vehicle was equipped with modern equipment and well-trained, experienced EMT's were hired to man the vehicle. Telemetry was installed and a portable base station antenna was purchased for use in areas which do not have a UHF tower.

The MADTT spends four to six weeks in a county, at the invitation of the county commission. Its objectives are: to train firemen, police, and other emergency workers in life-sustaining techniques; to train citizens in cardio-pulmonary resuscitation and first aid; to upgrade the skills of ambulance personnel; to help establish an EMS advisory council; and to improve cooperation between ambulance personnel and hospital emergency departments.

This exposure and actual participation in rural areas has helped to create a desire in rural areas for improvement in EMS and has given communities a better understanding of EMS and the service a well-equipped ambulance with well-trained personnel can provide.

Trsp., Pers.

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STANDARDIZATION OF A REGIONAL DRUG BOX
AND ASSOCIATED PATIENT RECORDS

Significant regional progress has been achieved with the agreement of Suffolk, Portsmouth, and Virginia Beach to adopt the standardized drug and I.V. boxes and the patient record form utilized by the Norfolk Paramedic Rescue Service.

The drug box is unique in that when opened a metal rod is released precluding closing. The box must be returned to a hospital pharmacy for repacking and a locked replacement box is issued. Thus, the Cardiac Technician is assured that when he opens a drug box it is completely stocked with required items which are stored in a prescribed manner for access.

Drug and I.V. boxes can be exchanged at any of the participating hospital pharmacies. (Louise Obici; Maryview; Portsmouth General; Norfolk General; DePaul; Bayside; Virginia Beach General) Possible participation by St. Mary's Hospital in Richmond is being pursued.

The Associated Patient Record form completed by the cardiac technician at the emergency room has three carbon copies. The original is returned to the ambulance service organization, one copy is submitted with the opened drug box to the pharmacy, one copy is placed in the patient record, and the third copy is used for statistical information.

Trsp., Eqmt.

Tidewater Emergency
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ONE APPROACH TO SUCCESSFUL AIR AMBULANCE SERVICE

A private general aviation service, Northwestern Flyers of Sioux City, Iowa, has been providing air ambulance service to patients in and around the Siouxland area for approximately eighteen months.

The firm utilizes three twin-engine fixed wing aircraft with side-loading cargo doors, which allows the patient to be loaded and unloaded without being twisted or turned on end. The planes are also equipped to carry "transport incubators". When not in use for air ambulance service, the planes are available for charter and air taxi flights, however at least one plane is always kept available for air ambulance use. A specially trained flight medical attendant must accompany each patient. The attendants are a select group of emergency department and critical care unit nurses and EMT-As from St. Joseph Mercy Hospital in Sioux City. Attendants are "on call" for such flights during their off-duty hours at the hospital. Each plane carries a stock supply of medical equipment, including oxygen and suction, IV solutions and administration kits, bag-mask resuscitator, blood pressure equipment, etc.

Northwestern Flyers has purchased ambulance type folding stretchers and cot mattresses. When a patient is being prepared for transport to the airport, the ambulance crew places one of its own folding stretchers under their cot mattress. Upon arrival at the airport, the ambulance's stretcher and mattress are placed into the plane with the patient, and is replaced by equipment provided by the air ambulance service. This procedure ensures a minimum of handling discomfort for the patient, and allows the ground ambulance to maintain a full complement of equipment.

Requests for air ambulance transport have averaged one per day, and include flights both to and from Sioux City, as well as trips which originate and terminate away from Sioux City. Long flights to date have included destinations in London, Ontario; Corpus Christi Texas; and Huntsville, Alabama. Usual destinations are Iowa City, Iowa and Rochester, Minnesota.

The service has proven most successful and has been a welcome addition to the provision of EMS in the Siouxland area. Air ambulance transportation costs less than ground services, and the calibre of attendant is higher. Two patients have developed cardiac arrest during flights, and both were successfully resuscitated in the air and followed otherwise uneventful courses thereafter.

Trsp., Pers., Equip.
Cm., Pr.

Richard Vomacka, EMS Coordinator
Siouxland Health Planning Council
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A MOBILE EMERGENCY MEDICAL UNIT

The Mobile Emergency Medical Unit functions as an emergency room at the scene of disasters and accidents to provide first aid treatment to the victims and especially those who have a limited chance for survival, if not treated within ten to twenty-five minutes following the trauma. It is estimated that twenty-five percent of all accidental deaths could be prevented if emergency medical services could be immediately available.

Emergency medical services are provided by ambulances, (cadillac and van type ambulances); but, neither of the vehicles can receive any more than two patients at the same time. This situation is extremely critical at the scene of bus, plane, or railroad accidents where the victims are numbered by dozens. In case of natural disasters, the Civil Defense Organization has "packaged hospitals" or field hospitals available to the rescue effort, but they take hours to set up.

The Mobile Emergency Medical Unit has been designed to fit between the ambulance and the field hospital. It has the facilities to receive six injured patients and treat two others simultaneously. The M.E.M.U. (29 foot long and nine foot wide) is an all terrain and an all wheel drive vehicle, it also has a pneumatic suspension system permitting lowering or raising the vehicle. The M.E.M.U. has two treatment areas and two body extensions. Each treatment area has an operation table under which a stretcher can be placed and cabinets for the medical and treatment equipment. The body extensions are composed of collapsible panels. They form two waiting areas capable of receiving six stretchers.

The Mobile Emergency Medical Unit has radio communication systems. It has roof spotlights to illuminate the outside of the vehicle. The M.E.M.U. has rescue tools and safe-guarding equipment and it has all medical and treatment equipment to provide first aid and stabilization of injuries. Finally it has two hundred gallon water and one hundred and fifteen gallon gas tanks to provide a 36 to 48 hours autonomy at the scene.

Trsp.

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Wisconsin is largely a rural state. Major definitive care facilities exist in scattered communities only. In such an environment there exists the need to provide a uniform standard of critical care to all citizens at a minimal cost. A demonstration project was proposed to test if patients critically ill with multi-organ-system failures could be transported safely from one intensive care unit to another, whether a need for such a service existed and if the service did exist would it be utilized.

A demonstration vehicle was designed and fabricated into a GMC Transmode shell and became operational in February 1975. It includes capabilities for monitoring ECG; cardioversion; DC countershock; intravascular and airway pressure monitoring; ventilatory support; blood gas analysis; Na, K, and blood glucose measurements; balloon assist; membrane oxygenation; etc. The minimum staff for the vehicle is a critical care staff physician, a critical care nurse, a laboratory technician and an EMT-Paramedic.

In the first year of operation 88 patients were transported between hospitals demonstrating that the need for this type of service exists in Wisconsin. Only one patient died during transport and the condition of essentially all of the patients improved during transport, demonstrating that critically ill patients can be moved safely. In 80% of the transfers, the use of the vehicle was thought to be appropriate. The patient required transport to a more definitive center and survival was questionable by standard ambulance. 80% of this group survived to return home. Acute pulmonary failure (66%) and cardiovascular system failure (66%) were principle systems involved.

Trsp., Trfr., CC.

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Center for Health Sciences
University of Wisconsin-Madison

EMERGENCY CARE WITH PARACHUTES AND HELICOPTERS

Mountainous and wilderness terrain attracts a great number of people of varying physical skills and resourcefulness. Many become sick and injured. Expeditious delivery of trained medical care and equipment to them is carried out in our area by a team of trained parachutists who are also Emergency Medical Technicians. Treatment at the scene consists of adequate stabilization of the injured who are then air evacuated to Twisp Medical Center via helicopter for more definitive resuscitation. This presentation illustrates a special rescue technique which guarantees rapid delivery of talent to the injured and quick evacuation to definitive medical care.

Trsp., Spec.

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A MOBILE EMERGENCY MEDICAL UNIT

It is estimated that twenty-five percent of all accidental deaths could be prevented if emergency medical services could be immediately available. Emergency medical services are provided by ambulances, but, the vehicles cannot receive any more than two patients at the same time. This situation is extremely critical at the scene of bus, plane or railroad accidents where the victims are numbered by dozens.

The Mobile Emergency Medical Unit has been designed to receive six injured patients and treat two others simultaneously. It is an all terrain vehicle and has a suspension system providing leveling and lowering of the vehicle. Gas and water reserves give the unit an autonomy at the scene from 36 to 48 hours.

The conceptualization and design of the vehicle has reached the stage where the construction of a prototype is necessary, as well as testing the Mobile Emergency Medical Unit in connection with a major hospital in a large urban area.

Trsp., Dist.

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MOBILE EMERGENCY ROOM VANS

After being exposed to a number of multiple casualty incidents where on-scene care and stabilization were almost totally lacking in spite of the presence of physicians and nurses it became apparent that a key factor was the lack of a readily indentifiable medical treatment area. As answer to this we evolved the MERVAN - mobile emergency room van. Four such units are now in service in New York City - the original unit was designed to act as a neighborhood emergency room, while the other three units were 45 passenger buses converted to emergency patient usage. Each MERVAN has three stretchers, piped O₂ and suction to each stretcher position, an ambulatory treatment "bench", counter space between stretchers, running water, monitoring-defibrillation equipment, and sufficient space for storage of medications and supplies. MERVANs respond on notification from the EMS communications center with a team of several physicians and nurses from the emergency department of their assigned hospital. Their responses are limited to incidents where there are known or presumed multiple casualties such as fire, explosions, collapses, aircraft, and other major transportation accidents.

The number and severity of casualties will determine the role of the MERVAN as to whether it provides primarily triage, or more definitive care. In addition to providing patient care space on the scene the MERVAN also seems to have a calming effect on the usual frenetic activity to evacuate patients to the nearest hospital.

Trsp., CC., Dist.

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A CIVILIAN AIR EMERGENCY SERVICE

Since October, 1972 through December, 1975, four thousand six hundred (4600) patients have been transported, seventy-seven per cent (77%) by helicopter and twenty-three per cent (23%) by fixed aircraft. Sixty per cent (60%) returned to the base hospital system, the remaining forty per cent (40%) to other hospitals in the Denver Metropolitan area.

Four hundred ninety-six (496) critical trauma patients were transported in 1974-1975, the majority being vehicular accident victims. Two hundred twenty-five (225) required emergency surgery. The most common causes of death were head injuries and hypovolemic shock. Seven hundred sixty critical patients with primarily medical problems were transported. Heart disease and drug poisonings were the most common causes of death. The flight nurse must take the Critical Care Practitioner Course.

The Communications Center is the most important component in an E.M.S. System. Extending the arm of the Emergency Department to the scene of the accident is proposed. The cost of such a program is obviously high. However, it is not too high if the community believes in the endeavor and is willing to pay for the services.

Trsp., Cm./Pr., Comm., Fin.

Henry C. Cleveland, M.D., P.A.C.S.
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SYSTEMS DEVELOPMENT/AMBULANCE

With the assistance of the Department of Transportation, emergency personnel training criteria and emergency vehicle specifications have been established. Through the DHEW Division of EMS, federal funds have been made available to initiate programs to meet the criteria. The guidance and powers of the federal government have improved the overall emergency medical services nationally. Today, that ambulance is dispatched quickly, is driven safely to the emergency scene, and the patient is cared for on the spot by trained and capable emergency medical technicians. Once the patient's condition is stabilized, he is safely transported to the emergency hospital facility.

In metropolitan areas, Emergency Medical Service is provided primarily by professional ambulance firms. In more rural areas, where population density is limited, emergency service is provided by police, fire or volunteer departments. From state to state, even county to county EMS regulations and service vary. In the future, we will see national recommendations adopted in each state. When it happens, we will be even closer to providing the utmost in emergency medical care to every individual in this country.

This progression will be costly, no matter which way we turn, due largely to training programs and necessary emergency equipment. Over the past several years, there has been a trend to provide emergency medical care as a public service. In recent months, we have seen a reversal in this trend. Local government is becoming increasingly aware of the height cost of initiating and providing public emergency medical services.

Trsp.

(Mrs.) Lynne Mahan
Executive Secretary
AMSAA
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AMBULANCE SERVICE IN SMALL VILLAGE

The city of Barrow - population 2500 - received its first ambulance this winter. Three problems were immediately apparent. 1. How to obtain properly staffed personnel to staff it. 2. Who would dispatch it and when. 3. How to inform the people of town of the new service and its proper use.

Prior to the arrival of the ambulance, all emergency calls were handled by the hospital maintenance man who used the hospital truck to transport patients. He had little to no training in medical techniques. The people were also in the habit of using the hospital vehicle any time they needed transport to the hospital in the evening or night after the taxis stop running. There are few private vehicles in town and skidoos are the only other means of transportation.

The following solutions were worked out and seem to be functioning well.

1. Volunteer firemen staff the ambulance. An ETT course was brought to Barrow to give them basic training and four firemen renewed their EMT-A licensure.

2. Because the volume of calls would not support a full time dispatcher and because it was felt that the police dispatcher did not have proper training, the nurse on duty at the hospital acts as dispatcher. A fire radio was installed at the nurses' station. If the call does not require on the scene care, she has the option to send the hospital truck.

3. A series of radio talks - in English and Inupiat - were done explaining the new system and how to use it.

Trsp., Pers., Comm.

Ms. Elise Patkotak
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North Slope Borough
Health Program
Barrow, Alaska

NEONATAL TRANSPORT SYSTEM

Problem

Identification of high risk pregnancies is being developed by the Department of Obstetrics, Richland Memorial Hospital, Columbia, S.C. This is a new 579 bed general hospital in the central part of the state which is categorized, for emergency medical service purposes, as a comprehensive facility. Many of the high risk deliveries in Richland County are now performed at this hospital but approximately 50% of all high risk newborns are delivered from pregnancies which were not identified as high risk. The Neonatal Intensive Care Unit at Richland Memorial Hospital in 1975 had about 155 newborns transferred to it from outlying areas. There was not an organized system for transporting critically ill newborns to the NICU or a vehicle especially designed and equipped for moving critically ill newborns between hospitals.

Highlights of Solution -

Richland Memorial Hospital in early 1975 began seeking possible sources of funding so that the purchase of a neonatal transport unit could be consummated. The unit is being purchased by DHEC through the MCC program and will be equipped with electric monitoring equipment for measurement of heart rate and respiratory rate, thermal stabilizing devices, infusion pumps to regulate intravenous fluids and oxygen monitoring and delivery systems. Also there will be equipment available for umbilical vessel catheterization and initiation of assisted ventilation. This vehicle and a nurse-physician team or physician-paramedical team will be sent to a referring hospital within approximately a 70 miles radius when transfer of a high risk newborn to Richland Memorial's NICU is desired. Vehicle expected to be operative in May 1976.

Trsp., CC

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SNOWMOBILE AMBULANCES

The utilization of snowmobile ambulances throughout northeast North Dakota and northwest Minnesota will become quite evident upon implementation of a 1204 EMS grant in North Dakota and a 1203 EMS grant in Minnesota.

There are instances when the much publicized winter climatic conditions of the region make equipment of this unique nature almost essential. Heavy snowfall and icy road conditions prevail during many of the winter months and thus effective response times are adversely affected. The geography of the region also dictates a need for snowmobile ambulance transportation. The region is predominantly rural with farming being the primary economic function. A number of vacation resorts and homes are located on numerous lakes and forest areas with associated outdoor activities present various response problems to the EMS system.

The snowmobile ambulance is an emergency snow vehicle which can easily attach to any type snowmobile. A snowmobile ambulance is actually an enclosure mounted on skis. The patient rides within the compartment and is protected from the elements. Various designs offer either top or rear loading and accessibility to the patient is more than adequate. Many models also offer self-contained lighting unit for both trail and interior illumination.

Ambulance services throughout the Agassiz planning region will be funded for such equipment under EMS grant applications upon evidence that agreements with local snowmobile clubs and/or snowmobile dealers are in effect for provision of a snowmobile(s) when an emergency situation demands it. The formalization of agreements for these services is necessary as the cost of a snowmobile makes it economically unfeasible to purchase and house such equipment. We also believe this procedure effects a greater utilization of our resources within the region.

Trsp., Spec.

AGASSIZ HEALTH PLANNING COUNCIL
Donald E. DeMers, Executive Director
Dana L. Tinnes, E.M.S. Planner
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East Grand Forks, Minnesota

THE U. S. COAST GUARD'S ROLE IN THE TRANSPORTATION OF MEDICAL CASES

The U. S. Coast Guard has specific statutory authority and responsibility for developing, establishing, maintaining and operating Search and Rescue (SAR) facilities; for rendering aid to distressed persons and property, both military and civilian, on, over and under the high seas and waters subject to the jurisdiction of the U.S.; and may render aid to persons and protect/save property at any time and at any place at which Coast Guard facilities and personnel are available and can be effectively utilized. It is this authority that charges the U.S. Coast Guard with the responsibility of participating in the EMS program.

The Coast Guard, as the world's largest SAR organization, maintains a wide variety of SAR facilities. Our resources include cutters, boats, aircraft - fixed wing and rotary wing, and numerous stations throughout the U.S. and its territories. Its operations are supported by an extensive communications network of coastal radio stations, specialized land-line circuits and numerous communications centers.

EMS benefits that can be realized as the Coast Guard endeavors to upgrade its personnel and equipment for the purpose of primarily meeting its operational commitments are: The purchase of new fixed and rotary wing aircraft and vessels capable of providing a faster mode of transportation and carrying more personnel and equipment, the qualification of a greater number of personnel as Emergency Medical Technicians, the determination of exactly what the hypothermia problem is and how to protect for and treat it and the standardization/sophistication of our medical kits as our personnel become better trained to use them.

Trsp., Spec.

U.S. Coast Guard
David E. CIANCAGLINI, CDR
Chief, Aviation Life Support Section

ACADIAN AMBULANCE SERVICE

Acadian Ambulance Service, Inc., a private emergency medical transportation system, operates under Louisiana's Civil Code based on Napoleonic Law.

The acknowledged emergency medical dispatch center(EMDC) for eleven parishes (counties), Acadian Ambulance Service, Inc. is headquartered in Lafayette, the industrial and medical hub of the Southwest "Acadiana" region.

Five 300 WATT transmitters, strategically placed along Louisiana's Gulf Coast, are connected to the dispatch center by telephone FR circuits. All incoming emergency and transfer ambulance service calls are channeled through inward WATS numbers, and four on measured basis in rotary. "Ambulance...1-800-252-5522" is front cover data in 36 telephone directories, and emergency "Operator" calls are trunked into AASI's control center.

Meeting today's technological standards and regulatory requirements, while remaining basically simple in overall concept, AASI is a fully developed "EMS Dispatch in a multi-parish area" of 585,000 people spanning 9,000 square miles. Native French and English speaking medical technicians, with ambulance experience, man the Emergency Medical Dispatch Center controlling movement of 30 ambulances at 15 substations. The ratio of emergency/transfer requests to telephone/radio traffic is about 1:3. Average response time is 7.6 minutes -- hurricanes not withstanding.

Trsp., Cm.Pr.

Richard E. Zuschlag
Secretary-Treasurer
Acadian Ambulance Service, Inc.
P. O. Box 52888
Lafayette, La. 70501

CONTINUED FUNDING

Acadian Ambulance Service, Inc. offers membership and non-membership emergency medical and ambulance protection in eleven South Louisiana parishes. Eighty one thousand families are enrolled at \$18.00 per MEMBERSHIP. Five hundred eighty thousand individuals, within nine thousand square miles, have coverage --- 54 percent prepaid and 46 percent at non-member rates.

The history of AASI began five years ago with funeral home abandonment of ambulance service and proposal of the MEMBERSHIP concept to meet the crisis. The Lafayette Parish 1971 MEMBERSHIP campaign netted nine thousand paid subscriptions. Then as now, the media persuasively promoted support of the plan "employing the American principle of private enterprise."

As adjoining parishes invited AASI protection, cooperation of public offices broadened. Police juries influenced wide adoption of the concept requiring no state, parish, or municipal subsidy; financial institutions became collection depots during annual August campaigns.

The fiscally sensitive prepaid subscription method accounts for two-thirds of total income, and mandates a reputation for excellence. Public relations programming includes complimentary first aid instruction in high schools; stand-by coverage at student athletic events and community sponsored gatherings, as well as open financial records.

Trsp., Fin., Cm.Pr.

Richard E. Zuschlag, Secretary-Treasurer
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A MAGIC BOX

The issuance of personal jump kits by the Medical Crisis Unit Project to its personnel has expanded effective and efficient patient management by the P.H.S. EMS Grant supported project in Portland, Maine.

Each EMT in Portland's MEDCU is issued a "jump kit" (equipment box) containing equipment essential to evaluate and treat a patient at the scene. This kit is used by the MEDCU EMT during his duty tour and remains with him when his shift is complete.

Using this operational technique each EMT, in a multiple patient situation, has his own kit with which to treat. Contents of the kit may vary by training level of the EMT. Additionally the EMT is always intimately familiar with the resources at his immediate disposal. Evaluation and treatment of all patients is thus expedited and greatly improved. A multi-trauma kit is also stored in each ambulance. This extra kit provides a physician or nurse arriving on a multiple patient scene, the necessary equipment to assist in the management of the patients.

In a disaster situation, off-duty personnel who respond carrying their own kits can be immediately utilized for patient management. In their own neighborhoods they may act as first responders, responding to emergent calls near their homes, providing necessary assistance until the "on-duty" team arrives. The kits enable them to evaluate and treat the patient with sophisticated equipment and supplies and thereby drastically reduce time to stabilization.

The voluntary efforts of off-duty personnel in crisis situations has greatly enhanced, and significantly reduced response and stabilization times during peak operating periods and has virtually eliminated queing. The provision of a tone-alert monitor and portable scanner in the future will further expand this response system.

Trsp., Eqmt.

H. Edward Walker, Director
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An essential requirement for any good ambulance system is the control center. This must be easily accessible to the public and in turn have positive and direct control over all emergency ambulance vehicles in the area. The ambulances must be geographically distributed for fast access and the public safety agencies such as fire and police must be used as backup for manpower, fast access, extrication and first aid, and traffic referral. It is our feeling that in the urban areas, emergency medical service in the field will increasingly become a public safety function due to the better salaries, advancement opportunities, and adequate funding. Routine transportation as contrasted with emergency will continue to be carried out in the commercial field. The urban public safety units will be highly equipped, manned by superbly trained paramedics, and locked into an integrated and flexible communications system.

This system with radioed advice of physicians will treat nearly all serious emergencies in the field. While on field stabilization, the patient will be delivered at a moderate rate of speed and under careful supervision to a medical facility.

The rural areas cannot afford, justify, or maintain the same high quality of care as can urban areas. Many principles of the system of both areas are similar. However, the providers are largely volunteers, county hospitals in some cases, and a few funeral homes still exist. Commercial ambulance firms are rare in rural areas as revenue available precludes profit. The big problem is maintaining skills in rural areas due to the small number of cases. It is therefore best to concentrate on basic life support and practice repeatedly due to the credibility to treat enough actual patients. The other solution in the rural area appears to be the basing of ambulances on the county hospital using the paramedics both in the hospital and in the ambulance to split the cost and to provide continual training and handling of patients.

In both, the urban and the rural environments, the two biggest problems facing us now are the maintenance of quality control, and the establishment of a standard, nationally accepted curriculum for paramedical personnel.

Trsp.,

John M. Waters, Director
Department of Public Safety
Jacksonville, Florida

ORGANIZATION AND DEVELOPMENT OF AN EMERGENCY AMBULANCE
SERVICE IN A RURAL-SUBURBAN COMMUNITY

In May of 1972 a local mortician gave up his ambulance service in a rural-suburban community of 10,000. He donated his old ambulance to the city.

Under the sponsorship and guidance of hospital personnel, Ambulance Service was incorporated as a non-profit association, volunteers were recruited and training begun.

On January 1, 1973 the service went fully volunteer, purchasing supplies, laundry service and billing and collection service from the hospital. The city provided repairs, gas, oil, and insurance for the vehicles.

At the end of three years the service had 65 crew members, 80% of whom had completed the 81 hour EMT course. 25% of the crew members are women. First call and back up crews each have three members. 800 calls per year are made in a primary service area of 400 square miles.

From its own resources the service has purchased two new vehicles, replaced all radio equipment and built an excellent building for garage, training and social events. It has no debts, a comfortable cash reserve and now receives no financial support from the city.

The keys to the financial success include starting without debt, a vigorous collection policy, generous donations from those who realized that without the service, they, their families and employees would be in danger, and the provision of a semi-insurance plan.

In summary, the members of the community were made an offer they could not refuse - either support the service or there would be none when they would most need it.

Trsp., Rur., Fin.

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TALLAHASSEE MEMORIAL HOSPITAL EMERGENCY AMBULANCE SERVICE

The Tallahassee Memorial Hospital Emergency Ambulance Service was established August 7, 1972, as a response to the lack of medically sophisticated ambulance capability within the area. Its primary service area comprises 660 square miles and 133,000 persons. All levels of service are provided, from elective transportation to advance life support with light rescue capability.

The Tallahassee system has demonstrated a number of advantages to hospital based EMS systems, including: 1. Excellent rapport between paramedical, nursing and physician personnel, all of whom become well acquainted. 2. Day-to-day exposure to paramedical personnel to the learning environment of the hospital, with, resultant continual upgrading of clinical knowledge and skills. 3. Cost-effective, medically relevant utilization of personnel during time not occupied with ambulance operations. 4. Availability of electronic data processing facilities well suited to the functions of: A. Time, and attendance reporting and payroll generation. B. Cost accounting and inventory control. C. Medical record storage/retrieval and data collection/processing/display. D. Billing, collection and accounts receivable management by a system designed to deal with the intricacies of private and governmental third-party payment. 5. Access to quality-control modalities including audit and retrospective review processes.

Potential disadvantages of the hospital-based concept might include: 1. Lack of pre-existing sites for multistation operation. 2. Controversy between competitive hospitals for control of patient distribution. 3. Political/Jurisdictional disputes within the service area.

Trsp., Pers., Fc./Ct.

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FIXED WING AIR TRANSPORT OF CRITICALLY ILL AND INJURED PATIENTS

Despite demonstrated increase in survival when certain critical illnesses and injuries are managed in specialty critical care units, the advantages of such care are too often unavailable to patients who become critically ill or injured in rural areas. Deficiencies in emergency medical transportation systems contribute to inaccessibility to specialty care facilities and a greater fatality rate.

Distances and other geographic considerations magnify these problems in the Intermountain West, where Salt Lake City constitutes the major tertiary care referral center for all of Utah and much of 5 surrounding states. Marked improvements in the ground ambulance system - influenced by federal aid through the 1973 EMSS Act - will result in an even greater number of critical patients surviving to reach a community hospital; resulting in an even greater need for a coordinated link between rural community hospitals and medical center critical care units.

The ability to provide adequate care enroute is recognized as a key issue in long range transport of the critically ill. Even when the excess time involved in ground ambulance transfer might be discounted, it is impossible to assure an appropriate transport team can be mobilized at the originating community hospital. Beyond 150 miles, helicopter transport becomes both time and cost ineffective.

In response to these needs, critical care physicians in Salt Lake City have developed an immediately available flying intensive care environment, with recovery teams derived from their critical care units; using chartered fixed wing aircraft to retrieve critically ill and injured patients from outlying community hospitals.

Trsp., Pers., CC

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LOUISVILLE EMS--ANOTHER IN THE "HOW TO" SERIES

How to start a new emergency ambulance service in six months nearly from scratch? This was the charge given to us two years ago by Dr. Harvey Sloane, physician and newly-elected Mayor of Louisville.

Most of Louisville's emergencies were being handled by the police department, which carried patients in station wagons, and the Park DuValle Neighborhood Health Center Ambulance Service, which provided services principally to one third of the City's area. One of Mayor Sloane's major campaign promises was to start a new city-wide emergency service, and he expected us to have it operating in six months.

And we did it! We used fourteen EMT's and four ambulances from the Park DuValle Ambulance Service as a nucleus. In addition, we attempted to recruit every other available EMT in our region, but we were short so many we set up a special crash course for 30 EMT's. We bought seven new ambulances and borrowed a dispatch channel from the fire department for our radio communications. Within six months we were taking all the emergency calls for the city, beginning with 1800 calls a month, at present averaging 3000. We now have our own telephone number and seven more new ambulances.

In addition to EMT's we decided to use nurses to staff the Louisville EMS. This provided us with professionals already trained in advanced life support since our RN's came from CCU's, ICU's, and emergency rooms. The nurses operate out of completely equipped station wagons which we call Medicars. They act as triage officers at the scene and administer drugs and carry out CPR, including defibrillation. Our ambulances staffed by EMT's are then called for transport. When EMT II's emerge from classroom training, nurses will supervise their field service. And to solve the problem of "down-time" nurses work in the neighborhoods between calls, conducting first-aid classes in schools, carrying out diabetes and hypertension screening, teaching people how to administer CPR, and helping families with health problems.

Field service is a relatively new function for nurses and opens up a complete career ladder for our Service. To make our Service even more professional, a group of nurses, physicians, and technicians reviews all charts at regular mortality and morbidity conferences. Pre-hospital care can save nearly as many lives as hospital care, provided that it is well-organized and patient care is carefully monitored.

Trsp., Urb.,
Pers., CC.,
Md.C.

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MAST IN WEST CENTRAL FLORIDA

What is MAST?

MAST, or Military Assistance to Safety and Traffic is a cooperative program of the Department of Defense, the Department of Transportation and the Department of Health, Education and Welfare that provides military helicopter ambulances to transport civilian medical emergencies. MAST is a supplement to the local emergency medical service system and is used only when there is a life threatening situation in which time is a major factor to save a life. MAST in West Central Florida was initiated by the volunteer efforts of Mrs. Nancy McKay of Tampa with funding support from the Florida Regional Medical Program, Inc. The all volunteer MAST Coordinating Committee includes doctors, civil defense directors, hospital administrators, health planners, law enforcement officers, representatives of the media and others interested in the improvement of emergency medical services.

Military Support

Military support is provided by Detachment 10, 39th Aerospace Rescue and Recovery Wing at MacDill Air Force Base in Tampa and the Coast Guard Air Station in St. Petersburg. MAST is available 24 hours a day, 7 days a week. The helicopter can carry 3 litter patients and 4 ambulatory patients. The crew is composed of a pilot, co-pilot, helicopter mechanic and a pararescueman, who is well trained in the care of medical emergencies. Communication with the helicopter is through the 56th Tactical Fighter Wing Command Post.

Heliports

In excess of thirty hospitals in the area have a designated landing site for helicopters. It might be a 1st class heliport, a vacant lot, a golf course, parking lot, or a nearby airport, but no matter where it might be, the helicopter crew and the hospital staff know where the helicopter will land in an emergency.

Highway Accidents

Requests for MAST's services for highway accidents are channeled through the Florida Highway Patrol. They also relay requests for help with remote area accidents--like the hunter who is hurt in the woods. In case of a mass disaster, like a bus or plane crash with many victims, MAST can transport several medics to the scene to give first aid and then fly the injured to receiving hospitals.

Services Provided

MAST has been available in this area, which includes a 100-mile radius from Tampa, since the end of January, 1974. Over 200 MAST missions have been flown and a variety of patients have been transported--premature infants, burn victims, kidney patients, heart patients, and many other serious ailments.

Trsp., Fed. Ag., Pers.

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EVOLUTION OF MONTGOMERY COUNTY'S EMERGENCY MEDICAL SERVICES PROGRAM

In September 1974, the Montgomery County Fire & Rescue Services placed in service two Mobile Intensive Care Units to augment the thirty-eight ambulances already providing emergency care in the County. A third unit was placed in operation a year later.

The Mobile Intensive Care Units which are dispatched on major life-threatening incidents, both medical and traumatic, are staffed with paramedics and emergency medical technicians and equipped with the latest in biomedical communication equipment. The Paramedics, while in radio contact with physicians in the Emergency Department of any of the County's four hospitals, have the capability of administering IV fluids and drugs, monitoring EKGs, defibrillating and inserting esophageal airways.

Montgomery County's Mobile Intensive Care Unit Program differs from others throughout the country in that it utilizes both career and volunteer paramedics to staff the units. During weekdays, Career Paramedics man the Mobile Intensive Care Units, with volunteer Paramedics providing night and week-end coverage. Training and performance standards for volunteer and career personnel are identical. Continuous field and medical evaluations are performed on the 103 paramedics by two registered nurses employed by the Department of Fire and Rescue Services, and the Emergency Medical Services Committee of the local medical society.

In an effort to improve patient care the Department is up-grading the level of service ability of all emergency care vehicles in the County. The first phase of this program consists of placing special Paramedic Kits with IV fluids and medications on all first line ambulances which have Paramedics available for response. In this way, for certain emergencies, the ambulance can provide the necessary patient care without the need for using one of the three Mobile Intensive Care Units. As funds become available for Biomedical Data Acquisition Units and UHF Communication equipment these ambulances will be up-graded to the level of the Mobile Intensive Care Units.

The Montgomery County Fire & Rescue Services' Emergency Medical Services Program serves as a model of system development and evolution for other jurisdictions who, because of either manpower or financial constraints, must phase advanced life-support into their existing care system.

Trsp., CC, Pers.

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THE ABC'S OF THE CCEMSA: AN INNOVATIVE COMMUNITY EMS

The Cypress Creek Emergency Medical Association (CCEMSA) is a non-profit community corporation organized in July, 1975 by residents to provide essential emergency medical services to the isolated, growing community. Located 40 miles northwest of Houston, Texas, the Cypress Creek development includes the area of approximately 150 square miles and a population of 90,000. The EMS system consists of three parts: 1) the Harris County Emergency Corps (HCEC), a non-profit trained EMT organization which provides actual emergency services, 2) a consortium of local and medical center hospitals and 3) the CCEMSA which manages policy and financial matters. CCEMSA-HCEC services are supported by voluntary, resident contributions of \$25 per family per year. However, ambulances answer all local emergency calls and provide services free of charge to both contributing and non-contributing residents.

The CCEMSA sought and attracted the interest of The University of Texas Medical School at Houston. Representatives from the CCEMSA and the Medical School have discussed potential relationships such as emergency room back-up and referral, educational support, and system planning and assessment methods. Immediate plans include implementation of transportation networks consisting of ground and air systems, cooperative inter-hospital associations, community education and self-help programs, and disaster planning. Together the CCEMSA and The University of Texas Medical School at Houston are exploring, planning and initiating innovative methods for providing rural/residential emergency medical services.

Trsp., Md.Ct., Fin.

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 Center

The Highway Emergency Radio Control Operation project, Project HERCO, was implemented to reduce the medically critical time between the detection and notification of a highway emergency and operated from early 1974 to December 1975, along the I-40/US 66 highway that traverses the remote northern Arizona region from border to border. The project was part of a demonstration grant awarded to the Arizona Department of Public Safety by the Department of Health, Education and Welfare (Contract HSM-110-73-361).

Specific HERCO objectives were: (1) to increase the number of reportable incidents identified and recognized (accidents, motorists in trouble, hazards, etc.); (2) to decrease the time from detection to notification; (3) to improve the validity and content of the information being processed and transferred to the DPS dispatcher; (4) to decrease the time from notification to dispatch in an EMS event; (5) to improve the prevention aspects of the system through early recognition and notification of correctable pre-EMS conditions.

These were accomplished by issuing two-way portable radios to Yellow Freight truck drivers who travelled the state from the issue points in Kingman and Holbrook. The radios were turned in at the end of each run, re-charged and re-issued to a truck driver going in the other direction. When a truck driver came upon an accident or other incident he was able to contact the DPS dispatch center in Flagstaff directly. Dispatchers then took the appropriate response action, dispatching a patrolman, a wrecker, or whatever was necessary. All objectives of the program were successfully met and the program generated interest in the neighboring states of New Mexico and California.

During the course of the HERCO project, the number of Citizens Band (CB) operators increased dramatically. Currently underway is a special 90 day study of the nature of CB calls in the same area served by Project HERCO. A comparison of the two systems as to operational and cost effectiveness will be prepared and submitted to the Department of Health, Education and Welfare.

Trsp., PSA

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The primary objective of all aspects of an emergency medical services system is the reduction of death and long term disability. Because of its rural and remote characteristics, with vast distances between communities having emergency receiving facilities, an air medical evacuation concept was adopted in Arizona. The responsibility for helicopter operations was legislatively mandated to the Department of Public Safety, Emergency Medical Services Division in 1972.

Two Bell Jet Ranger 206B turbine helicopters are available around the clock, seven days a week to provide medical and law enforcement coverage throughout the state. Each helicopter is equipped as an air ambulance and carries life sustaining equipment and supplies. The helicopter is capable of transporting two litter patients and is always operated by a two man crew.

Currently, there are eight helicopter crews. Each crew is comprised of a pilot who is trained to the Basic (81 hour) EMT level and a state certified emergency paramedic. Both are commissioned officers, which allows for the dual function of the section.

Requests for helicopter assistance are received from within the Department of Public Safety, the Arizona medical community, and other law enforcement agencies. All requests are received directly by the on-duty crew and authority to accept or refuse missions lies with the crew members, subject to established criteria and priorities.

The general classifications of missions logged by the Helicopter Operations sections are medical and law enforcement. Under medical missions the aircraft are used for highway and remote area medevacs, hospital transfers, including premature infant transfers, and transportation of blood and other vital materials. Law enforcement missions include search and rescue, surveillance and general law enforcement duties.

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FACILITIES / CATEGORIZATION

HOSPITAL EMS NETWORKS

In Massachusetts during the past two years considerable effort has been devoted to working with the Area Hospital Committees. These Committees have been responsible for developing the medical facilities component of the EMS system in their geographic areas. Regional and State EMS staff have acted as the catalyst for organizing these committees. State EMS staff have prepared guidelines for basic standards and timetables. Initial development of the Hospital/Medical component has been based on the concept that, if the EMS system is to be coordinated and effective, it must be designed and implemented around a plan which is developed and supported by providers and which provides for the triage (sorting) of emergency patients according to (1) the nature and seriousness of their illness or injury, and (2) the emergency care capabilities of hospitals and other medical facilities. Such patient distribution information and procedures are needed on an area, regional and statewide basis by ambulance attendants, EMS dispatchers, physicians, first responders and the hospitals themselves. Basic medical EMS plans include the identification of hospital emergency care capability, point-of-entry plans, identification of specialty centers, transfer plans and protocols and continuing education for emergency department physicians, nurses and the EMT-As. In summary, the hospital medical component of the developing area EMS system is based on the area's medical resources. Through statewide guidelines and basic standards, local providers, through their Area Hospital Committees, are implementing functional delivery plans which utilize the best possible resources. As providers get used to working together to improve care in the field and between hospitals, many traditional barriers are breaking down.

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HOSPITAL CARE CAPABILITIES

In Massachusetts, "point-of-entry" is a term describing the most appropriate hospital to provide initial care for various categories of emergency patients, depending on the nature and extent of the illness or injury. The point-of-entry hospital may provide only initial stabilization prior to transfer to a hospital with greater care capability or it may also provide definitive care. Point-of-entry plans are based on the hospitals' own assessments of their emergency care capabilities. In each of the 28 EMS areas of the state, hospital committees-- made up of a physician, nurse and administrator from each acute-care hospital-- utilized a Care Capability Questionnaire (CCQ) and evaluation criteria developed by Office of Emergency Medical Services with the advice of a State Physicians Committee. Information supplied by individual hospitals in the CCQ's was reviewed by the local committees in relation to the minimum evaluation criteria. Questionnaires were returned to the local hospital committees for review and discussion. Finally, in order to evaluate reported care capabilities, several of the hospital committees are forming site visit teams who visit each institution. Their completed survey forms are returned to the committees, and any discrepancies between the site visit findings and the CCQ are discussed and appropriate changes made in point-in-entry designations. The site visits provide an opportunity for the individual hospitals to bring up areas of concern which are not addressed by the CCQ and which are then discussed within the hospital committees.

Once the point-of-entry document is finalized, EMT's and hospital committee work out a method and schedule for its implementation.

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CRITICAL CARE UNITS

Categorization of hospital emergency department facilities in Minnesota has been a priority project with the Minnesota Department of Health, Emergency Medical Services Section since 1973. Criteria were developed from which the Local, Area, Regional, Referral/Specialty (L.A.R.R/S) categorization system evolved. While the Local, Area, and Regional criteria development has been completed and facilities categorized, Referral/Specialty unit criteria is currently in the developmental stage.

To accomplish the task of developing critical care unit referral criteria and care standards, the State Emergency Medical Services Advisory Committee to the State Board of Health appointed a subcommittee on hospital categorization. The subcommittee has organized task groups in each of ten critical care and referral categories including Behavioral (psychiatric, acute alcohol, and drug overdose problems), Burns, Comprehensive Biomedical Telemetry Control, Comprehensive Cardiopulmonary, Hyperbaric Chambers, Pediatric Intensive Care, Perinatal Intensive Care, Poison Information and Treatment, Renal Dialysis, and Spinal Cord Injury. The format for criteria development for each unit will include 1) Introduction, 2) Definition of care level, 3) Definition of service components, 4) General requirements, 5) Staffing requirements, 6) Equipment and supply requirements, and 7) Space requirements.

Since the Emergency Medical Services Advisory Committee recommended that critical care units should not be designated in the absence of specific criteria, the State Board of Health will utilize the Referral/Specialty criteria in designating critical care capabilities in hospitals throughout Minnesota by July 1, 1976 as part of the overall hospital emergency care categorization plan. It is anticipated that such course of action will assure due consideration to the many issues inherent in categorization, including quality of care, patient access, and economic priorities.

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DEVELOPMENT OF A REGIONAL FACILITY CATEGORIZATION PLAN

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Efforts to categorize emergency facilities have focused primarily on what is known as "Horizontal" categorization, typified by the A.M.A. guidelines. It has been determined by this agency that this approach is unacceptable. The single rating assigned to a facility is based on the least sophisticated level of care capability for any one of several critical care patient groups. There is the danger of public and even professional misconception about a hospital's care capabilities.

The alternate approach is "Vertical" categorization, i.e. assigning multiple ratings to each facility based on compliance to specific requirements for different patient groups. A "Vertical" system would recognize the particular areas of expertise of each facility. In addition, it would acknowledge such realities and necessities as the multiplicity of coronary and intensive care units as well as the centralization of burn, perinatal, trauma and poison control centers.

Criteria for "Vertical" categorization has been developed for the following patient groups: Trauma, Burns, Spinal Cord Injuries, Critical Coronary Disorders, Maternal and High Risk Infant Emergencies, Poisoning, Behavioral Emergencies, and General Medical Emergencies. Four Critical Care Task Forces, consisting of physicians with specialty backgrounds, have developed the various criteria. To provide input from the hospital community, and to examine the work of the Task Forces, is a Facilities Committee consisting of administrators from every hospital in the eight county region.

It is intended that upon completion of the designation of the various categories it will be possible to compile a collection of charts indicating care capabilities on an individual hospital, county-wide, and region-wide basis. Such materials would then be used by ambulance, rescue, police and fire units for initial patient disposition, and by the hospitals to coordinate transfer protocols.

Fc./Ct., Reg., CC.

Emergency Department Study

The Emergency Department Study was announced as available to hospitals and other emergency care facilities on 1 July 1975. The ED Study is an information system providing the data required to support a program of evaluation of emergency care and to assist in the internal management of and planning improvements to emergency care facilities. It is based on a year-long pilot study conducted by the Commission on Professional and Hospital Activities (CPHA), assisted by a grant from the W. K. Kellogg Foundation. It has been reviewed by representatives of several national medical specialty organizations.

In September 1975, another grant was received from the Kellogg Foundation for: 1) further development and national marketing of the freestanding Emergency Department Study; 2) development of quality assurance methods; and 3) development of the uses of data for emergency room management and facilities planning.

Participating emergency departments complete an abstract for every patient seen. The case abstract is designed to collect information specific to the needs of physicians, administrators, and emergency department personnel. Emergency Departments receive monthly reports consisting of tabulations of medical and administrative data supported by listings of individual cases. These reports display information on basic patient data, procedures and diagnosis, investigation and management.

One of the most significant aspects of the program is that the participating emergency departments and CPHA are working together to find better ways of using the data currently being collected, and to determine whether all necessary information is included. Also planned is an investigation of the ways the various professional communities can use the data and how it can be of assistance to EMS grantees.

As of 1 February 1976, fourteen emergency care facilities, with a total of more than 264,000 visits annually are participating in the Emergency Department Study.

Fc./Ct., Org.,
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A Multi-Hospital Approach to ED Physician Coverage

The three major acute care hospitals in Sioux City, Iowa, (St. Joseph Mercy Hospital, St. Luke's Medical Center, and St. Vincent Hospital) have been providing part-time physician staffed emergency department service to the community since January, 1973.

The service was established by the hospitals and a volunteer group of approximately thirty physicians from the Woodbury County Medical Society to meet a self-perceived need in emergency medical care. Prior to the initiation of the new program, the Medical Society had required its fifty newest members, regardless of interest or medical specialty, to participate in a rotational call schedule. During their twenty-four hour "on call" period every fifty days, these physicians were called to see any patients who did not have their own local physician. Patients charges were billed by the hospital and by the physician.

The new program is markedly different and more comprehensive. A volunteer group of physicians now provide "in house" coverage from 6 pm to 7 am on weekdays, and twenty-four hour coverage on weekends and holidays. Each physician has contracted with the hospitals and is reimbursed on an hourly basis. All charges are billed by the hospital. The emergency physician sees all patients who do not have their own private doctor, and provides initial treatment for all emergent patients until the physician of their choice or an appropriate specialist can take over.

A unique aspect of this program is that it rotates from one hospital to another on a scheduled basis. Each of the three hospitals is designated as "the emergency call hospital" for successive three month intervals. During the period when a hospital is "on call" emergency department nurse and allied health staffing is augmented in anticipation of the increased number of patient visits.

Area ambulance and rescue units, as well as the general public, are repeatedly advised of which hospital is on call, and ambulances are strongly urged to transport patients with life-threatening conditions (as well as patients without a physician choice) to the designated facility. The Community Ambulance Service of Sioux City makes inter-city transfers of such patients, following stabilization and initial care, to their hospital of choice at no charge. Similarly, patients to be seen by the emergency call physician who present at the wrong hospital are transferred free of charge to the designated facility.

The service has proven most successful in every regard, and full-time emergency physicians are now being sought to provide weekday coverage in order to allow "in house" service on a twenty-four hour basis.

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A STRATEGY FOR CATEGORIZATION OF HOSPITALS IN THE CAPITAL REGION

The categorization of hospitals presented several initial problems, specifically historic regional prejudice against categorization, lack of uniform criteria, and staff limitations. To address these problems a complex methodology was developed incorporating a technical committee, community outreach, and data analysis.

The Categorization Committee was formed of regional physicians and hospital administrators from both urban and rural areas. They first developed "capability criteria" that were comprehensive while being compatible with the regional situation. Next was the development of a time-phased methodology including data gathering, on-site evaluation by a multi-professional team, initial assignments, a group presentation for review and comment, and final assignments and distribution. The time-phase is approximately 18 months.

The staff undertook outreach, consulting each hospital administrator to erase misunderstanding and by speaking at hospital association meetings. Review and comment from administrators was continually requested. This public relations effort was implemented to prevent obstruction that arise from misconceptions and was coordinated with the overall EMS outreach model. Emphasis was on upgrading of regional care, the legal benefits to the hospital, and on the fact that categorization pertains to capability for care and is not a condemnation of smaller rural hospitals.

Technically, data gathering and analysis emphasized critical patient group care and patient flow. Accordingly, the administrators and medical staffs have been made aware of the need for transfer agreements to ensure continuum of care. Simultaneously with on-site evaluations, the committee has developed systems designs for the critical patient groups and will develop treatment protocols.

In conclusion, the use of both staff and a committee of experts allowed for the development of a technical design that was responsive to the regional situation while addressing all clinical and critical patient criteria. The community outreach effort was essentially pre-intervention, foreseeing possible obstructions and removing them before they occurred.

The initial problems presented by categorization have to date been ameliorated by this approach and could conceivably have application in other regions.

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EMS PROGRAMMING FOR POISONING VICTIM

Each year in the United States an estimated 5 million poisonings occur, resulting in over 5,000 deaths and a significant morbidity and disability. These poisonings place a large demand on our emergency medical resources and are responsible for 10% of all emergency room visits and 5-10% of medical admissions to hospital.

Because there is no organized system of medical care for the poisoned patient, there exists:

1. No reliable data base on incidence, clinical problems, and outcome.
2. 600 Poison Control Centers in the United States, 98% of which cannot meet the needs of either the physicians or the public.
3. An inability for new treatment and technical advances to reach the majority of patients with poisoning.
4. An 8% mortality for adult poisoning, when with regionalization of care in other nations this figure has been lowered to 1%.
5. An inadequate number of trained clinical toxicologists who are competent to care for the critically ill patient with poisoning, manage Poison Control Centers and assist in system design.

Patients who are asymptomatic at the time of the discovery of the poisoning constitute 85% of all incidents. They should enter the system through rapid access to a regional Poison Control Center where appropriate treatment is provided over the telephone and the incident ends in the prehospital phase.

Patients who are symptomatic and critically ill at the time of discovery need rapid access to a response from the total Emergency Medical Services System, with on-site coordinated prehospital care by first responders and paramedics leading to transport of the patient to the appropriate designated emergency facility and/or the specialized regional treatment center. Medical control and direction of the total response by the Base Hospital and the Poison Control Center requires an integrated communication network.

As a result of federal and professional initiatives some regions of the country are operating and planning these systems. Evaluation to date is primitive, but preliminary information has shown a decrease in the number of hospitalizations and the cost of care for the less severely poisoned patient.

Continued efforts to develop effective systems of care for the poisoned patient should also result in a decrease in morbidity, mortality and cost of care for the critically ill poisoned patient.

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DELINEATION OF HOSPITAL SERVICES

South Dakota's hospital are presently categorized according to AMA guidelines. While acceptable the categorization refers to total hospital and does not point out strong or weak points provision of emergency medical care. In an effort to delineate services the South Dakota EMS Program has formed an Ad Hoc Committee on Categorization to develop more appropriate methods. The Committee is composed of two physicians, two nurses and two hospital administrators chosen by their respective associations. A thorough study of other State's efforts and the use of proven methods was made. The writing of forms and methods of collecting information has been made. The information will be supplied by the hospital administrator and the Chief of Medical Staff. A follow-up visit by a team of medical professional will be made to discuss the gathered data and provide recommendations. The Committee will pilot test the project in their associated hospitals. They will also present the project to their associations for endorsement.

Fc./Ct.

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CALIFORNIA HOSPITALS: NEW PLANS FOR CATEGORIZATION

Experience with categorization or classification of hospitals' emergency medical services, nationwide, has been limited. Few states have enacted laws concerning categorization, but many states are now contemplating categorization plans through legislative proposals.

Until recently the effective evaluation and categorization of California hospitals' emergency medical services has been more a subject for intellectual study and debate rather than hard reality. A statewide program for categorization of emergency facilities did not really begin to be developed until after a conference in February of 1971 held under the auspices of the Commission on Emergency Medical Services of the American Medical Association. Since then the State of California Department of Health, Emergency Medical Services Section, in cooperation with the State Advisory Council on EMS, developed a State Plan for Emergency Medical Services.

Categorization and licensing according to the State Plan will now begin to occur. California Senate Bill 1412, known as the Beilenson legislation and which is now in the Legislature, holds that only emergency medical facilities holding special State permits and designated in the area (usually County) plan shall be identified through signs or other means as providing emergency medical services. Categorization, permits for emergency department operation, and the role of each facility in the local emergency medical services system will begin to have a significant impact on California hospitals.

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HOSPITAL INTERRELATIONSHIPS IN BOSTON

In this system the Hospital Committee of the Conference of Boston Teaching Hospitals, consisting of physicians, nurses and administrators providing emergency services, is the central planning body for the city. Their actions are freely discussed and taken, with affirmation when necessary by the institutional chief executive officers who comprise the Conference Board of Directors. Not only has the Conference taken the lead in this planning effort but have supported it both politically and financially. Thus, the three university medical centers, through their teaching hospitals, have assumed ultimate responsibility for the function and coordination of the facilities of the system. Community hospitals look to these teaching hospitals for their extensive capabilities in providing definitive care for complex problems. Transfers are made routinely into the inner Boston system.

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CATEGORIZATION IN BOSTON

The variety of strengths and capabilities in seventeen hospitals led to the adoption of a system of vertical categorization, emphasizing seven clinical areas: (1) acute medical and cardiac, (2) burns, (3) neonatal, (4) pediatric, (5) poisoning, drug overdose and alcoholism, (6) psychiatric, and (7) trauma. In each of these areas evaluation criteria were initially established delineating staffing, facilities, procedures, and support or back-up requirements. Response to hospital care capability questionnaires were filtered through the evaluation criteria guidelines, permitting numerical grading of individual hospital capability in each clinical area. Voluntarily accepted site visit evaluations of emergency facilities insured uniformity of the process. The ultimate result was a point-of-entry plan specifying the hospitals capable of supplying optimum care in each clinical area, for use by transport services and indeed the hospitals themselves.

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FACILITIES WORKSHOP

No rigid system is intended to apply to all geographic emergency units: state, metropolitan or community. An economically feasible system must build on the already present strengths of an area. In some locales the facilities themselves are top notch and what is needed is collaboration of effort and cooperation of people. The opposite pole would find a financial need for bricks and mortar but a total willingness of key individuals to evolve an appropriate system.

The situation in Boston, Massachusetts, in 1974 may be used as a text to illustrate problems and elements in planning an emergency medical system. The immediate strengths of Boston are three medical schools and seventeen teaching hospitals supplying some measure of emergency service. The major weakness in hospital facilities has been an absolute lack of intercommunication and collaborative planning. The establishment of a Hospital Committee of the Conference of Boston Teaching Hospitals in December 1974 was the key step in addressing the situation.

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FACILITY VERTICAL ASSESSMENT PROFILE

A "Standard" facility vertical self assessment profile format has been developed for California to uniformly tabulate hospital capability in 14 separate fields of medical emergency fields. This program is based on the hypothesis that the emergency services offered by a hospital cannot be accurately classified by grouping into a single number or category that will cover all medical fields.

An explanatory letter was sent to all facilities involved explaining that basically the numbers were to be applied to each of the medical fields independently as follows: Level 1: minimal facilities, essentially no care in this field. Level 2: routine care facilities, can handle most of the day to day problems. Level 3: advanced care facilities, can handle most of the complicated problems. Level 4: definitive care facilities, can handle any complications, act as consultant to any subordinate class of facility, and be actively involved in research and teaching.

The assessment was developed in both a short form for check off and return and a longer version which outlined services and patient types in more detail. The forms were promptly returned for compilation with no delays related to insufficient information furnished or available. More medical expertise and related services was in the area than had been realized. Referral changes will be noted as we develop transfer agreements between facilities.

A Vertical Assessment Profile would seem to provide a more definitive answer to the total capability of a particular facility. However, the CAPACITY of a facility to deliver service must also be assessed. The assessment must be done for static capacity, as well as capacity fluctuations.

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MEDICAL SCHOOL-COMMUNITY EMS RELATIONSHIPS

The University of Texas Medical School at Houston (UTMSH), is an expanding medical school located in the Texas Medical Center. The school stresses training of primary care physicians, and is increasingly involving faculty and students in community oriented health care delivery programs. Cypress Creek is a community of 90,000 in an isolated environment, located in a 150 square mile area, 50 miles northwest of Houston. In response to inadequate ambulance service, the Cypress Creek residents formed the Cypress Creek Emergency Medical Association (CCEMSA), a community organized and operated, non-profit EMS. The CCEMSA instituted a local awareness and fund-raising campaign which in six months accrued \$100,000, contracted with a non-profit EMT organization to provide EMS and community first-aid training, and purchase a fully equipped ambulance. In November, 1975, representatives from the CCEMSA approached the School for aid in developing the CCEMSA's EMS system.

It appeared that a cooperative EMS program would benefit both the UTMSH and the CCEMSA. Faculty and hospital administration have to be convinced of the project's benefit. Equipment, including telemetry, and educational materials have to be purchased. City-county and institutional politics have to be considered. To date, the project's advantages and benefits seem to overshadow its problems. Medical School and hospital personnel acknowledge the project's potential of providing Medical School students and residents opportunities to participate in a community-emergency medicine program. Currently, hospital personnel are assisting with first-aid courses in Cypress Creek; telemetry systems are planned; and progress is being made toward the consummation of the UTMSH-CCEMSA EMS system.

Fc./Ct., Pers., Req.

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MYOCARDIAL INFARCTION PREDICTION IN EMERGENCY ROOMS:

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A logistic regression model for predicting the probability of a myocardial infarction (MI) among patients presenting to an emergency room (ER) is being developed. The model is intended to maximize appropriate utilization of CCU beds and to minimize inappropriate discharges. The model is based on empirical observations of present CCU admission criteria including risk factors, presenting historical/clinical parameters, initial ECG's and social/organizational factors.

During a 17 day pretest, 101 "eligible" patients were selected by chart review on the basis of 12 IMIR (Imminent Myocardial Infarction-Rotterdam) symptoms. 43 of the 53 (81%) eligible patients, discharged from the ER on the basis of conventional medical criteria, were seen in 36 hours follow-up. ECG's/cardiac enzymes were obtained. None had an MI. 34 of the 48 eligible patients were admitted for suspected MI's. 12 (35%) had MI's, 8 (24%) had acute myocardial ischemia, 4 (12%) had non-ischemic heart disease, and 10 (29%) had non-cardiac diagnoses. Among the remaining 14 eligible patients admitted for non-cardiac causes, 2 (29%) had MI's. A negative past history for MI and a weekend admission were more frequent ($p < .03$) among the false positive admissions than among the patients with MI/ischemia despite a similar distribution of presenting complaints and clinical findings in both groups.

These data suggest that although false negative discharges from the ER are rare, false positive admissions are frequent. This model may be useful for prospectively identifying predictive parameters for diagnosing acute MI's.

Fc./Ct., CC., Acss.

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OUTREACH OF A COMMUNITY HOSPITAL - PAOLI MEMORIAL HOSPITAL

The ultimate goal of all health care delivery systems should be, through education and preventative medicine, to put themselves out of business. Realizing that such a goal is unobtainable and yet desiring to reach as far toward this goal as possible, Paoli Memorial Hospital has undertaken to educate its community in the hope that its citizens will not need our services, or if they do, will arrive at the point of initial definitive care in the best condition possible.

Historically, the Hospital's efforts were solely in the area of in-patient education with programs conducted by dietitians, nurses and physicians at the "bedside". While not detracting from these efforts, new approaches have been made to reach the nonpatient and the expatient. As a community resource center of health knowledge, such a project logically becomes part of the overall role of the Hospital.

Some of the programs established include cardiopulmonary resuscitation and coronary recognition training initially started for nurses, later broadened for all Hospital employees and volunteers, and now available to any interested group of citizens; Hospital orientations to alleviate the worries of children and adults about what they will encounter if they become patients; Pacemaker evaluation telephone service tied in with local ambulance squads having the ability to transmit EKGs to the Hospital for interpretation; Poison Center and lectures on prevention of poisoning; career elective sessions for local high school students; lectures by Hospital physicians on certain illnesses of interest; training of EMTs, both through course work and through practical experience in the Hospital's emergency room; assisting local ambulance squads on selection of appropriate equipment and its use; assisting in establishing local squads; development of an orientation brochure for new residents of the community.

Specific Bicentennial projects - Paoli Memorial Hospital is the nearest hospital to Valley Forge Park - include providing an ambulance to be located in the Park during weekends and the summer; publishing maps for motels and police to distribute to those in need of medical care; establishing a Language Bank for non-English-speaking patients; provision of training for Park guards in basic first aid and cardiopulmonary resuscitation techniques.

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"INTEGRATION OF THE SIX CRITICAL CARE GROUPS
IN A REGIONAL CATEGORIZATION SCHEME"

Attempts over the past few years to categorize hospital emergency capabilities have been less than successful in most parts of the country. Even though the concept of categorization is fairly well accepted, few areas have progressed further than forming a categorization committee and conducting a hospital survey.

One method that significantly facilitates the categorization process is to focus on the identification and integration of systems of care for specific clinical patient groups such as trauma, burns and perinatal. Most areas of the county already have some semblance of a critical care referral system within their region or adjoining region, for burns, neonates or less formally for head trauma. This vertical categorization provides a basic framework for total categorization while serving to illustrate its value to the general medical community.

DHEW has identified 6 clinical patient groups that should be integrated within this vertical framework. The strategy for implementation should necessarily be stylized for each particular area. In Illinois, Trauma acted as the leading edge in prompting the development of the other 5 clinical groups. 50 strategically located trauma centers were officially designated and became the hubs of the emergency medical service system. Their development led to the identification of 10 burn centers, 1 spinal cord center, and 10 perinatal centers throughout the state. Integrating these highly visible patient groups into an organized system provided a clear focus for the efforts of physicians and nurses with special interests in these areas.

In summary, vertical categorization, the identification and integration of specific critical care resources within a region can facilitate and provide needed direction to a total categorization program. Essential to its success is active physician participation in the development of transfer agreements and protocols and the availability of support services i.e. transportation and communications to insure appropriate utilization of the designated centers.

Fc./Ct.

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THE ILLINOIS EXPERIENCE: "EMS CATEGORIZATION"

Over the past 2-3 years, categorization of hospital emergency capabilities has been recognized and accepted as an essential component of emergency medical services systems. The federal government has provided a three pronged definition on which to base program criteria and activity. These three prongs, horizontal, vertical and circular are separate yet inter-dependent components of a single categorization scheme.

Illinois has developed what appears to be a successful mandatory categorization program emphasizing direct provider involvement, self categorization and on-going areawide planning. Probably the single most important factor contributing to the programs success, was the existing trauma center program, a highly visible vertical categorization effort that demonstrated significant patient care advantages during the prior year. This prompted the amendment of an existing act allowing hospitals to categorize on a voluntary basis, to an act requiring statewide categorization of all emergency facilities.

By 1975, 39 of the 40 identified service areas had met the requirement for 24 hour coverage, either by contracting emergency physician groups or utilizing existing physician staff. To date, none have indicated any significant financial or clinical burdens as a result of this commitment.

The Illinois experience indicated that several program activities can ease the categorization process. First, the initiation of a visible vertical categorization program can set the stage for overall categorization and can effectively demonstrate the value of the categorization concept. Self-categorization, even within a mandatory program tends to decrease provider resistance and enhance chances of on-going provider involvement. Finally, area-wide planning committees can provide an on-going mechanism for monitoring and upgrading the operational usefulness of the categorization scheme.

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The Twin Cities Metropolitan Council has developed a four-level horizontal categorization scheme to fit the urban-rural characteristics of its seven-county region. Emergency care of varying levels of specialization is provided for the 2,000,000 residents of the region by 37 hospitals and two clinics. Costs of care are high and several urban emergency departments are within walking distance of each other; in rural counties large areas lack 24-hour physician-staffed emergency services.

The Minnesota Department of Health developed a minimum category for all EMS facilities (Local) and two 24-hour critical-care categories, one for rural areas (Area) and one for regional services (Regional). The Metropolitan Council adapted this plan by establishing a "Basic" category, which was defined by standards that approached those of Area centers but did not demand full physician staffing 24 hours a day. It also defined "parameters" (location and service area for all facilities, volume for Regional and "Basic" centers) and "standards" (staffing, equipment, procedures, in-hospital services) more rigorous than the State criteria. Non-Regional EMS centers that meet the volume parameter and the categorical standards, and that draw most of their patients from within a Metropolitan-Council-defined "Urban Service Area" have been designated as "Basic" EMS centers. The remainder are "Local" facilities.

The Basic category allows an adequate distribution of providers of non-emergency or quasi-emergency care, and The Regional and Area categories clearly define the appropriate receiving sites for life-threatening emergencies. The volume parameters set for Regional and Basic centers allow the system to change with changing patterns of care, and the use of the Metropolitan Council's defined Urban Service Area allows EMS categorization to be related to other Council policies. The Council has designated nine Local, 15 Basic, six Area, and five Regional EMS facilities; two of these are shared services and one is a non-hospital "community health center."

Fc./Ct.

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THE CATEGORIZATION OF EMS FACILITIES IN IOWA HOSPITALS

The Facilities Task Force of the Governor's Emergency Medical Services Advisory Council assumed the following charge:

1. Evaluate, for the purpose of categorization, Iowa hospitals' capabilities for rendering Emergency Medical Services;
2. Utilize these hospitals' Emergency Medical Services facilities to best effect and with the greatest efficiency; and
3. Encourage appropriate upgrading of capabilities in locations where areawide health planning agencies indicate such a need.

An exhaustive statewide study of hospital emergency facilities ensued during a fourteen month period. Basic to the study was the definition of each of three levels, Comprehensive Emergency Service, Regional Emergency Service and Community Emergency Service, of emergency care capability. These levels have served as the means of categorization to establish what level of care each facility is capable of rendering and to facilitate triage within a particular region.

The definitions of these levels rested upon criteria agreed upon as minimal to qualify a facility for delivering a given level of emergency care and permitted facilities to be placed in categories accordingly.

The study has given rise to a number of recommendations for upgrading and/or improving statewide emergency medical services.

Fc/Ct., Ste.

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The ultimate goal of all health care delivery systems should be, through education and preventative medicine, to put themselves out of business. Realizing that such a goal is unobtainable and yet desiring to reach as far toward this goal as possible, Paoli Memorial Hospital has undertaken to educate its community in the hope that its citizens will not need our services, or if they do, will arrive at the point of initial definitive care in the best condition possible.

Historically, the Hospital's efforts were solely in the area of inpatient education with programs conducted by dietitians, nurses and physicians at the "bedside". While not detracting from these efforts, new approaches have been made to reach the nonpatient and the expatient. As a community resource center of health knowledge, such a project logically becomes part of the overall role of the Hospital.

Some of the programs established include cardiopulmonary resuscitation and coronary recognition training initially started for nurses, later broadened for all Hospital employees and volunteers, and now available to any interested group of citizens; Hospital orientations to alleviate the worries of children and adults about what they will encounter if they become patients; Pacemaker evaluation telephone service tied in with local ambulance squads having the ability to transmit EKGs to the Hospital for interpretation; Poison Center and lectures on prevention of poisoning; career elective sessions for local high school students; lectures by Hospital physicians on certain illnesses of interest; training of EMTs, both through course work and through practical experience in the Hospital's emergency room; assisting local ambulance squads on selection of appropriate equipment and its use; assisting in establishing local squads; development of an orientation brochure for new residents of the community.

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CATEGORIZATION OF EMERGENCY DEPARTMENT AND
CRITICAL CARE UNITS OF THE S.C. APPALACHIAN
REGIONAL EMERGENCY MEDICAL SERVICES SYSTEM

Purpose: The purpose of this discussion is to relate the experience of the S. C. Appalachian Health Council in the development of a categorization scheme for emergency department and critical care units.

Method: Approximately two years prior to the initiation of our current efforts at categorization, the South Carolina Hospital Association, in conjunction with the South Carolina Medical Association, developed a slightly modified version of the American Medical Association's categorization scheme, allowing its member hospitals to categorize themselves. The four categories are: comprehensive, major, general, and basic.

In our on-site surveys of hospitals in the South Carolina Appalachian Region, we noted a very close correlation between that self-survey and what was actually observed.

The critical care unit facilities in the region already serve fairly well established patient referral patterns with informal agreements. Written formal agreements, based on the informal agreements, will be developed as a part of the categorization scheme.

Fc./Ct.,Reg.,CC.

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Categorization of Facilities

Problems Anticipated

1. Legislative versus non-legislative approach
2. Selection of a standard
3. "Selling" the proposed schema

Strategy

1. Basic Subcommittee members selection and orientation
2. Philosophy of approach to problem developed
3. Regional model development
4. Seek endorsements of model
5. Survey institutions and facilities
6. On-site verification of categorization schema

Problems Encountered

1. A lack of understanding for the need
2. Parochial interests and attitudes
3. A "what's-in-it-for-me" attitude

Fc./Ct.

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REGIONALIZATION: AN ALTERNATIVE
TO CATEGORIZATION

In our region, categorization of hospitals by their emergency medical capabilities is presently not acceptable to the physicians practicing in the various political subdivisions. In order to overcome the resistance, suspicion, and paranoia among the physicians and to coordinate the delivery of emergency medical services throughout the region, we developed an alternative to formal categorization which achieves the same objectives of getting the right patient to the right hospital with the fewest delays. First, we identified the critical care facilities within the region. Second, we developed a general policy statement regarding the patient's and physician's rights in determining the ultimate hospital destination or facility within a hospital for that patient. Third, we are developing guidelines for patient transfers based on the available facilities within the region. Each of these guidelines will be composed by those specialists in each of the critical care areas working at the various hospitals within the region in a voluntary manner. For example, the pediatricians, obstetricians, and neonatologists will decide how they wish to manage neonatal emergencies. What we wish to emphasize is that it is not necessary to categorize hospitals before developing optimum utilization of existing adequate facilities. The political and economic issues of categorization create hostility and divisiveness within the medical community which impede the development of coordinated emergency medical services. We hope that by our alternative approach, we can achieve the same objectives as categorization and in the process cement strong working relationships among all the practicing physicians in our region.

Fc./Ct. , Reg.

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THE WENATCHEE SOLUTION OF THE "TWO HOSPITAL COMMUNITY PROBLEM"

As the development of Emergency Medical Services Systems has progressed in Washington State, much thought-provoking discussion was held on relative capability of hospital emergency departments, and the delivery of unjured or ill patients to the appropriate facility.

Hospitals depend on patients for their economic existence and are reluctant to "give up" any potential income derived through patient care. The concept of limiting emergency care resources to one hospital in a community was not acceptable to administrators and physicians.

Further "research" indicated the need for a trade-off system of patients which was agreeable fo the hospital-medical community. For example, one hospital would agree to concentrate on pediatric, psychiatric, alcohol, drug, or other specific areas of treatment, and relinquish the emergency departments' trauma center business. This has been the standard approach in a two-hospital community.

The Wenatchee, Washington, experience was the exception. Physicians and administrators simply, as a group, arranged for the purchase of one hospital by the other hospital, thus combining the administrative and physician input into one organization. Each facility was then designated specific areas of patient care. In emergency medical services, the result was one fully staffed and equipped emergency department in one location. All patients were given initial in-hospital treatment; then they were routed to the specific area of patient need, which included transportation from one physical facility to another, on referral to specialties non-existent in the community.

It is interesting to note the two hospitals were of different religious, social backgrounds, and this amalgamation of services was still effectively administered.

Fc./Ct., ACSS, Fin.

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NATIONAL EMERGENCY FACILITIES CATEGORIZATION REVISITED 1976

Categorization of the emergency capabilities of hospitals is an established Emergency Medical Services (EMS) systems concept. Since the mid-1960's there has been considerable discussion about the need for the categorization of the general and specialty hospital emergency care capabilities on a regionalized basis. Medical professionals and organizations and interested health agencies have recognized and supported the need for adoption and implementation of EMS facility categorization. Unfortunately, little positive action has taken place at the regional and local levels to implement programs that integrate the principles of established national categorization guidelines that assess the individual hospitals' general and special care resources and potentials to effectively improve Regional EMS systems.

Federal Grant program requirements for categorization of hospital emergency capabilities was specified in the Department of Transportation Highway Safety Act of 1966 (Standard 11). Categorization was also a requirement in the Robert Wood Johnson Foundation EMS initiative of 1973. The EMSS Act of 1973 clearly states the requirement for categorization of emergency capabilities of hospital services. Three of the Congressionally mandated fifteen components that must be integrated in an EMS system granted under the Act includes facilities, component #5; critical care units, component #6; and transfer agreements, component #10.

As the Lead agency in the Federal government for all EMS activities, the Division of EMS, HSA, HEW initiated a major program effort in 1975-76. Emergency facilities categorization starting with a National Symposium on this subject in Chicago, Illinois September 9-10, 1975 and at subsequent Regional, State, and local workshops for EMS systems planning, implementation, and expansion throughout the past program year.

A HEW technical assistance document (discussion paper) emphasizing the role and importance of categorization of emergency facilities in planning and implementing sound and effective Regional EMS systems in order to qualify for Federal grant support under the Emergency Medical Services Systems Act of 1973 (P.L. 93-154) was presented. This working paper was intended to provide technical assistance to all grantees and potential grantees in their effort to develop EMS services systems for their areas. Emphasis in categorization has been on the Clinical Rationale and Patient Impact, for all categories

of EMS patients and especially for the most critical patients requiring immediate advanced life support that can only be effectively provided for by a total effort of improved prehospital, general hospital, specialized hospital center/unit services. In order to assist in EMS systems development involving facilities designation and interfacilities arrangements, the following critical patient groups have been identified in the National EMS Program; Trauma, Multiple Burn, Spinal Cord Injuries, Acute Cardiac Care, Poisonings, High Risk Infants, Alcohol Detoxification and Drug Overdose, and Psychiatric and Behavioral Emergencies.

With this evolvement, the development of new terminology was necessary and effective categorization must therefore involve all of the emergency receiving facilities and ascertain both the general (HORIZONTAL) and specialty (VERTICAL) care capability for all emergency patients. using statewide or national criterion and be implemented on a regional basis (CIRCULAR), if impact on emergency medical care services is to be anticipated. Categorization has relevance in urban, suburban, rural and wilderness areas.

Fc./Ct., Fed. Ag., Fed. \$

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CRITICAL CARE

The lack of providers with knowledge relating to emergency care and follow-up treatment for the alcoholic and the need for trained counselors to work with the alcoholic, his family and the medical community has long been recognized as a serious problem in the Panhandle of Texas, if not the entire U. S.

To help resolve or, at least, reduce these inadequacies the Texas Panhandle Alcoholism Counseling Services was initiated in May 1974 to help the alcoholic and family and to change some misconceptions and attitudes about the medical care for alcoholism and the alcoholic.

To provide these essential services, working agreements were set up between the TPACS and all agencies who have resources that can be made available to the alcoholic living in the area, including detoxification facilities, halfway houses, DWI court classes and other special alcoholism services. Counselors are located in five rural Panhandle communities and the only urban area, Potter County, has two counselors. It is the job of each counselor to reach the alcoholic in his area and provide the services necessary including counseling, AA, medical care, employment and/or legal aid through the district judges and courts.

TPACS maintains a contract with Northwest Texas Hospital's alcoholism programs at Unit J and Underwood Hall (a halfway house) via the Amarillo MH-MR, and a contract with Potter County to do counseling and follow-up for the Panhandle Alcohol Recovery Center (a minimum security facility).

Since this pilot project is geared to close coordination with MH-MR alcoholism medical treatment programs, close attention is paid to the after-care program of alcoholic patients released from medical therapies. Of primary importance are follow-up visits to prevent recidivism and to determine what further help the client (or family) needs in terms of education, training, job placement, sheltering services, social rehabilitation and individual or group counseling sessions.

The program has completed more than three thousand follow-ups in the past eighteen months with 57% sobriety for area clients, 69.8% sobriety for Unit J (Northwest Texas Hospital's clients) and 47.5% sobriety for the Panhandle Alcohol Recovery Center residents.

The counselors are now attempting to integrate programs of education for the rural emergency room personnel, mostly to change attitudes and modes of treatment. With the use of the film "Chalk Talk," these services have doubled due to the community interest. The film has been shown at least once each day every day since October 1975 to civic groups and medical providers.

An educational course provided by the Texas Hospital Association will be presented in five different rural hospitals this spring by the Panhandle Emergency Medical Services System inviting both hospital personnel from surrounding communities and the TPAC counselors to assist in better serving the community.

CC., Pers., C.E.&I

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SYSTEMATIZING EMERGENCY CARE OF THE POISONING VICTIM

Poison care in Massachusetts consists of seven "poison control centers" with widely varying capabilities for information and treatment. Existing information resources run the gamut from a set of National Clearinghouse file cards in an emergency department to an extensive, computer-linked information system. Consumers everywhere suffer from lack of familiarity with poison information numbers. More than half of all witnesses to poison emergencies probably rely only on the nearest hospital emergency department for initial information and/or treatment.

The Office of Emergency Medical Services is working with a task force of representatives from existing poison centers and key poison specialists in an effort to systematize poison control. The following is occurring: (1) Definition of standards for regional treatment centers embracing several Health Service areas and (2) Definition of standards for a centralized information facility to be accessible statewide to consumers for consultation on treatment.

C., Ste., Adm.

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SPINAL CORD INJURED PATIENT

Every year about 250 persons suffer a traumatic spinal cord injury in New England. Institutions in Massachusetts provide the most definitive care resources in the six states. To date, there has been no formal identification of specialty care centers for the spinal cord injured person; consequently transfers have been all too often haphazard. Two years ago the New England Spinal Cord Injury Foundation, Inc. was formed to develop a comprehensive system of quality care for the spinal cord injured person, by utilizing existing resources in the most effective way and by encouraging the development of new resources as needed.

OEMS is working with the Foundation to develop and implement standards and criteria of care for the treatment of the spinal cord injured patient from the time/place of the injury through rehabilitation.

The Standards and Criteria Committee has developed criteria and protocols for the treatment of spinal cord injured patients from the scene of injury through definitive care and rehabilitation: (1) EMT-A Patient Assessment Protocols; (2) initial emergency department treatment protocols; (3) transfer procedure and enroute patient treatment protocols (4) criteria for classification of facilities to treat spinal cord injured patients (classified by treatment capability to emergency care stabilization; definitive emergency care; definitive short term care; and comprehensive initial and continuing care, including complete rehabilitation); (5) and acceptable length of stay by class of facility. These standards and criteria will be implemented through the Area EMS Hospital Committees. Definition of specialty centers is expected to occur over the next year. The specialty centers have agreed to work with hospitals to insure that the protocols are followed.

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Coronary Care Mobile Unit

The Panhandle of Texas (24,900 sq. mi., twenty-five counties, 330,316 population) has one metropolitan urban center, Amarillo. Ambulance service for Amarillo is provided through a private firm with six emergency vehicles in service, manned by Emergency Medical Technicians.

A major concern of the Amarillo Hospital District was the lack of ability of the private ambulance service to provide sophisticated advanced life support for the cardiac patient in transit, as well as at the site of the incident, due to costs and trained employees.

A low cost but feasible experimental solution is being implemented in February 1976 with the introduction of Amarillo Intensive Mobile Emergency Service (AIMES).

The Amarillo Hospital District in cooperation with the Metropolitan Ambulance Service has purchased necessary telemetry equipment and defibrilators, trained their Amarillo Emergency Receiving Center's registered nurses in an eighty-hour EMT-Coronary Care course and relocated one fully equipped coronary care ambulance at the site of the AERC for full utilization of the trained registered nurse when not on call.

On receipt of a call from a citizen indicating possible cardiac problems, the AIMES ambulance is dispatched with the specially-trained coronary care registered nurse in addition to the ambulance service's EMT.

As funds become available and the system proves effective, additional ambulances in Amarillo will be equipped as coronary care mobile units. Additionally, paramedic training will be introduced in Amarillo to assist in providing advanced life support capabilities.

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BURN SPECIALTY SUBCOMMITTEE

Only one organized burn unit in Massachusetts contains adult burn beds. Pediatric burn treatment beds are available on a limited basis.

A Burn subcommittee of the Boston Hospital Teaching Conference EMS Committee was formed in fall, 1975 to develop (1) criteria for designating facilities as burn treatment centers; (2) patient protocols for the treatment of burns at the initial emergency department, transfer of the burn patient and mechanisms for that transfer; and (3) a burn transfer form. The committee, coordinated through OEMS, is comprised of burn specialists from all of the major Boston teaching hospitals, emergency department physicians from these same facilities, nurses, rehabilitation personnel and administrators. After this specialty committee has developed these criteria and protocols, they will be sent for approval to every area hospital committee in the state before being implemented.

In support of this voluntary state burn effort, there are five burn related laws in the Commonwealth. One of these laws, currently being implemented throughout the state by the Department of Public Health, requires reporting by all hospitals, on burn injury report forms, those burns affecting five percent or more of the surface area of the body. Comprehensive records of these reports are being maintained by the Department. This will assist in determining where the highest incidence of critical burns occur, where they are being treated and whether the criteria and protocols are being implemented.

The committee has endorsed the development of a physician's continuing burn education program.

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The immediate post-operative phase of the multiply injured patients presents one of the most challenging problems in critical care medicine. Because of the multidisciplinary factor, the most efficient care could only be provided by a full time team of critical care personnel headed by a clinical director upon whom absolute authority and responsibility for the patient's medical management is conferred.

Continuous observation and sophisticated monitoring of ventilation, circulation and perfusion, renal function, coagulation and metabolism, are mandatory.

Thoracic and central nervous system injuries dictate additional protocols of management.

Adequate replacement of circulating blood volume is followed by judicious replacement of losses and maintenance fluids with appropriate colloid and crystalloid solutions to avoid the ever present problems of overloading and respiratory distress syndromes.

The storage lesion of banked blood and the coagulaopathy of massive transfusional therapy have been significantly reduced with the use of fresh frozen plasma while ultra-fresh whole blood is still useful in situations where thrombocytopenia accompanies multiple factor deficiency.

Early recognition of incipient blood loss, incomplete replacement of volume deficits, massive hemolysis, myoglobulinuria and elimination of vasopressors in the treatment of shock become of utmost importance in the prevention and management of renal failure.

Appropriate surgical wound debridement and drainage, frequent cultures of blood and fungi, absolute sterility in insertion and maintenance of intravenous catheters and proper care of all indwelling catheters, provide the basis for reduction and elimination of septic complications.

Total parenteral nutrition administered early in the course of treatment has significantly reduced excessive nitrogen loss and the extreme catabolism invariably present in the multiply injured.

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Recognition of the problem of overcrowded conditions of the local jails, including DWI and alcohol/drug related misdemeanor patrons, in addition to the drain on the emergency departments by the "revolving-door alcoholic-drug abuser" led to the establishment of the Panhandle Alcohol Recovery Center -- the newest concept in rehabilitation in the Panhandle of Texas (twenty-five counties, 330,316 population).

The PARC opened in the spring of 1975 through funding of Potter County, Amarillo Mental Health - Mental Retardation, the Texas Commission on Alcoholism and Manpower funds. The PARC is a criminal justice minimum security facility. Approximately one-third of the seventy-bed facility has been designed for the alcoholic-drug inmate. Two counselors and an LVN family counselor serve the residents. A physician is on call.

Residents are committed by court order (detox is offered at the Amarillo Emergency Receiving Center) for a minimum 30-day - maximum 90-day period. While serving their sentences, residents are required to attend daily counseling programs (both group and individual) and evening Alcoholics Anonymous meetings provided on the premises. Work release programs as well as educational programs are offered in nearby facilities.

The Texas Panhandle Community Action Corporation of Amarillo has five referral counselors in communities throughout the Panhandle. TPCAC provides an intake counselor at the AERC as well as counseling services at the PARC. Once the PARC resident has served his sentence and is released, he is immediately picked up by the TPCAC community counselor for follow-up.

To date the concept is working so well that additional facilities are being constructed at the same location to house women, men and juveniles, with all counties participating.

With citizen education programs being stressed as never before; implementation of the A/D Alliance for improved referrals and accessing of the system; upgrading of emergency room personnel in A/D training; and the establishment of the PARC with resident and follow-up counselors the Panhandle is well on the way to impacting the problem of the alcoholic and his recovery.

CC, Spec., C.E.&I.

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FUNCTION OF LIAISON PSYCHIATRY IN A TRAUMA UNIT

The modern technological advances in postoperative care have made a major impact in the surgical care of a patient with severe trauma. At the same time, the evolution of the intensive care unit has created a foreign and perplexing environment for patients, as well as a stressful environment for nurses. Observers have likened the daily work of the nurse in an intensive care unit to a battlefield situation. The recognition of the ICU psychosis or postoperative delirium and its treatment first brought the liaison-consultation psychiatrist into the trauma unit. The focus then spread to psychological reactions of the nondelirious patient to his predicament. Involvement of the family in the recovery of the patient as supportive or hindering to his care has been another area of collaboration between surgeon and psychiatrist.

What factors led to the trauma in the first place? Accident proneness, alcohol, drugs, a thinly veiled self-destructiveness--here is seen the interface between the social workers, nurses, surgeons and psychiatrists. Patients deal with the stress of the recovery in the pure characterologic manner with which they dealt with life stresses, so investigation into pretrauma factors is relevant to postoperative course.

The liaison psychiatrist has been used further to lead group discussion with nurses in which the feelings related to severely ill or dying patients may be ventilated. Scapegoating of the surgeon and nursing office is thereby hopefully diminished.

In an era of increasing emphasis on specialization of function, the holistic approach to patient care can be facilitated by utilization of a liaison psychiatrist in the setting of a modern trauma unit.

CC

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THE DEVELOPMENT OF A PERINATAL TRANSPORT SYSTEM

By Frederick H. Wirth, M.D.

A perinatal transport system is an important factor in the successful transfer of critically ill infants from the hospital of birth to the regional intensive care nursery. The system should reduce the hazards of transport by stabilizing the infant's environment, thus raising the percentage of infants who survive transportation and improving their condition upon arrival at the perinatal center.

The transport system of Virginia State Perinatal Region VII was developed by a group of physicians representing hospitals in the region. These physicians found a committee to develop the concept, design the vehicle, and provide financing. A neonatologist was then recruited to be the Director of Perinatal Services. Specially trained transport teams, each consisting of a paramedic, a neonatal intensive care nurse, and a house officer were set up. These teams, on call 24 hours a day--through recall beepers, respond to the calls from referring doctors and arrive at the hospital of birth to evaluate, stabilize, and transport the infant. The infant is reevaluated upon admission by the team.

Each transport is evaluated in a monthly meeting of all transport personnel. The initial evaluation, stabilization, transport, and condition of the infant on admission to the perinatal center are reviewed to determine the effectiveness and safety of the perinatal transport system. Infant mortality before and after the initiation of the transport system has been analyzed. Data of the infant's initial condition and their condition on admission to the perinatal center have demonstrated medical improvement of most infants transported.

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PROTOCOLS FOR ON-SITE CRITICAL CARE BY THE EMS-II

PROBLEM: The Metro Dade County Fire Rescue Department serving a South Florida population of over 750,000 has operated an advanced EMS system without an adequate back-up voice radio-EKG telemetry system, utilizing protocols (written standing orders) for on-site care by the paramedic. The use of protocols was necessitated by rapid growth of the EMS system prior to development of adequate back-up EMS communications.

SOLUTION: Protocols covering initial evaluation and immediate basic and advanced life support for medical and trauma emergency stabilization were written and implemented.

IMPLEMENTATION: Paramedics who have completed an advanced EMT training curriculum, three months of emergency medical rescue experience, and passed a written and practical skills examination are authorized to independently use the protocols. Skills which are tested and may be performed per the protocols include the following: (1) Airway management including the esophageal-obturator airway; (2) Intravenous catheterization; (3) Use of EKG diagnostic equipment; (4) Use of monitor-defibrillator; (5) Use of a pneumatic cardiocompression-ventilation unit; (6) Use of the MAST trouser; (7) Arrhythmia recognition; (8) Handling of essential IV cardiac drugs.

Per the protocols, the paramedic is authorized to utilize the above equipment, drugs, and procedures prior to contacting a back-up emergency physician when necessary.

The following problems are covered by the protocols: (1) Initial Assessment; (2) Cardiopulmonary Resuscitation; (3) Trauma; (4) Chest Pain; (5) Respiratory Distress; (6) Coma; (7) Burns; (8) Toxicology; (9) Shock; (10) Dyssrhythmia; (11) Hypertension; (12) Eye Emergencies; (13) Emergency Child Birth; (14) EMS Communications.

SUMMARY: By implementing protocols, to authorize on-site critical care by the EMT-Paramedic, the Metro Dade County Fire Rescue service has improved on-site critical care in an expeditious fashion without the advantage of EKG telemetry.

CC, Pers, Md.C.

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A National Symposium on Emergency Medical Services Patient Care System Design and Implementation was held at Grand Rapids, Michigan, November 11-13, 1975. Participants included Alan W. Jameson, William C. Huddelston, Peter Bourne, C.J. Frederick, Janet O. Frank, Paul Widem, Stuart L. Nightingale, Carl Leukefeld, and Daniel H. Johnston.

Areas covered were: psychiatric (behavioral) emergencies; EMS system requirements; psychosocial emergencies; the psychiatric patient in an EMS system; treatment of alcoholism in the EMS system; treatment of the drug abuser in the EMS system; the roles of the National Institute on Alcohol Abuse and the National Institute on Drug Abuse; and the training of EMT's in crisis intervention skills.

The EMS Systems Act of 1973 (P.L. 93-154) mandated fifteen specific procedural items necessary to develop and implement an EMS system. Included in the critical patient groups were psychiatric, drug overdose and alcohol abuse patients. These categories require the defining of issues, current experience and national awareness for the development of sound care and rehabilitation. Also, essential to an effective system is the multidisciplinary input of technical and professional individuals from the private and governmental sectors. Program planning is the key-stone. This includes evaluation of the process before, during and after.

Personnel, facilities, transportation and communication systems must be efficiently coordinated and function on a 24 hour basis. Access into the system is a prime concern, as is the training of health professionals and allied health professionals. Education of the lay public as to the system, access into and its service area must be provided.

A psychiatric emergency is any behavioral emergency that does not fit into a medical or surgical emergency, and is potentially life-threatening to the self or others, or is psychologically damaging.

The "Grand Rapids papers" address themselves to the definition and implementation of the appropriate (psychiatric, alcohol and drug abuse) emergencies. They consider in a comprehensive manner the development of model emergency medical services systems for these emergency patients.

CC., Spec.

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BACKCOUNTRY EMERGENCY MEDICAL SERVICES

Rural/wilderness emergency medical services systems present particular challenges in terms of implementation and operation. It is necessary to interface the EMSS resources of communities with the special search and rescue capabilities of the area. Communications between and various involved agencies and organizations is particularly important, along with a focal point that is aware of the resource capabilities of all EMS organizations and their status at any particular time. The training of rural/wilderness EMS and search and rescue personnel also presents challenges in terms of skills utilization and degradation in relation to the relatively low volume of emergency situations encountered, especially as contrasted to their urban counterparts. The need for modified equipment items, special vehicles, etc., is also a challenge for rural/wilderness EMS systems. Rugged terrain extremes in weather conditions, and other similar factors all contribute to the "differences" in rural/wilderness EMS. The great distances to definitive care facilities, and the fact that the nearest definitive care facilities often do not provide certain critical care capabilities (e.g. neurosurgery, burn care, etc.), adds to the need to provide a very high quality of prehospital emergency care, i.e. the need for more highly trained EMS personnel in rural/wilderness than in urban areas. The critical care transfers made between definitive care facilities often present considerable periods of out-of-hospital risk time, also demonstrating the need for highly trained personnel. However, the challenge of maintaining the skills and knowledge of EMS personnel in rural/wilderness areas is just beginning as advanced life-support personnel are trained for service in such areas.

Rur., Spec., Trsp.,
CC., Pers.

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FLORIDA PERINATAL INTENSIVE CARE PROGRAM

The Program was initiated three years ago through the efforts of the Florida Pediatric Society and the initial funds for the Program were provided by a grant from the Florida Regional Medical Program. The two problems that this program has addressed itself to are newborn mortality (survival) and newborn morbidity (quality of survival, particularly serious neurological sequelae). The primary objective of the Perinatal Program is to improve the outcome of pregnancy (norman healthy babies). We are convinced that this can be accomplished by means of a comprehensive plan of regionalization of maternal and newborn care.

Major accomplishments of the program to date have been the designation of six regional neonatal intensive care centers (Level III hospitals) with the establishment and implementation of communication and transportation systems linking the regional centers with the sub-regional centers (Level II hospitals) and the small outlying community hospitals (Level I hospitals). The main thrust of the program so far, has been in educational activities and there are eight separate and distinct educational courses geared for the various types of health professionals who care for mothers and babies.

In the spring of 1974, largely through the efforts of our program, the Florida legislature approved and appropriated \$1,500,000 for care of infants at the regional neonatal intensive care centers. This past year (1975) the legislature appropriated \$1,665,000 to be used at the neonatal intensive care centers. A most important activity of the program is follow-up of patients. The recently appointed Obstetrical Co-Director of the Program and other interested obstetricians are implementing many of the activities for the obstetric side of the program. A well coordinated program of regionalized care, can reduce maternal and infant mortality and morbidity in the State of Florida.

CC

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DETOXIFICATION SERVICES—COMMUNITY INVOLVEMENT THROUGH E.M.S. PLANNING

The need for detoxification services for alcoholics and drug abusers in the Brazos Valley (Region 13) area of Texas has long been recognized. Until recently, efforts made by a community mental health center and an MH-MR center (each serving Region 13) to provide those services have been subdued due to problems inherent to the youth of their organizations; the dearth of individuals in the area trained and skilled in the treatment of alcoholics and drug abusers, and; the reluctance of local physicians to perform detoxification knowing that patients would not have the benefit of subsequent rehabilitative treatment in the community. Consequently, patients requiring detoxification are frequently referred to state hospitals and other centers outside the region for treatment.

Attempts made by the community mental health center to secure special funding with which to establish detoxification and residential facilities for chemical abusers have failed. Realizing the need for this service in a comprehensive mental health system, support has shifted to the Mental Health/Mental Retardation Center to be the provider. Agreements between the two agencies have been reached on a referral system.

Last November, at the discretion of the Brazos Valley Development Council Emergency Medical Services Advisory Committee, a meeting was called of an ad hoc group with representatives from the Brazos Valley Development Council Advisory Committees on Alcoholism and Drug Abuse, mental health center and MH-MR boards and staff, and local physicians, during which the responsibility of the Emergency Medical Services program to critical patient groups was explained. The ad hoc committee formally requested that MH-MR staff explore the possibility of establishing detoxification and residential services and investigate sources of funding for these programs.

Results of two meetings of the E.M.S. ad hoc committee are as follows: Area physicians have agreed to supervise detoxification of patients in existing hospital facilities; hospital staff training in detoxification will be coordinated through E.M.S. training programs; a facility for rehabilitative care of chemical abusers with detoxification services will be purchased by the MH-MR Center, and; MH-MR has requested that where necessary the clinical staff of that facility be trained at the Emergency Medical Technician level through the E.M.S. program.

CC, Pers., Md.C.

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EXTENDING CRITICAL CARE TO TRANSPORTATION PHASE

Survey Guide Design

1. The individual questions in the survey guide should be updated and revised on a timely basis in order to meet current conditions.
2. All future versions of the survey guide should be pre-coded to facilitate input to the data processing equipment.

Surveyor Selection and Orientation

3. Survey teams should be composed of but not limited to a physician, a nurse and an administrative representative.
4. Surveyors should be recruited from personnel who work outside the area of the hospital being audited.
5. It is helpful to use one team of competent surveyors for several on-site audits.
6. Survey team members should receive an honorarium for each site audit conducted.
7. The possibility of continuing education credits for surveyors should be discussed with CMA, CNA, and other appropriate professional organizations.

Hospital Selection

8. Regular assessment of hospital emergency facilities should be made by an annual survey questionnaire and an on-site audit every two years.

On-Site Audit Procedure

9. Each surveyor should have a copy of the completed survey guide before the date of the on-site audit.
10. The administrative representative on each team should serve as the team coordinator. Upon completion of the audit, the coordinator should submit one completed copy of the validated survey guide.

CC., Trsp., Pers.

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THE PHYSICAL THERAPY MANAGEMENT OF FIVE HEPARIN-TREATED BURN PATIENTS

Patients with deep second and third degree burns covering 31 to 47% body area will be discussed. Each patient arrived for Hubbard tank treatments beginning day two. The heparin-treated patients were unexpectedly alert and not restless, compared to non-heparin treated patients who typically arrived depressed, lethargic and uncooperative. The burned areas treated with heparin characteristically were odor-free making nursing and physical therapy efforts far more agreeable. Edema was surprisingly minimal, both local and general, eliminating escharotomy and fasciectomy. Patients were minimally debrided. Blisters were carefully preserved and injected with topical heparin. This relieved local blister pain. Blister skin with heparin appeared to serve as a protective measure as no infection occurred in blisters. Topical heparin was sprayed onto denuded areas after tanking. Patients within minutes expressed relief from pain. Isotonic and isometric exercises, initiated to maintain muscle tone, and range of motion exercises were facilitated by the lack of edema around major joints. The patient's general comfort allowed an active participation, physically and mentally, in a vigorous exercise program which contributed to the absence of contractures. As the surfaces became drier, granulation tissue appeared and re-epithelialization progressed at a rapid rate. New skin was pliable and smooth. In summary, early use of topical and parenteral heparin enabled the burn team and the patient to better handle the traumatic injury.

CC

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EXTENDING CRITICAL CARE TO TRANSPORTATION PHASE

When we examine current military EMS transportation and initial critical care capabilities, and the demonstrated record of survival associated with their effective use, it is clear that current state-of-the-art generally exceeds ability of the civil sector to employ it. A significant indictment of our civilian system is the fact that many a Vietnam jungle battlefield casualty was in a M.A.S.H. unit surgical theater in shorter time following injury that it takes the average metropolitan freeway rush hour traffic accident victim to reach a medical center emergency room.

Success in design, implementation, and continued operation of an EMS transportation initial critical care component is heavily dependent on careful attention to the following considerations:

- 1) What is possible, on the one hand, with respect to state-of-the-art; and on the other hand, with respect to available financial resources;
- 2) What kind of coordination can be accomplished among existing (civil and military) emergency services special units, thus taking advantage of limited resources;
- 3) What modifications of and additions to "standard" components are required, with respect to special local geographic needs;
- 4) How local and regional vested money and power interests will encourage or retard the actual implementation of "the system everyone recognizes is really needed."

To realize maximum effectiveness in EMS transportation/initial critical care components, we must take a hard look at our ability and willingness to coordinate and share existing resources, to commit additional funding as necessary, to save "the other guy," to be flexible enough to respond to special geographic demands; and particularly, to design systems whose priority is to save dying people rather than determining which "vendor" will make the buck and take the credit!

The record to date would indicate that - in EMS development (as with many aspects of life) - technical state-of-the-art has exceeded our ability to respond socially and politically. We are still short of currently defined and technically achievable goals.

CC, Trsp., Reg., Adm. Md.C

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HEPARIN'S DOSE RELATED EFFECTS IN 270 HUMAN BURNS

Before 1963, heparin, administered parenterally in small anticoagulative doses, produced significant results in animal burns but not in human burns. Then, after trials in animals, heparin, in larger doses was administered topically and parenterally to 270 patients with deep thermal burns 1-60% size. Heparin produced blanching of erythema; relief of pain and toxic symptoms; prevention of burn extension; reduction of burn and body edema; elimination of escharotomy and fasciectomy; conversion of weeping surfaces to dry, richly vascular, granulating surfaces; re-epithelialization and repigmentation of deep second- and third- degree burns without contracture or infection, and significant reduction in parenteral fluid needs without shock. Few skin grafts were required. No bleeding problems occurred. Increasing heparin dose given parenterally and topically increased these effects optimally. Optimal heparin doses, given intravenously for two days, then subcutaneously, were accompanied by Lee White clotting time under one hour. Above one hour, subcutaneous heparin was stopped. Topical heparin was continued without affecting coagulation. Starting at 400 units/kgm weight/15% size/day, parenteral steam-burn dose increased linear while flame-burn dose increased exponentially day one, and linear thereafter. No parenteral doses above 1200 units/kgm/15%/day were used clinically because experimentally they were excessive. Topical dose averaged 100,000 units/15%/day. Although anticoagulative doses produced no discernible effect, larger doses produced multiple therapeutic effects.

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CC., Res., Spec.

"OUTLYING CORONARY CARE UNITS IN A REGIONALIZED EMS SYSTEM"

The development of the Illinois EMS system was highlighted by the phased implementation of clinical programs for specific categories of critical care patients. For trauma this took the form of specially designated trauma centers strategically located throughout the state; for the acute cardiac patient a statewide cardiac program was developed with two major components; pre-hospital mobile intensive care and in-hospital intensive cardiac care.

During the first three days the most common cause of death is cardiac arrhythmias, clearly pointing out the necessity for continuous electrocardiographic monitoring following a cardiac incident. To answer this problem a program of improving hospital cardiac care was initiated on a regional basis in five areas of rural Illinois. In Illinois the establishment of a regionally based remote monitoring program, referred to as the Outlying Coronary Care Unit (OCCU) program, was facilitated by the previous trauma, categorization and EMS system efforts that had already served to heighten provider involvement in emergency care improvements.

The OCCU program utilizes leased telephone lines to send EDG's between remote and central monitoring hospitals on a continuous basis. Cardiac patients in rural hospitals are continuously monitored by the staff of the central monitoring hospital. Arrhythmias trigger alarms in both the central and remote unit and automatically open two way communication between the staffs for emergency consultation.

The OCCU project is still relatively new in Illinois. Although not enough data has been collected to adequately evaluate the effects of the program, small rural hospitals are routinely requesting and receiving on-line consultation and assistance that would not have been available without the existence of the OCCU system.

CC.,Fc./Ct., Rur.

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A NEWBORN COUNTRY USA EDITORIAL

The Newborn Emergency Medical Service of the Children's Hospital, Denver is a working example of several national health priorities set down in PL 93-641, the National Health Planning and Resource Development Act of 1974.

This service demonstrates a means of reaching out to medically underserved populations. It is truly a multi-institutional service since it relates to hospitals in ten states and serves all four Level III intensive care centers in Denver. As a shared service it enjoys extramural support from the Colorado Department of Health, the National Foundation/March of Dimes, and the American Lung Association of Colorado. It is also a public education tool that exemplifies improved access to quality care while recognizing multiple levels of care which, quite practically, cannot exist in the total potential of the 227 hospitals the system serves. Improved management systems are demonstrated by organizational, administrative, and fiscal innovations which are cost restraints.

In 1975 the Newborn Emergency Medical Service moved 936 newborn patients, 678 by ground vehicle and 258 by airplane. This was a 34.2% increase over 1974. Referrals originated from 74 hospitals in ten states. All four Neonatal Intensive Care Units (NICUs) in Denver are served by the Newborn Emergency Medical Service, a key piece of Newborn Country, USA, which is (1) a concept of regional perinatal care, (2) a service region, and (3) an integrated perinatal care system.

We anticipate that the number of maternal transports will soon increase and someday equal the number of newborn transports. As that happens, perinatal mortality should fall even further and the social spin-off of improved early parenting will unfold as a new frontier in family care.

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A TRIAGE INDEX

Certain select clinical variables were measured from trauma patients upon presentation in an emergency care system. The purpose being to develop an objective, non-instrumental, reliable clinical evaluation at the initial encounter with the injured victim, aimed at identifying 1) patients requiring hospitalization 2) patients with a risk of dying. The evaluation of the clinical tool was performed on an estimated 500 patients in three emergency care facilities in Maryland, the purpose of which was to determine whether these variables either singly or in combination characterize the acutely injured or critically ill patient, and predict their outcome, one week post-injury. Using this data, an index will be developed with potential for use in emergency care systems by triage nurses and by paramedical personnel at the scene of injury.

Each of the variables will be analyzed alone and in combinations of two to eight, using statistical methods designed to indicate the predictive power of each parameter in the index, as well as, the misclassification rates of each. The parameters will be further analyzed with respect to the ability to predict outcome using multivariate techniques to weight the final index, as necessary.

A rapidly acquired objective index for use in triage has significant civilian and military use and implications. Because of the non-subjective criteria, which is unique for an index of this nature, and the non-instrumental design of this tool, it suggests the widespread applicability for all emergency care systems.

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Index of Renal Function in Multiple Trauma

Renal function in 751 multiple trauma victims was studied to define a level of function compatible with ultimate survival. The classical definitions of renal failure were ignored. A daily renal index was calculated using commonly measured parameters. The data for 3600 patient/days were analyzed on a Univac 1108 computer. Probability of survival was less than 0.1 in patients with a creatinine >4 mg/100 ml., or a BUN >80 mg/100 ml., or a renal index >3 on one occasion, or >2 on two consecutive days. The renal index provided an earlier and more accurate prognosis in a significant number of patients when compared with the other parameters measured. The level of renal function associated with death in the patients studied is considerably lower than currently accepted criteria for hemodialysis. Dialysis to within the levels shown to be compatible with survival offers a method of reducing the high mortality. Clinical application of the renal index as an indication for early hemodialysis in major trauma victims is proposed.

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ABDOMINAL LAVAGE IN BLUNT TRAUMA

A modified technique for abdominal lavage was used to evaluate the abdomen of 671 multiple trauma victims. 55% (299) of these showed a bloodstained return and were regarded as positive. All positive lavages underwent exploratory laparotomy which revealed that 89% such patients had significant intra-abdominal trauma requiring a surgical procedure, 8% had trauma which did not require any active surgical correction, and 3% had no abnormal findings. In all lavages performed there were 1.1% false positive and 1.03% false negative. The value of the test in the context of multiple trauma cannot be underestimated. Confusion with abdominal "taps" and traditional teaching in abdominal diagnosis account for the unacceptable failure to routinely include this diagnostic tool in the standard armamentarium of the physician evaluating the multiple trauma victim.

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ACUTE TRAUMA INDEX

Thirty nine parameters commonly measured on admission for major trauma, were evaluated by pattern recognition techniques in an attempt to define an acute prognostic index. The resulting index was an Euclidean distance using single pretreatment estimates of arterial pH (A), hematocrit (H), prothrombin time (T), and the systolic blood pressure (P).

$$ATI = \sqrt{\left(\frac{P-127}{21.0}\right)^2 + \left(\frac{H-37.0}{6.0}\right)^2 + \left(\frac{A-7.46}{0.065}\right)^2 + \left(\frac{T-13.0}{2.0}\right)^2}$$

Prospective validation of the index resulted in a 98% accuracy of prediction of survival rate with an individual misclassification rate of 15%. When used in conjunction with the anatomical index (Champion, et.al.) the expected misclassification rate was reduced to 8%, and the actual misclassification rate experienced was 3.4%.

CC., Spec., Res.

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HEPATIC DYSFUNCTION FOLLOWING SHOCK

Nineteen patients who had suffered profound hypotensive shock were studied to correlate the light and electron microscopic appearances of the liver with the clinical and biochemical evidence of hepatic dysfunction. Despite the multiple etiological factors that can result in jaundice in these patients a fluctuating pattern occurs which enables the correlation of a bilirubin "peak" with the predominating etiological factor. Immediately following shock there was enzymatic, light and electron microscopic evidence of hepatocellular damage, and resulted in a jaundice peak on the 8-10th day after the shock episode. This was followed by repair and regeneration of the liver, and an increase in cholestatic enzyme levels. Later bilirubin peaks occurred when hepatocellular function was further decreased or overloaded against this background of dysfunction related to the episode of shock.

Recovery of hepatic function could continue or be delayed by inter-current disease, particularly systemic infection, support of hepatic function, similar to that available for pulmonary and renal failure, may, in future, be used to effect the prognosis of these patients.

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AN ANATOMICAL INJURY SCALE IN MULTIPLE TRAUMA VICTIMS

Two thousand one hundred and thirty five consecutive acute blunt trauma admissions over a 48 month period were studied in an attempt to produce an objective scale for the severity of injury. All traumatic injuries were coded using the International Classification of Disease and Accidents (H-ICDA) prior to computer analysis. An a priori probability of survival was computed for the population under study. The patient population was divided into a "Training Set" and a "Test Set". The training set was used to compute a conditional probability of survival (P_C) for each diagnostic code, which was used to rank the injuries in order of severity. An effective probability of survival (P_E) was then computed for each diagnostic code. The P_E for each code was used to predict survival rates on the test set and five random groups of the patients studied, and to predict individual survival using a decision rule the $P_E \geq .5$ resulted in survival.

The results indicate that P_E attached to each H-ICDA code can enable high predictive accuracy and low misclassification rates for death following injury. The accuracy and widespread applicability (by virtue of H-ICDA coding use) of this methodology make anatomical quantitation of injury a practical possibility. Validation on a wide spectrum of trauma victims is urgently required.

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A RESPIRATORY INDEX FOR TRAUMA VICTIMS

A Respiratory Index was investigated in a retrospective study of 177 intubated trauma patients. The equation used for the index reflects the alveolar-arterial oxygen difference divided by the arterial partial pressure of oxygen.

$$\frac{(P_B - P_{H_2O T}) F_{I O_2} - P_{a O_2} - P_{a O_2} P(AaDO_2)}{P_{a O_2} \quad P_{a O_2}}$$

P_B = barometric pressure

$P_{H_2O T}$ = alveolar water vapor pressure at the patient's temperature (T), approximately 47 mm Hg.

$F_{I O_2}$ = fractional concentration of oxygen in inspired gas

$P_{a CO_2}$ = arterial partial pressure of carbon dioxide assumed to be equal to the alveolar partial pressure of the CO_2

$P_{a O_2}$ = arterial partial pressure of oxygen

The Respiratory Index reflects the presence of pulmonary shunting in a variety of circumstances including atelectasis, pulmonary contusion, pulmonary emboli and the post-traumatic pulmonary insufficiency (shock lung).

A Respiratory Index of 0.1 to 0.37 is normal. Patients with a Respiratory Index of 2 or greater were intubated, and those who attained a Respiratory Index of 6 had an associated 12% probability of survival.

Maximum Respiratory Index

<u>Maximum Respiratory Index</u>	<u>Ps</u>
0-1	0.95
1.1-2	0.8
2.1-3	0.73
3.1-4	0.73
4.1-5	0.64
5.1-6	0.55
5	0.26
6	0.12

A nomogram that allows the course of the patient with respiratory patterns to be followed was derived. Movement along the same isobars or between isobars can be followed by plotting the $P_{a O_2}$ against the $F_{I O_2}$.

CC., Spec.

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A PROTOCOL OF PROPHYLACTIC ACTIVE BLOOD COMPONENT THERAPY

A protocol for the prophylactic administration of coagulation substrates in patients undergoing massive transfusion was devised. Data were collected for one year on all patients undergoing massive blood replacement for major multiple trauma.

The protocol ABC Therapy was (for the 70 Kg. adult):

- 1) 1000 cc. (or approx. 1/5 Harvey^{*}) plasma protein fraction.
- 2) Packed cells (O Rh positive or negative, group specific, or cross-matched in reverse order of preference), matched by unit (approx. 300 cc.) with 250 cc. plasma protein fraction.
- 3) Group specific fresh frozen plasma (from 2 units of whole blood) with every Harvey.
- 4) Platelets (O Rh positive) (from six units of whole blood) with every second Harvey.

* One Harvey = One exchange transfusion.

There were statistically significant differences between treated and control patients on the first post-resuscitation days for the mean normalized measurements of serum fibrinogen, prothrombin time and partial thromboplastin time. Prophylactic platelet administration did not abolish post-traumatic thrombocytopenia and there was no significant difference in the platelet counts obtained up to five days post-injury. Clinical bleeding diatheses occurred in 50% of control patients and in none of the treated patients despite platelet counts falling as low as 15,000 per cu. mm. The protocol has been used for up to 70,000 cc. transfusion in 24 hours following major trauma.

CC., Med.C., Spec.

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**DEVELOPING THE CRITICAL CARE UNIT
COMPONENT IN THE URBAN AREA**

The development of a viable workable program permitting more effective utilization of specialized critical medical care units in the urban area is a project crucial to the EMS system. The basic design of a program of this nature should be structured to insure appropriate treatment in the field, in hospital and an effective means by which patients requiring advanced specialized critical care are appropriately "forwarded" to the special care facility best able to deal with their care and treatment.

~~insu~~ The city of Chicago is currently structuring a critical care unit program by building on the already established emergency room categorization plan and the rapidly expanding MICU ambulance program, with its Resource and Associate Hospital concept.

Task Force Committees have been formed consisting of medical specialists in the areas of burn care, spinal cord injury, neonatal care, coronary care, neurosurgical trauma and general surgical trauma. The establishment of critical unit registries are included as components of the overall task force plan.

The various task force reports are in the process of being reviewed by the Chicago Health Department Emergency Medicine Committee. The various Resource Hospital Medical Directors are represented on the Committee.

This mechanism of review shall best insure each committee (task force) maximum input into designing, an effective and workable approach in forwarding the emergency care management of their particular critical care category. In addition it will help us develop an effective means by which the task force information may be appropriately disseminated to hospitals throughout the municipal.

CC., Urb., Pl.

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CAVEAT EMPTOR

Communications equipment costs are often inordinately high. Many EMS managers have little experience in telecommunications and unwittingly play into the hands of vendors whom they rely upon to develop systems and write specifications. Inasmuch as the vendor's primary interest is the maximization of profits, and only secondarily the needs of the EMSS, the results are often financially catastrophic. Being relied upon by the buyer to design the communications system, the vendor is in optimum position to develop restrictive bids which adversely affect his competitors, excluding them or otherwise affecting them unfavorably.

Certainly there are many honorable communications equipment vendors playing an indispensable role in the provision of EMS communications, but their role should be limited. When the buyer relinquishes responsibility for system design, forfeiting it to the vendor who will profit from the sale, valuable competitiveness disappears, prices are elevated, and unnecessarily elaborate features are purchased.

Alabama is fortunate to have a Telecommunications Committee of knowledgeable communications engineers who operate statewide networks. They evaluate EMS needs, examine equipment which can fulfill these needs, design the system, and draft open specifications which foster competitiveness by permitting all major vendors to bid from a position of parity.

Since these procedures have been established, savings of 35% are not uncommon and reliable systems are being installed. Alabama recommends that EMS managers develop or seek similar independent sources of expertise. Affordability is a prerequisite which can only be met when the buyer remembers the old adage, "Let the Buyer Beware".

CC

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CONSERVATION OF BLOOD IN EMERGENCY MEDICAL SERVICES

The trauma patient presenting to the hospital emergency center has often sustained massive blunt or penetrating trauma with external or intracavitary loss of blood. The resultant hypotension frequently necessitates the use of large amounts of banked blood to restore circulatory homeostasis. Often this demand for blood depletes or exceeds available hospital stores. The use of autotransfusion in the emergency center has increased in popularity in an attempt to alleviate the critical problem of blood shortage. For the past six months we have employed the use of the Sorenson Autotransfusion Unit in the Emergency Center on 30 patients with the salvage of 57 units of whole blood without complication. To date, this unit has proven to be a safe, practical, and economical method of blood replacement for the trauma patient without exposing him to the hazards of homologous banked blood.

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CC

EMERGENCY PATIENT FLOW STUDY

The Rhode Island Department of Health has subcontracted with Health Planning Council, Inc. to conduct an emergency patient flow study and develop emergency patient referral guidelines relative to categorization of hospital emergency care capabilities; the development of transfer agreements; and a system of medical control VIA radio. At the outset a Committee on Emergency Patient Flow was established.

This committee concurred that it would first develop a listing of critical emergency care conditions and then determine where they can be handled. They saw the listing of critical care conditions as including major emergency diagnosis which should be identified even though these would be expected to be treated at the nearest hospital; and recognition that there are emergency conditions, not otherwise identified, whose treatment at the nearest hospital would be expected to be appropriate.

Critical care conditions which the Committee developed are as follows: TRAUMA (Uncontrolled massive bleeding; Airway obstruction or respiratory arrest; Neurosurgical injuries-brain and spinal chord; Major thoracic injuries; Shock-etiology other than cardiogenic; Severe multiple trauma; Multiple abdominal injuries). CARDIAC (Cardiac arrest; Cardiogenic shock or severe arrhythmias; Congestive heart failure). PULMONARY (Pulmonary edema; Severe asthma). POISONING (Major toxicity; Renal failure). BURN (Major burn, greater than 30% and 2nd or third degree). BEHAVIORAL (Psychiatric emergency; Alcohol overdose; Psychiatric drug overdose). NEONATAL (Additional insight needed into what is appropriate age definition and whether distinction between medical and surgical emergencies is indicated). OTHER (Obstetrical gynecological emergency; Emergency conditions not otherwise identified).

CC

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ELECTROCARDIOGRAPHIC ABNORMALITIES IN TRAUMA

The mechanisms of death in many acutely injured patients remain unclear. The electrocardiogram was monitored as a matter of routine in 2744 injured patients being transported to hospital by EMTs for the purpose of reinforcing the EMT's monitoring skills. Although the incidence of arrhythmias (4.2%) in this group of patients was significantly lower than in patients with chest pain (22.9%) the incidence of arrhythmias in patients suffering non-automobile related injury increased significantly with age. There were also significant life threatening arrhythmias in patients injured in automobile accidents. It is probable that the arrhythmia in the older patient injured in a non-automobile related incident may cause the patient to fall and be injured. The arrhythmia in the patient with automobile related injuries may be secondary to myocardial contusion associated with steering wheel impact to the chest, or to hypoxia associated with chest injuries. Bradyarrhythmias have also been noted with head injuries. Therefore, ECG monitoring may play an important role in the early treatment of the injured patient. Telemetry of the ECG to base hospital in these patients has also served as a medium to bring as close medical supervision to the injured patient as to the acutely ill cardiac patient.

CC., Trsp., Comm.

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**U.S.A. Bicentennial Emergency Medical Services
and Traumatology Conference and Exhibition**

Social thresholds for the intervention of personal violence committed by persons are high; most individuals must get into legal trouble within the criminal justice system before they are noticed, and even then the "notice" is a punitive one. Family arguments, for example, one of the most lethal social circumstances for policemen, are generally ignored save for a few isolated special programs such as the one in New York City which was started to protect the police more than the members of the family. Thresholds for other interventions are high, also. Dangerous drivers are not perceived as "violent" or "aggressive", though they could be so identified by most motor vehicle registries. Our intervention for drunken drivers is less stringent than in Scandinavian countries where harsher laws exist and have led to a reduction in violence with cars, which should be considered as weapons. Automobile accidents form a large part of the trauma seen in Emergency Medical Services systems; indeed, entry into the system is usually sudden, violent, and predicated on violence.

Gun control in this country is limited to state laws which are largely ineffective; 55% of all homicides--there are almost 20,000 a year, involve guns. Yet powerful lobby interests raise the threshold of intervention and control.

Most violence can be controlled by social policy issues. Skyjacking is one example where a crime of violence which has reached epidemic proportions was eliminated virtually overnight by executive government order, yet at a tremendous annual cost. During the year 1973-74, the reduction in speed limits and reduced availability of gasoline and driving led to 11,000 fewer people being killed on the highways. This is an example of a social policy covertly shaping violence.

Violence is not only controlled by social policy, but shapes it. In this country, violence is covertly and overtly glamourized. Assassins make the front page of popular magazines, and the media give great attention to violent crimes and personal violence. In Maryland, only sex can be censored in the movies; violence knows no bounds.

CC, Spec.

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EMS MANPOWER WORKSHOP, AMERICAN BURN ASSOCIATION

The American Burn Association, with over 1200 members, provides the umbrella under which individuals from all disciplines exchange information and work to reduce burn injury and improve the survival of burn patients. Intensive care of extensively burned patients at multidisciplinary centers has improved survival. Such centers form a national burn care network and exist in all but a few geographic areas of the country. Rational planning for facility need, distribution and expansion depends on accurate determination of regional and national occurrence of burn injury. The Association recommends legislation for support of (1) a national survey of burn incidence by region, cause of burn and extent of burn; (2) special training in burn care to parallel establishment of care facilities; (3) improved communication and transportation for regional transfer of patients; (4) continuation of present NIH and DOD research support.

The American Burn Association activities include regional burn care seminars for continuing education, the development of standards of care related to proper triage, facilities, equipment and training of burn care personnel. Although specialized training is desirable, certification beyond that of the individual's primary specialty or discipline is unnecessary and perhaps detrimental.

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LIFE LINE --
EMERGENCY TELEPHONE SERVICE FOR ALL NEEDS

The Poison Control Center is the original prototype of the emergency telephone service for health problems. Since the original center was established in 1956, the system has evolved to a point in the 1970's where regionalization and coordination have been sought. In the 1960's, mental health services as well began to develop hot line telephone services for suicide, for youth, and then for everybody. In Rochester in 1956, a Poison Control Center was established by the Department of Pediatrics at the University of Rochester, and in 1968, a mental health information and crisis service was developed by the Department of Psychiatry. It was not long before the services, although independent and widely separated physically, began relating to each other with calls with multiple needs and requiring multiple answers. Other calls were received which fell in neither service's territory.

The need for a combined medical and psychiatric information and crisis service to include poisoning was clearly identified. In October 1973, a multiple crisis telephone service was opened with a single emergency telephone number and a single staff trained to handle all emergencies and with "on-premises" physician back-up to handle any need. A new name was created to signify help -- "Life Line".

Life Line has proven to be a viable, consolidated medical and psychiatric advice and crisis telephone service operating with one emergency number, with one staff, one budget, and one telephone number. Consolidation of services offers more efficient, economic, and effective community resources for emergency health care.

CC., Comm.

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GUIDELINES FOR A BURN HEALTH CARE
SYSTEM IN VIRGINIA

A burn health care system in Virginia is being designed to deliver optimal health care to the burn victims from the time of injury until their recovery. The development of plans for this system was a collaborative effort between the three burn centers in the state.

The proposed health care system focuses on the care of patient at the site of injury, the immediate resuscitation of the thermally injured patient, and transfer of patients to an appropriate emergency medical facility for advanced life support.

Treatment plans for the burn patient in the emergency department were also developed and are being sent to all the hospitals in the state. Clinical indications for the triage of the patient to a regional burn center are stressed.

Rapid transport of the burn patient to the appropriate medical center is a key component of our system.

To the burn patient, they will provide more rapid access into the burn health system, immediate treatment and triage to the appropriate facility.

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EMERGENCY CARDIAC CARE PROSPECTUS

Development of a number of Mobile Coronary Care Unit (MCCU) Programs throughout the United States has demonstrated a significant impact on community mortality from acute coronary events through resuscitation of patients from cardiac arrest with resultant long term survival, prevention of progression to cardiac arrest through early monitoring and stabilization of rhythm and indeed through further reduction of hospital mortality from acute myocardial infarction in patients receiving early pre-hospital emergency cardiac care. Components of emergency cardiac care include stabilization of the patient at the scene of the incident and enroute to hospital through both basic and advanced life support in the Emergency Department and in the Coronary Care Unit. Patients with acute myocardial infarction complicated by heart failure, shock, or arrhythmias refractory to ordinary pharmacologic intervention should be transferred to regional reference centers for special care.

CC., Trsp., L.S.

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THE ROCKY MOUNTAIN POISON CENTER

The Rocky Mountain Poison Center in Denver, Colorado provides a regional poison information and treatment service to emergency medical service systems in parts or all of six states in the Rocky Mountain area. This system provides three levels of response in coordination with the vertical categorization systems. Level I hospitals are supplied with a toll-free telephone line and written materials concerning poisoning as well as a public education program. Level II hospitals are supplied with a POISINDEX Emergency Poison Management System, a public education program based around the "Officer Ugg" symbol and inservice education by specially trained nurses every three to four months, originating from the Rocky Mountain Poison Center. The level III hospital duties are shared by Denver General Hospital and Colorado General Hospital. These serve as treatment centers for the entire region and provide clinical toxicology consultations from all hospitals with transfer agreements.

Mechanisms for obtaining the appropriate equipment for level I, II and III hospitals will be discussed including the POISINDEX System, the royalty free Officer Ugg program and training programs for nurses and physicians. This program has been designed to provide maximum service with minimum equipment and personnel. Specific information will be supplied concerning institution of all aspects relative to current thinking in emergency medical services.

CC, Comm., CE&I

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PROFILING THE PATIENT'S CLINICAL CONDITION

Problem: The critical victim is not regularly delivered to the proper critical care facility.

Cause: The EMS System is necessarily composed of interdependant people with different backgrounds and training. Each of these people does not understand the technical jargons that the others use to describe a patient's condition and his care requirements.

Solution: Develop a common nomenclature that describes generically clinical conditions related to care requirements, that is consistent with the labeling of profiled (categorized) critical care facilities, and that is understood and accepted (if not completely agreed with) by planners, administrators, communicators, providers, consultants and ever present critics.

Washington Work Plan: Our Critical Care Facilities are profiled in a 3 level hierarchy for each of 8 separate categories: General Trauma, Head and Spinal Injuries, Burns, Cardiac, Respiratory, Perinatal, Behavioral, Poison-O.D.. We induced our medical experts to write down, on one page, clinical criteria for 3 levels of patient conditions which matched the 3 levels of care capability in each category. Level 1 patients have care requirements usually met by the general physician in the general hospital, Level 2, by the specialist in a special care unit, and Level 3 patients have care requirements met only by the highest current "state of the art".
 i.e. **CARDIAC:** Level 1: CHF, Arrythmias, Arrest, Possible M.I.
Level 2: M.I., Arrythmias that require cardiac pacing.
Level 3: Unstable angina and M.I., refractory arrythmias or CHF requiring circulatory assist or cardiac surgery.

Implementation: Our state program supports and coordinates local EMS Systems which usually serve at least one county. We believe that once Kittitas County knows the care capability of their critical care units from the facility profiling program, and then has guidelins for patient condition profiling, they will eagerly accept the operational task of delivering the Level 2 Head Injury victim to the Level 2 Head and Spinal Injury Service. And what is more, everyone in the system will know why.

CC, Pers., Trsp., Acss.

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ASSESSMENT OF DRUG ADMINISTRATION BY ADVANCED EMT'S*

This study attempts to evaluate the effectiveness of Advanced EMT's administering drugs to patients in the field by comparing a control group of patients who received pre-hospital emergency treatment from advanced EMT's prior to drugs being available at that level of treatment with an experimental group of patients to whom EMT's had administered drugs. The control group consisted of 411 patients and the experimental group consisted of 52 patients. Complete records were obtained on both groups from pre-hospital emergency treatment to complete hospital records.

The results indicate that there are no statistically significant differences between the two groups in terms of death and recovery overall. However, the experimental group is composed of patients with more critical injuries and are less likely to reach the hospital alive (26% of the experimental group were DOA at the hospital as compared to 10% of the control group).

Regression analysis using death as the dependent variable and age, blood pressure, pulse, EMT response time, and group identification as independent variables showed no statistically significant correlation between the two groups. However, the model was able to correctly predict death based on those independent variables 89% of the time indicating that those independent variables are indeed the primary correlates of death and recovery.

CC., SMRK, Eval., Pers.

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Mobile Coronary Care in Rural Kansas

The City of Newton and most of Harvey County, Kansas, have developed a mobile coronary care system which, in two years, claims a 31% long term survival rate from ventricular fibrillation. Of 26 patients found in ventricular fibrillation, 18 were converted to a viable rhythm and brought to the hospital, and 8 were discharged home. In 1972, attendants enrolled in a coronary care course for nurses, and under the guidance of the County Medical Society developed standing orders for the treatment of ventricular fibrillation. All patients with suspected cardiac problems are monitored; only those with ventricular fibrillation or tachycardia are treated. Treatment includes basic life support plus starting an IV with D5W, defibrillation and administration of sodium bicarbonate. (All patients who were converted did so before NaHCO₃ was given, probably due to aggressive ventilation by technicians). Daily drills on arrhythmia recognition and "code" procedure prevent skill degradation.

The two ambulances (only one has a defibrillator) are dispatched by the crew and staffed at all times with at least one paramedic and two EMT's. Response time in the city is less than three minutes, however, 25% of the calls are outside the city. Seven (26%) of the resuscitated patients were from outside the city.

Neither of the two hospitals in the city provide physician coverage 24 hours per day. At the discretion of local physicians, critical patients can be sent to Wichita hospitals after evaluation at the local hospital.

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The development of regional systems for trauma and emergency medical services (EMS) is an exciting proposition. Over the last century the United States has developed the models and set the standards for military field casualty care and evacuation. These progressive improvements were initiated after the medical care and evacuation disaster experienced by the Union Army of the Potomac at Bull Run on July 21, 1861. From this chaotic awakening, a series of reorganizations of the army surgeons, medical corps, ambulances, and hospitals was undertaken. During the Civil War, major changes in administration, professional personnel, transportation, hospitals, sanitation, and medical records established patterns that have been continually refined and improved and, in large part, have been responsible for the improvements in military field casualty survival now realized in modern times.

Stimulated by pressing demands of war surgery and coupled with parallel advances in medical care over the last century, an almost unbelievable level of performance has been realized in the recent Vietnam experience. Advances in field resuscitation, efficiency of transportation, and energetic treatment of military casualties have proved to be major factors in the progressive decrease in death rates of battle casualties reaching medical facilities; from 8 percent in World War I to 4.5 percent in World War II to 2.5 percent in Korea and to less than 2 percent in Vietnam. The integration of rapid evacuation of the critically injured directly to adequately staffed and equipped advanced treatment units has shown that a highly perfected and well-operating trauma system can save lives in the civilian peacetime community as has been repeatedly demonstrated in previous military conflicts.

While there are considerable differences between the civilian peacetime community and a battlefield, many principles for an areawide trauma system design for accident patient care are transferable and can be successfully implemented into statewide and regional programs for the comprehensive care of the injured. In fact, it is most surprising that more of the medical lessons learned on the battlefield over the past century have not been implemented in civilian day-to-day accident care.

The ineffective nonsystems and inadequate attention and support for the trauma patient that still exist in most of this country were well documented in the crucial white paper published by the National Academy of Sciences/National Research Council. This publication presented the problem and set forth a series of recommendations for improvement. A strong case was made for the development of a system of trauma patient care, and a series

of subsystem components essential to the success of an overall effective effort was outlined. This timely document made specific recommendations for improvements in accident prevention, emergency first aid and medical care, ambulance services, emergency medical communications, use of air evacuation by helicopter, upgrading and categorization of emergency departments, and expansion of the role of hospital intensive care units. These systems and subsystems components (15 Congressional Mandates) all support and essential to an effective Regional Trauma Care Program. Therefore, in designing regional trauma-EMS systems, it is emphasized that focusing on one component or subsystem will not be as effective as an overall and comprehensive view of the sequence of events as they affect the course and final outcome of the critically ill and injured, including care at the accident site, during transportation, and on to definitive treatment and rehabilitation.

The critically injured trauma victim is an easily identifiable patient with complex care requirements that demand a sound clinical and geographically designed systems approach to the provision of emergency medical care. A system for trauma care integrates the following essential components: Hospital (trauma center) categorization and designation, communications, transportation, training and education of professionals and the public, and program evaluation. These essential subsystems must be integrated into a comprehensive effort that supports improved patient care and furthers development of regional designs for other health care programs.

Trauma patient care, because of its complex requirements, provides an excellent model from which to design a basic emergency health care delivery system, and one that can be expanded to include all types of emergency medical problems.

Because of the obvious demanding clinical needs of critically injured trauma patients for comprehensive care and the necessity for consolidation of medical resources for these patients at all community levels, surgeons should take a leadership role in regional and areawide trauma-EMS planning and implementation in their local communities.

CC., Reg., Adm.

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BURN CARE ASSESSMENT ALGORITHM

The Algorithm has eight assessment steps and four sets of performance steps. Diagrams are provided to indicate the size and distribution of the patient's lesions. If the etiology of the injury is electrical, a telephone number is provided for obtaining consultation or securing transfer of the patient. If the patient is a child or an adult over 50 years of age, burned over 10% BSA (with or without evidences of postburn pulmonary injury), the Algorithm indicates that the patient should be admitted to the hospital. If the victim is an adult younger than 50 with a burn of 20% BSA or more, hospital admission also is indicated. All patients are assessed for postburn pulmonary injury and if it is present, the patient should be admitted to the hospital.

If the patient is admitted, the facility is evaluated as to the availability of "TOTAL" care. We interpret this undefined term to mean the hospital has all facilities, services and personnel necessary to completely manage and rehabilitate the victim of extensive burn injury, postburn pulmonary damage or both. When these are not at hand, a mode of referral or consultation is provided. If the patient remains at the local facility for whatever reason, or if transfer is delayed, the Algorithm has eight critical steps for initial care. These include a method for appraising adequate fluid resuscitation, preventing vomiting and aspiration, and otherwise protecting the patient and his wound from untoward events. ^{1/}

^{1/} McKinley, J.C.; Jelenko, C. III; and Lasseter, M.C.: Call For Help: An Algorithm For Burn Assessment, Triage and Acute Care. JACEP 5:13-16, Jan. 1976.

CC
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TRANSPORTATION CARE OF THE CRITICALLY ILL AND INJURED

Considerable improvements have been evident in the prehospital phase of emergency medical systems of care, with major advances being made by the development of a "systems approach" and the integration of standardized ambulances, equipment, and training programs. Advances in on-site care by physician agents (Emergency Medical Technicians-Ambulance and Paramedics in radio telecommunications with medical direction) have been shown to be effective in improving patient care for a wide variety of emergent and critically ill and injured patient categories, especially those suffering from acute myocardial infarction and major trauma. Pioneering programs in Miami (Nagel), Nassau County, New York (Lambrew), Charlottesville, Virginia (Crampton), Seattle (Cobb) Maryland (Cowley, Wilder) and Illinois (Boyd, Meyers) have illustrated the necessary systems design, treatment protocols, technical adaptations, and organizational structure that are required for program development. It is emphasized that the transportation component of an emergency medical services (EMS) system must be integrated into a total comprehensive effort that includes medical direction and purpose, and an appropriate arrangement of all of the systems components, especially the categorization of hospital emergency capabilities and the availability and access to critical care services.

While substantive and sound treatment protocols for the prehospital phase have received considerable national consensus, for Basic Life Support (BLS) and Advance Life Support (ALS), in both the rural and populated areas. There has not yet been an adequate emphasis conceptualization and development for emergency medical care service during the inter-hospital transportation phase. These necessary protocols must by their very nature be more sophisticated by virtue of the patients transportation requirements in being moved to an advance or special treatment facility. Likewise these protocols must involve logic, and operations decisions algorithms for advance treatments and triage (sorting) distribution that must occur if patients are to be selectively moved through the system and receive the most appropriate for their specific needs.

Program Experiences, New Treatment modalities (MAST shock suits, telemetry etc.), Organizational Concepts, Implementation Strategies (facilities categorization transfer agreements).and areawide Treatment-Triage protocols and Evaluation Methodologies are pertinent parts of the transportation care of the critically ill and injured.

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Rural community hospitals throughout the Texas Panhandle offer emergency alcohol, drug and psychiatric services on a limited basis. Apparently this is not atypical in other rural areas of the United States. However, the Panhandle (24,900 sq. mi., 330,316 population) recognized an immediate need to provide training for rural hospital personnel and to establish referral patterns, or at least communications, to reverse this situation.

In early spring the Panhandle Regional Planning Commission A/D Authority sponsored a three-day annual institute on Alcohol/Drug Abuse. One of the four tracts was directed to training of professionals and para-professionals in medical emergency room elements relating to the alcoholic and/or drug abuser. Additional training programs are being conducted by Texas Tech University at Lubbock and the West Texas Alcohol Training Program - monthly seminars.

A top priority of the 1976 Plan for Alcoholism is that the Alcohol/Drug Abuse Coordinating Board initiate training teams to go to the regional hospitals to specifically train emergency room personnel with regard to behavioral emergencies. This is currently being initiated through the Emergency Medical Services (EMS) System.

The Coordinating Board for A/D Abuse became cognizant of the need in the emergency setting for a unified referral system in the Panhandle, as well as education, eventually establishing the Panhandle Regional Alliance on Alcohol/Drug Abuse (Consortium). This agency is fully functioning now with fifty-two members to date. Education of professionals and para-professionals is a prime objective as stated in the by-laws. The establishment process served to point up the need and/or ease of accessibility to emergency services for all agencies involved. After only six weeks of the Alliance's existence, the Amarillo MH-MR reported a decided increase in referrals from agencies other than the local emergency room.

CC., Trsf, Rur.

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The Division of Emergency Medical Services (EMS), the established Federal lead agency, has developed EMS Program Guidelines in which, in Chapter III, "Special Program Guidance," the clinical significance of EMS systems is described. While an EMS system must respond to all declared emergency cases within its appropriate geographic region (including the non-emergency 80%, the truly emergent 15%, and critical cases 5%, there has been special designation for these well identified critical patient groups which demand a competent system for survival. It is to the survival of these patients (trauma, burns, cardiac, high risk and premature infants, poisonings, psychiatric, drug and alcohol overdose) that a "systems" conceptualization and initial systems efforts must be directed, in order to insure the medical-clinical soundness of a comprehensive EMS system, and to insure significant impact on the death and disability of emergency and critical patients.

To this end, a National EMS Seminar was held in Grand Rapids, Michigan on November 11-13, 1975, where the National experience current practices, systems design and implementation techniques, treatment and evaluation protocols were presented in seven working papers on each of the National priority critical patient groups (Trauma, burn, acute cardiac, high risk infant, poisonings, and Behavioral Emergencies). These working papers were an attempt to crystallize the issues, synthesize current experience and delineate national perceptions of a sound systems concept for each critical patient category. These discussion papers used as a "straw man" for discussion, exchange, and a starting point for developing a national guidance program to be appropriately modified for local and regional program development and each followed the following basic outline:

1. Systems conceptualization and design for pre-hospital, and critical care phases.
2. Patient category identification by diagnosis, special needs and magnitude of injury or illness.
3. Facilities qualification for initial and definitive care (Critical care units).
4. Treatment protocols for pre-hospital and critical care phases.
5. Technological advances and adaptation now applicable.
6. Training programs for spectrum of paraprofessionals and professionals.
7. Evaluation tracer studies, patient compliance, morbidity and mortality indices.
8. Public education and prevention programs.

CC., PL., Adm., Pers.,
Fc./Ct., Eval.

Sylvia Micik, M.D.
Robert J. Baker, M.D.
William C. Huddleston

Costas Lambrew, M.D.
Raymond L. Warpeha, M.D., Ph.D.
Gerald F. Staub, M.D.

EXPLANATORY NOTES REGARDING CRITICAL CARE AGREEMENT

This form has been developed with several thoughts in mind. The typical critical care patient doesn't start and stop at county lines. However, in most states the financial accountability for patient care too often is limited at the county line. In many states the county government can not pay the bill if the care is rendered in another county. Therefore the comment was inserted into the third paragraph (including legislative). Legislation at local, state, and national levels should be a goal of all the people involved in providing critical care to patients. This should include unified efforts of the medical profession, hospital associations, emergency medical groups, and health planning councils. Perhaps as catastrophic insurance is considered in Washington, it should include care of critical emergency cases that usually are in the catastrophic classification. This would have a direct bearing on the development of and/or improvement of emergency medical services systems.

Five signatures are requested at the end of this transfer agreement. This is for educational purposes so that more than one or two people know there is a commitment toward proper care for these critical patients who transfer from institution to institution, county to county, and at times from state to state. While it will be time consuming to get these signatures, one of the problems we have is that not enough people who have leadership in our communities are aware of the problem of providing care in these circumstances and of the problems concerning financing such care.

On the attached page listing specific critical care categories, there is a need for listing of limitations. For example many towns may have a neurosurgeon. However, if that neurosurgeon is out of town then there is no neurosurgical capability. Therefore limitations on the service should be listed so the referring physician knows he should make contact with the referring hospital to determine if this man is in town before sending a patient.

Please note this form is aimed primarily at the critical care in those categories listed, and is not suitable for the many medical and surgical patients normally transferred from one hospital to another in the usual course of providing health care in our present system.

This form should be completed initially by the referring hospital and subsequently by the receiving hospital. The upper half of the first page and page two are the responsibility of the referring hospital, and the lower half of the first page and page three are the responsibility of the receiving hospital. Following completion of this document, copies should be sent to all who have signed it as well as the EMS lead regional organization and the EMS Division of the State Health Department.

CC Fc./Ct.,Trsf.,Leg.

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The University of Alabama in
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PUBLIC SAFETY AGENCIES

PROBLEMS AND SOLUTIONS

Problem: Having convinced the Toledo Police Department of the need for each officer to complete our 40-hour First Responder's Course, we faced only the problem of scheduling the 743 man force. Each Toledo policeman is required to complete eight hours of training each month (on duty time). The Toledo Police Department's Training Officer agreed to give us the Toledo Police Department for the full 40 hours needed to complete the First Responder's Course. However, with five of these sessions already committed and regular shift changes allowing for only ten sessions per year, it would have taken well over a calendar year to finish the 40-hour course. The obvious problems with dragging out the sessions in such a manner forced us to look for an alternate method of scheduling.

Solution: It is not feasible to take any officer or group of officers off-duty for a continuous one-week period. At the same time, we were assured that few officers would be interested in a 40-hour, voluntary course of instruction. Included in the 40-hour First Responder's Course in the American Heart Association's Cardiopulmonary Resuscitation Course. This course accounts for approximately 12 hours of the total 40 hours. If offered on a volunteer basis, with the remaining 28 hours accomplished on "duty" time, the entire 40-hour course could be finished in six months. With the proper "selling" job done with the 28 hours of instruction, we can expect a high percentage of officers to volunteer for the four sessions required to complete the CPR course. At the same time, we will have eliminated those uninterested in learning the art of CPR.

PSA, Pers.

William Schabel
Regional Emergency Medical Services
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SPECIAL RESCUE OVERVIEW

As emphasis continues to grow in Emergency Medical Services, it becomes apparent that there are several isolated groups of prehospital care personnel whose special skills such as mountain climbing, scuba diving or parachuting have given them an opportunity to rapidly access patients who will require prolonged care before reaching definitive medical management. These people then require not only the skills of their vocation or avocation in reaching the patient, but medical skills above and beyond that of the Emergency Medical Technician/Ambulance. Equipment must be compact and light enough to be carried on their person and they must have the ability to perform special procedures in patient management.

This workshop is then addressed to that special class of rescuer by the rescuers themselves. It is the objective in the workshop to develop:

1. Common educational requirements.
2. Common skill requirements.
3. Common equipment requirements.

Utilizing these objectives a program can be developed relevant to all onto which they can add their own unique requirements.

PSA., PERS.

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EMERGENCY MEDICAL CARE. A POLICE SYSTEM

In the Fall of 1968, the Grand Rapids Police Department, with the assistance of the Kent County Medical Society, developed an Emergency Medical Care Program. This roving Police System is a unique, innovative concept and provides 24 hour emergency medical service coverage. Currently there are 15 Police Units covering a population density of approximately 450,000 people in an area of 865 square miles. These two man advanced EMT (Paramedic) level trained individuals provide the full scope of emergency medical services. The police concept has been appealing to neighboring counties. Ottawa County now has four units in operation.

Providing the transportation to four community hospitals are two private ambulance companies and two volunteer ambulance companies which have a mixture of basic and advanced EMTs. One fixed base Fire Department Unit serves the East Grand Rapids Community. The Police Emergency Units, in their three-quarter ton suburban trucks, average seven to eight thousand calls per year for the county. Significantly, there has been a 30 to 35% decrease in mortality from automobile trauma and 15% increase in survival from cardiac arrests.

The Grand Rapids - Kent County Police System provides another alternative to methods of delivering Emergency Medical Services.

PSA, Pers., Trsp.

C. Mark Vasu, M. D.
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FIRST RESPONDER PROFICIENCY EVALUATION

The Regional Manpower Committee supported the theory that any advance response team approach had to be based on adequately trained first responders who could support the patient with basic life support procedures. It is generally accepted in the region that the public safety personnel are the first to reach the scene of an emergency. All public safety personnel in California are required to have a Red Cross First Aid card which must be renewed every 3 years and a CPR card which must be renewed every year. During the discussions of the Manpower Committee there arose the question whether or not these first responders could in fact actually do what a first responder was expected to do. That is could they: 1. Perform an adequate initial patient survey for injuries of multiple systems? 2. Evaluate, establish and maintain an adequate airway? 3. Carry out efficient and adequate basic CPR?

To further answer this question the Manpower Committee utilized the services of the American Red Cross to establish evaluation teams using a Recording Anne to test any group that desired such an evaluation on-site at no cost to the group. The evaluation will consist of a short written exam, and a practical exam pertaining to first aid procedures and a practical demonstration of proper CPR.

A second phase of this program will be the training centrally of key personnel as Instructors who will return to their respective units to carry out the local training of individual groups. It is hoped that the Red Cross Evaluation teams will also be utilized to evaluate the training of these local responders and secondarily the efforts of their instructors.

PSA, Pers., Eval.

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THE IMMEDIATE RESPONSE VEHICLE (IRV)

In the rural community there are usually 10 to 30 members in the volunteer units and each member is connected with a ring down phone system, i.e. all phones ring at the same time. Since the EMT's are scattered over a large geographic area it's a waste of time to leave home and travel to the ambulance station only to return to the house next door. What was needed was a EMT on the scene as soon as possible to render basic life support.

Each member of the squad has a small kit of dressing and bandaging materials, airway, B/P Cuff etc. and responds directly to the scene in the "family Auto" following all the rules of the road, i.e. speed limits, traffic signals etc. Other squad members proceed to the station and respond with the ambulance and its necessary equipment.

Response times using this method average 4-8 minutes within a five mile radius of each EMT's home vice 12-20 minutes when the EMT drives past the scene to get the ambulance and return. The surprising element is that many times the scene is near-by and response is less than two minutes. The important thing is: don't talk about it, do it - you'll like it and it works.

PSA, Trsp., Pers.

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Passavant Area Hospital
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"Emergency Medical Procedures (EMP) in High Rise Buildings"

PROBLEM: Advance Life Support Units (MIC) can dramatically reduce the pre-hospital mortality rate if the victim is treated within 4 to 6 minutes following clinical death.

However, in high rise buildings in metropolitan areas, although MIC units are operational they are frequently unable to reach the victim in time due to:

1. adverse traffic conditions
2. lack of knowledge of building
3. lack of EMP in building

GOAL: To provide Basic Life Support (CPR) in high rises within the critical time limit, in order to sustain life until the arrival of an MICU.

STRATEGY: Pilot Program: Public Safety Officers Foundation offered all employees of the Old Republic Building (Chicago) a five-hour CPR class given on company time at no cost to the employees.

Seventy-four employees successfully completed the class. Eight of these persons were trained as CPR Instructors in an additional 21-hour course.

A customized EMP for the Old Republic Building was established. This included instructions to the security guards for management of elevators, stickers with medical emergency (in-house) number provided on all building phones, and notification of all employees that EMP had been instituted.

RESULTS: Teams of rescuers trained in CPR are available at the side of a victim within a maximum of 90 seconds.

Re-testing of rescuers took place at 6 months and only 17 persons requalified.

- Causes:**
1. skill deterioration
 2. normal attrition of personnel
 3. lack of interest in participating in program

While a "CPR Secured" building is a critically needed link in combating cardiac and respiratory arrest, continuous drills re-training, pep talks, recognition and regular CPR classes for new personnel are mandatory for effective Basic Life Support in high rises.

PSA., CC., CE&I

Janet Schwettman, Director
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VIRGINIA ASSOCIATION OF VOLUNTEER RESCUE SQUADS

The Virginia Association of Volunteer Rescue Squads is composed of 6,500 members representing 192 organized volunteer rescue squads located throughout the Commonwealth of Virginia. The squads vary tremendously in size and in number of calls answered per year.

The Association and its member squads have been providing outstanding emergency care and transportation throughout the state for many years. The first squad located in Roanoke, Virginia was organized in 1928. By 1935 interest had developed in forming a statewide organization which has continued to grow. The most phenomenal growth of new squads occurred in the mid to late sixty's with the passage of federal and state legislation to regulate emergency medical services.

Today our organization represents over 50% of the licensed ambulance attendants and operates 64.6% of the ambulances within the state. In order to belong to our organization, member squads must provide 24 hour a day service free of charge. Every squad vehicle has ambulance to dispatch communication. The most popular vehicles are either carryalls or vans.

Several areas are proving Advanced Life Support or Cardiac Technician capabilities with all volunteer manpower. An added service, of most squads is the teaching of first aid and safety skills in their community.

The Virginia Association of Volunteer Rescue Squads is the formally recognized agency for statewide search and rescue during disasters.

PSA., Dist.

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EMERGENCY MEDICAL SERVICES ACTIVITIES WITHIN HOWARD COUNTY, MARYLAND

Howard County is one of 23 counties in Maryland and centrally located within the State covering 251 square miles and an estimated population of 109,000 people.

The Howard County Fire Department, under the direction of the Fire Administrator, operates 12 ambulances on a county-wide basis as part of the overall fire protection and public safety activities within the County.

All ambulances are radio equipped to communicate with the EMRC located at Sinai Hospital in Baltimore City with the additional capability of transmitting and receiving to the local hospitals. In addition, all ambulances are radio equipped with the local County fire frequency. A Central Alarm dispatching operation is manned on a 24 hour daily basis. Two (2) of the twelve units now in service have the capability of telemetry and this capability is planned for two additional units within the near future. Firefighters perform both fire suppression and Emergency Medical Services. Three Hundred and Twenty (320) Volunteer firefighters are supported by sixty-four (64) full time merit system employees. Twenty-three (23) personnel are qualified as Cardiac Rescue Technicians, 260 serve as Emergency Medical Technicians and of the total group, 50 are Intravenous Therapists or IVT's. One individual serves as a qualified CRT Instructor and 3 others serve as qualified EMT-A Instructors. A qualified Physician at Howard County General Hospital acts as the Medical Advisor to the Fire Administrator. Proficiency for CRT's is maintained by assigning an ambulance and personnel to the local hospital for four hour periods on a twice weekly basis. The County wide Fire Service responded to 3,414 Ambulance calls in 1974 and 3,649 responses in 1975.

PSA., Trsp., Pers., Md.C.

Paul F. J. LePore
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EVALUATION OF THE ROLE OF POLICE IN THE EMS SYSTEM

The overall purpose of this ongoing project, supported by Grant #HS 01767 from the National Center for Health Services Research, HRA, is to evaluate the performance of medically-trained police officers in the administration of first aid prior to the arrival of an ambulance as a means for providing cost effective, rapid response EMS resources. Operationally, the project has several charges. These include: (1) to identify the type of medical emergencies a policeman routinely encounters; (2) to identify the medical and non-medical tasks performed by the police officer both prior to and after arrival of an ambulance; (3) to determine the frequency with which a policeman performs specific tasks; (4) to assess the relationship between performance of medical tasks and the performance of more traditional duties associated with law enforcement; and (5) to measure the attitudes and perceptions of the police, EMT's, and the public with regard to police EMS intervention.

To date, much of the developmental work has been completed. The police training program has been documented in terms of the knowledge and skills imparted to the police officer. Two sets of tasks representing the medical and non-medical duties of the police officer have been compiled. Performance measures based on completion of these tasks are presently being developed. These performance measures consist of a ratio of weighted tasks performed to weighted tasks required. Both the Delphi technique and a modified nominal group process are being used in the development of task weightings. An incident form has been designed to collect the necessary task performance data. This form has been pre-tested in the field and data are presently being collected. Preliminary behavioral questionnaires have also been developed and will be administered in the near future.

Future project efforts will be directed towards the development of a multi-variate model to quantify the relationships between medical and non-medical performance, response time, intervention time, and various behavioral factors.

PSA, Eval., Pers.

Charles Y. Thomason, III
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Justin A. Myrick, Ph.D.
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The Arizona Department of Public Safety's Emergency Medical Services Division is the only police agency in the country utilizing both civilian and commissioned personnel in paramedic operations. Twelve DPS employees had been certified as of January, 1976.

Eight commissioned officers are assigned to the Department's Helicopter Operations Section, an operational entity which provides both medical and law enforcement services throughout Arizona utilizing the dual purpose cost effective concept of medical evacuation/law enforcement which was pioneer in Arizona in 1969. Four civilians are assigned as paramedic/instructors in the Training Section and travel to locations anywhere in the entire state to provide improved first care training.

These paramedics were trained in a specially designed program created and implemented by Department of Public Safety personnel in cooperation with physicians and hospitals in Phoenix and Tucson. The program included both didactic and clinical experience. Practical experience was also provided in cooperation with the Phoenix Fire Department, who allowed DPS paramedic candidates to ride with certified paramedics and nurses on their rescue units. Through these cooperative efforts, all of the men were able to meet state certification requirements established by the Arizona Department of Health Services.

PSA., Pers.

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The need for improved first care for law enforcement personnel and fire fighters who are often first on the scene of a medical emergency has long been recognized.

The Emergency Medical Services Division personnel of the Arizona Department of Public Safety began instructing the federally approved 40 hour Crash Injury Management Course in September, 1975. Although this program is primarily aimed at Department of Public Safety officers, other agencies throughout the state have also been instructed in this program. To date, approximately 700 law enforcement and fire fighting personnel have been certified in Crash Injury Management. This intensive instruction program will continue until June, 1976, on a weekly basis, then will be offered to requesting organizations as the need arises. Currently, plans are being made to have every law enforcement officer and fire fighter in the State of Arizona trained in Crash Injury Management.

The program provides many hours of practical experience in CPR, bandaging, splinting, primary and secondary survey and diagnostic techniques. Improvisation of first care equipment is heavily stressed because most of the men in isolated areas do not have commercial first care equipment available.

PSA., CC., Ste., Pers.

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Phoenix, Arizona 85005

CONSUMER PARTICIPATION

CONSUMER EXPECTATIONS FROM AN EMS SYSTEM

Using Units of Care to describe the EMS System, we can ask: What does the consumer expect in each Unit of Care or expect from the EMS System?

Thanks to TV and other mass media, the consumer expects excellent service and treatment in any and all levels of the EMS System. The consumer knows we have the technology and the ability to provide excellent health care.

How much does the consumer expect to pay for excellent emergency health care and/or non-emergency care?

At the time of the need for care, cost is not a high priority consideration; but once the medical problem is resolved and money issues surface, the consumer's willingness to pay for services is often not comparable to the expectations of the system.

If we were to graph consumer expectations in each unit of care, we would see a high level of expectation. If we graphed the consumer's willingness to pay before care was needed or after care was given (but not during the time care was needed), we would see a low level pattern (Human Nature). If we were to graph appropriate medical standards in each Unit of Care, we would see yet another line or pattern develop.

Some compromise has to be made between expectation, willingness to pay and standards of care appropriate to the circumstances. The general public must be made aware of the System and the choices.

A community should establish its wishes based on a logical, understandable explanation of the EMS System. If a compromise is to be made and an effective, self-supporting EMS System developed, public education programs about the System must be developed and implemented.

Cons., C.E. & I, Acss.

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Health Division
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The REACT program is operating in over 1,000 U.S. communities through local volunteer groups coordinated through an independent non-profit central headquarters known as REACT International, Inc. Each local team provides a monitor volunteer watch on the citizen band radio emergency channel 9 with a goal of 24 hour coverage.

REACT monitors receive calls reporting accidents, highway emergencies, and other situations that could result in a need for emergency medical services. Since establishment in 1962, REACT teams have handled an estimated 55 million emergency calls including approximately 12 million highway accidents. The teams have been directly involved in emergency communications before, during and after every major U.S. disaster since 1962. This includes the recent tornados and floods, severe storms, Hurricane Camile, Rapid City South Dakota flood, Southern California earthquakes, Buffalo Creek disaster and many many more.

REACT maintains a formal understanding with the American National Red Cross to encourage cooperation between their respective local groups. As a direct result of this program, a high percentage of REACT teams are qualified in first aid procedures with a number of members having completed EMT training.

REACT teams maintain working relationships and communication with all local official agencies. Used in daily operations, their equipment is ready instantly to handle all types of emergency communications with minimum response time. With the large numbers of CB radios in use, estimated at 13 million in the USA, the potential for service through this medium is virtually unlimited. Research demonstrates that use of CB reporting on a city freeway can save approximately 17 min. reporting time.

Current expansion of REACT is occurring with the organization of State and Regional councils. Interface of the program with all appropriate agencies is available at state, local and national levels. Many public safety agencies are themselves monitoring the CB emergency channel. With the highly local nature of this communications system, REACT volunteers are interfacing with these agencies to maximize access to emergency service everywhere.

Cons, Comm.

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CITIZEN AWARENESS OF EMS IN THE BIRMINGHAM METROPOLITAN AREA*

Citizen awareness of the EMS system being deemed requisite for opportune utilization of the system, a citizen awareness study was accomplished for the Birmingham Demonstration Project area. The study was conducted in November, 1974, one year after the Fire Medic Rescue Squads had become operational in Birmingham, Homewood, and Vestavia Hills. A stratified random sampling procedure based on telephone exchange information was utilized. Telephone interviews with 636 citizens were completed by trained interviewers under direct supervision.

Overall citizen awareness of the EMS system in the service area was one in three. However, statistically significant greater awareness was found among the citizens of the two smaller cities, Homewood (48.8%) and Vestavia (55.8%), as compared to Birmingham (27.4%). Three main sources of EMS information emerged from the study:

- (1) Friends (15.7% on average);
- (2) Newspaper (14.9% on average); and
- (3) Telephone Company (9.5% on average).

Cons., PE&I

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COMMUNITY ACCEPTANCE OF EMS

Regionwide success for any operational EMS System, or implementation of any major EMS grant, is dependent upon the degree of local public, provider and political support developed in the area. The 1974-6 Robert Wood Johnson Foundation grant and resulting EMS Communication System have received tremendous support and acceptance in Acadiana.

These developments stemmed largely from the involvement of the local 314 (b) comprehensive health planning council in the grant program. The council, The Acadiana Health Planning Council, has involved more than 400 men and women, rich and poor, black and white, providers and consumers, from all eight (8) of the area's civil parishes (counties). Thus, with the espousal of the Robert Wood Johnson Foundation program by the people who are the Acadiana Health Planning Council, there were 400 active advocates speaking to the authorities and citizens of their communities about the merits of the program. The civil parish governing bodies, called police juries, were already "taxing" their parish 3¢ per capita to support Acadiana Health Planning Council. They knew the agency, its quality, and its Director, personally. They accepted the EMS project because of the combined feedback from their constituents, generated by the 400 advocates, and because of their confidence in the agency and its Director and staff.

The grantee on the project was the Louisiana Hospital Association and that, coupled to the intimate relationship between Acadiana Health Planning Council and the twenty-odd hospital administrators in the area, ensured the close cooperation of these primary care facilities. The existence of an extremely advanced rural ambulance service, under a progressive and extremely capable group of corporate officers, working closely with nearly all of the hospitals, was the last vital link. This ambulance service operates on funds raised through public subscription of many thousands of Acadiana residents. Thus, Acadian Ambulance Service's advocacy lent the weight of its many subscribers to the forces supporting the grant program.

In summary, grass-roots support by active and effective health organizations who are in close and constant touch with the community's citizens and governing bodies is the heart of success for EMS - anywhere.

Cons.
CE&I
Trsp.

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ACCESSIBILITY TO CARE

EIGHTY MILLION HANDICAPPED PERSONS IN AMERICA: SOME HAVE SPECIAL CONCERNS WHEN IN NEED OF EMERGENCY MEDICAL SERVICES

There is a new voice in America. It is the voice of handicapped individuals. A special interest group that is sometimes hard to identify ranging in numbers by some estimates from a low of twenty million to a high of over one hundred million.

The Allergy Foundation estimates that over thirty-five million Americans have allergy conditions, which makes it the number one reason for missing work. There are over twenty million Americans with arthritis. Six million Americans have eye disorders that cannot be corrected to 20/20. The numbers for hearing impaired individuals range from two to ten million. The Epilepsy Foundation of America reports nearly four million individuals with epilepsy and the American Diabetes Association shows an additional four million people with diabetes. Then, there is heart disease, cancer, paralysis, amputations, multiple sclerosis, muscular dystrophy, cerebral palsy, cystic fibrosis, mental retardation, kidney disease, etc. Not to mention the twenty million who have experienced a history of mental illness.

The differences of each disability group makes the numbers more complex. For example, with cerebral palsy, deafness or aphonia the problem may be basic communications. Whereas with paralysis it may be a problem of pressure points or lack of feeling in certain sections of the anatomy.

Allergies or Diabetes may present still a different problem as it may involve the type of medication or treatment to be administered. These are only a few of the special concerns that workers in the field of Emergency Medical Services must be aware. Skin conditions, cancer, and heart disease will require still different types of unique challenges.

Acss., Spec.

Dr. Dennis Wyant
The President's Committee on
Employment of the Handicapped
Washington, D.C. 20210

MEDIC ALERT FOUNDATION, INTERNATIONAL

The Medic Alert Foundation was established 20 years ago as a non-profit, charitable and tax-exempt organization to provide emergency medical identification for persons with important hidden medical conditions. It is today the world's largest system of medical identification with 635,000 members in the U.S. and an additional 300,000 belonging to 14 affiliates on four continents. Membership in the U.S. is growing at the rate of about 1,500 members per week and a level of 1,000,000 is expected in the near future.

The basic system of Medic Alert is a medical emblem which is worn at all times, as a bracelet or a necklace, and indicates the basic hidden medical condition. In addition, the member is provided a billfold card, and the Foundation stores in its computerized files other medical information about the member. This data is available to responsible health care personnel by a collect call to the data bank in Turlock, California. Emergency medical care personnel are taught to search for the emblem on encountering an unconscious patient. Members receive an annual pocket card and notification of the data on file and are given an opportunity to up-date the data if it is necessary.

The most common medical conditions listed are allergy to penicillin or other drugs, diabetes, heart conditions, taking anticoagulants, epilepsy, wearing contact lenses and blood dyscrasias. Proof that the Medic Alert system works is that in a recent 12-month period, over 2,000 members reported that Medic Alert had contributed to the saving of their lives.

When an individual is unconscious or cannot communicate his medical problem in an emergency, Medic Alert speaks for him, loudly.

Acss., Org.

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Chairman of the Board
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PUBLIC ACCESS TO THE EMS SYSTEM IN NORTHEASTERN CALIFORNIA

THE PROBLEM

There are 82 emergency telephone numbers for public access to the EMS system in sparsely populated northeastern California. Although one of the numbers is a county-wide central access number, the remaining eight counties in the region have no central emergency access telephone systems. Although the planning of local "911" systems has been mandated by the State Legislature, their implementation is not expected to occur before 1984.

Because northern California is a major recreational area, the population increases as much as 600% to 800% in some locales with the influx of skiers, campers, and other vacationers. Consequently, visitors to the area represent an extremely high-risk target group in terms of access to the EMS system during a medical emergency.

PROBLEM SOLUTION

A conceptual framework for illustrating the location of EMS resources in the region, their capabilities, telephone numbers, and procedures for accessing them was developed for use in brochures, pamphlets, and maps, approximately 10,000 of which were distributed to key locations in the region frequented by visitors. The conceptual framework was developed to insure easy public comprehension of the information, which includes three major areas: 1) critical first aid, 2) location in the EMS system, and 3) who to call for help.

RESULTS

Preliminary evaluation indicates that the materials are easily understood and are receiving widespread public acceptance; however, an evaluation of the overall impact of the program in terms of changing public behavioral patterns has yet to be completed.

For further information about this program, contact:

Acss., Comm.

Richard Sequest or
John Di Perry, Jr.
Northern California Emergency
Medical Care Council
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Redding, CA 96001

TRANSFER OF PATIENTS

TRANSFER PROTOCOLS AND PATTERNS

Area Hospital Committees in Massachusetts are further refining their assessments of hospital care capabilities in order to define appropriate transfer points for patients in major clinical groups. Identification of specialized care capabilities will assist the physician in locating the required definitive care. Area Hospital Committees are developing written protocols containing this information for dissemination to their areas' emergency departments.

Hospital Committees are also developing written patient care protocols and administrative procedures to be followed in the transfer of an emergency patient from one acute-care facility to another. These will be specific for each major clinical category and will include guidelines for patient care prior to transfer, arranging for an adequately staffed and equipped transfer vehicle, contacting required specialists at the appropriate receiving hospital, and transmittal of necessary patient records including clinical observations and treatment rendered at the initial receiving hospital.

To date, there are committees of specialists in burn, spinal cord, and poisoning who are developing standards and criteria for specialty care centers and appropriate patient transfer protocols. These drafts will be given to all area hospital committees for their review before they are implemented.

Trsf., Ste., Fc./Ct., CC.

Patricia Murchie
Massachusetts Department of Public Health
Office of Emergency Medical Services
600 Washington Street, Room 406
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TRANSFER PATTERNS WITHIN REGIONAL NETWORKS

Based upon the establishment of the four medical control centers, the next step was the formation of the seven technical advisory committees to define critical care referral patterns. The composition of each committee was physician and nurse specialists from each respective area. The seven critical care areas addressed by the grant are cardiac, burn, head and spinal trauma, perinatal, psychiatric and substance abuse, trauma, and orthopedic. Each committee met to define the capability of the region for their critical care area, i.e., manpower and resources. Following establishment of area capability, the committees outlined their responsibility in relation to the subregional medical control points. It was necessary to establish routine referral patterns to the critical care units serving the entire region, such as burn, perinatal, and head and spinal trauma. The resulting referral recommendations of the seven committees vary in content from mutual cooperation with the subregional control point system to broad assessment and management criteria for the multiple injured patient.

The committees have now begun to develop specific protocols for treatment, and are initiating written transfer agreements. Workshops have started for the three critical care areas with regional focus. These workshops will disseminate the referral mechanism to the medical community, and to the ambulance personnel. An end result of the committee's recommendations is a manual outlining specific referral and transfer criteria to be utilized in the emergency rooms of all twenty-three hospitals in East Central Michigan.

Trsf., Reg., CC

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TRANSFER AGREEMENTS AND REFERRAL PATTERNS

In the rural state of South Dakota with relatively few physicians and hospitals it is not difficult to determine referral patterns. Critically ill or injured patients are routinely referred to medical centers where they can receive necessary care, however, few written agreements exist to support this activity. In an attempt to secure signed referral agreements in the shortest possible time it was decided that a statement signed by Hospital Chief of Medical Staff would reflect referrals of at least 90% of the practicing physicians in the state. A transfer agreement form indicating physicians and/or hospitals from which they accept and where they transfer patients was sent to all Chiefs of Medical Staff. All clinical categories per PL 93-154 guidelines were listed. This form was accompanied by a cover for information. The form signed by the Chief of Staff constitutes an agreement to accept and refer. The information can be cross-matched to indicate coverage. Out-of-state referral centers can be contacted for written agreements. Results of this effort are unknown but it appears that the explanatory cover letter by a well-known, respected surgeon should eliminate much of the hesitancy of physicians to respond.

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TRANSFER AGREEMENTS AND PROTOCOLS IN BOSTON

In each of the seven clinical areas, subcommittees have been set up, representing maximal expertise of the teaching hospitals, to develop guidelines for optimum emergency room treatment and for the supporting critical care facilities. These subcommittees are in the process of developing protocols, both medical and administrative, for the transfer of patients. This process will permit rationalization, according to a set formula, of already existing transfer agreements between hospitals within and without the Boston system. The protocols will also serve as the formula for transfers, coordinated through the Communications Coordinating Center for Boston and based on computerized read-outs of individual hospital critical care bed occupancy (and thus availability). Massachusetts, and regional, hospitals outside the Boston system await these protocols.

The evolution of this system ultimately works only through the cooperative interaction of the people involved.

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WRITTEN TRANSFER AGREEMENTS

It may well be said that an EMS Coordinator working in Texas is operating in a legislative wasteland. Certainly in discussing written transfer agreements with hospital administrators, the regulatory waterholes are few and far between. So, lacking some formal precedent in this area, one approach to the problem lies in developing the goodwill of the major receiving hospitals and in pointing out the advantages such a formalized arrangement offers the patient and the receiving hospital and physician.

Fortunately in Central Texas the hospital administrators from the two major receiving hospitals have taken an active part on the EMS Task Force. This interest has been encouraged by the EMS Staff through frequent meetings with the administrators. In addition, the "public relations" film developed by the Texas EMS Division was shown at the EMS Task Force meeting and at special meetings with staff and administration of both receiving hospitals. These meetings have helped promote good working relationships where problems like the written transfer agreements can be worked out in a friendly atmosphere. The hospital administrators have gradually developed into arbitrators in developing an agreement format.

By letting the institutions work this out themselves, the EMS staff felt, a successful solution was more likely than one imposed by outsiders such as the EMS staff.

Trfr., Fac., Reg.

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THE ALABAMA AGREEMENT FOR TRANSFER OF CRITICALLY ILL/INJURED PATIENTS

A State Critical Care Committee was appointed by the State EMS Advisory Board in 1975 to assist the Medical Director in the development of the State EMS Program. This committee is composed of physicians and hospital administrators geographically distributed throughout the State.

One task completed by the committee was development of a transfer agreement for critically ill/injured patients. The preamble of the agreement contains explanatory notes. On the second page are the responsibilities of the referring and receiving hospitals, and provides for signatures of the Chairman of Hospital Board, President of Medical Staff, Administrator of Hospital, President of County Medical Society, and Chairman of County Commission Board (for both the referring and receiving hospitals). These signatures were deemed essential to assure awareness and understanding of transfer agreements. The signatures of the County Commission will provide a greater awareness that patients must be transferred across county lines for appropriate care. It could lead to more equitable sharing of costs which are incurred with the indigent critically ill/injured patient. The third and fourth pages of the transfer agreement delineate the Critical Care Patient Categories. It also provides for the referring and receiving hospitals to list the types of patients they may treat, any limitations, and types of patients that may transfer. The president/chief of the medical staff must sign the third and fourth pages.

The agreement was approved by the State Board of Health on March 17, 1976. It is anticipated this form will be used by all hospitals in Alabama negotiating agreements for the transfer of critically ill/injured patients.

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TRAUMA TRANSFER REVIEW

To improve the care and transportation of the seriously injured, the Division of Emergency Medical Services of the State of Illinois created Critical Care or Trauma Fellowships to help institute cooperative training, evaluation and management of trauma network programs organized on a regional basis in the state. Since the fellowship program has been established at St. Francis Hospital-Medical Center, Peoria, the trauma fellow has been most closely involved with those patients classified as trauma transfers within Region 1B to St. Francis Hospital. In this regard, 111 trauma transfer patients were evaluated from 1 July to 31 December 1974, a peak transfer time which the author, as trauma fellow, was personally involved.

- (1) The greatest need for transfer appears to be for neurosurgical evaluation.
- (2) Temporal factors reflect efficiency of the system as the time interval from accident scene to arrival varied between 1 hour 38 minutes to over 3 hours from communities with travel time of 20 minutes to 85 minutes respectively.

Trfr., CC., Trsp.

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TRANSFER AGREEMENTS

In the rural state of South Dakota with relatively few physicians and hospitals it is not difficult to determine present referral patterns. It would appear on the surface that critically ill or injured patients are referred to a medical center where they can receive the necessary care, however, few written agreements actually exist to prove that this occurs. In an attempt to secure signed referral agreements in the shortest possible time it was decided that a statement signed by Hospital Chiefs of Medical Staff would reflect actual referrals of at least 90% of the practicing private physicians and/or hospitals from which they accept patients and where they refer patients was sent to all Chiefs of Medical Staff. All clinical categories as shown in P.L. 93-154 guidelines were listed. This form was accompanied by a cover letter from Albin Janusz, M.D. F.A.C.S. explaining the necessity for the information. The form signed by the Chief of Medical Staff constitutes an agreement to accept and refer. A cross-match of the information would indicate whether all hospitals and therefore their medical staffs are covered. If not, they can be contacted for a signed agreement. The out-of-state referral centers can also be contacted for a written agreement. The form was recently mailed and the results of this effort are still unknown. It is felt that the cover letter explaining the necessity of the information and signed by a well-known, respected surgeon should eliminate much of hesitancy of the physicians to respond.

Trsf., Rur., Ste.

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STANDARD MEDICAL RECORD KEEPING/DATA

UNITS OF CARE

The "units of care" schematic was developed to provide a framework or tool in order that anyone could understand the health care system and, more particularly, the emergency health care system.

It is a grouping of activities in a sequential order to depict events that occur to acutely sick and injured patients. The sequence of activities affects patients regardless of whether there is an EMS system or non-system. By grouping activities or events, we are able to separate roles and responsibilities of providers. This separation allows a non-threatening approach to confront issues in each unit. This also allows a management technique to develop a framework to coordinate EMS committee, consumer and provider input and to develop a framework in a non-threatening manner. In order to use this tool, one must accept the following premise: Knowledge and Hardware, placed in the heads and hands of EMS providers, plus an Attitude of cooperation and teamwork, equals better Patient Care. (K+H+A=PC)

The following units have been recommended:

100 - Access to Care	600 - Secondary Transportation
200 - Care at Scene	700 - Advance Care
300 - Primary Transportation	800 - Maintenance Care
400 - Emergency Care Facility	900 - Rehabilitation
500 - In-House Care	1000 - Mutual aid and Preventive Medicine

SMRK, Eval., Spec.

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DEVELOPING A BASIC DATA BASE ON CRITICALLY
ILL/INJURED EMERGENCY PATIENTS

The Tidewater Emergency Medical Services Council initiated a data collection project to obtain essential base line statistics pertaining to the management of critically ill/injured patients in the categories specified in the program guidelines.

Personalized letters were sent to each hospital administrator in the region served briefly explaining the objective, methodology, etc., and requesting a personal meeting with the administrator and medical records librarian to provide complete details, answer questions and identify a qualified person willing to conduct the survey. The raw data collection process is conducted by a person working in the medical records department of each hospital. An agreement is executed between the TEMS Council and the individual selected, stipulating an hourly wage for off-duty time required to conduct the survey and each collector is provided with forms for recording specified information which is to be extracted from individual patient records in the specific hospital code (such as Patient Activity Study) pertaining to critically ill/injured categories. This information includes: age, sex, zip code, length of stay, mortality rates, and final disposition, including transfers to regional centers for special treatment (burns, high-risk neonates, major trauma, etc.). The administrator reviews the data and exercises release authority.

The survey has been completed in seven hospitals and is ongoing in five. Three others have approved the project and only one hospital has declined to participate.

Analysis of the collated data will provide valid information to: evaluate the effectiveness of the existing system; determine improvements, modifications, or revisions deemed desirable and feasible; and serve as a bench mark to measure progress in patient management.

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DESIGN AND IMPLEMENTATION OF A MODEL EMS SYSTEM

The backbone of the design is a dedicated information system which has two primary functions. The first deals with the collection and transmission of information about all patients going through the system as well as about potential consumers. It contains a common data base for ER patients and ambulatory care patients.

The data collected on each patient going through the system are based on the improvements in functional status as he progresses through the system and are correlated with time spent in each phase and costs associated with it as a function of final medical diagnosis. This use of the information system is primarily for evaluative purposes.

The second function is purely administrative. It comprises an inventory of all resources of the system and their maintenance records; for example, training status of all rescue squad members, costs associated with the operation of each vehicle and cost of passing one given patient through any of the different stages in the system. The basic concept for evaluating the system anchors on the realization of the ultimate goal of the system, namely to return a patient to a productive life as rapidly and inexpensively as possible. The final step in this evaluation will be to send out questionnaires to each client in which information about the degree of consumer satisfaction with the system is a major item. It is obvious this kind of data collected during the pilot program has relevance for socio-medical decision makers far beyond Emergency Medical Care.

SMRK., Pl., Eval.

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RURAL/WILDERNESS EMERGENCY ROOM MEDICAL REPORTING SYSTEM

In Nebraska, all hospitals are reporting health care statistics to the State Health Department. The report includes total outpatients and total emergency patients. It has been noted, however, that because different personnel utilize various definitions of "emergency", the statistics gathered are not functional. In addition, the classification "emergency" is not refined enough to provide information on what type of emergencies actually occurred. The generality of the data limits efforts of planners and administrators in identifying the special manpower training or equipment necessary in a given emergency area.

The definition of "emergency" has been dismembered for years. Doctors, nurses, administrators, and medical librarians have all developed their own special colloquialisms of an emergency. Nebraska definitions have ranged from: "anything that comes into the emergency room" to "only if it is a life-sustaining act by a physician".

A study was conducted in central Nebraska, involving 20 hospitals. The hospitals ranged in size from 175 acute care beds to 12 acute care beds. Doctors, nurses, administrators, medical records personnel, insurance companies, welfare, Medicare and State Health Department personnel were involved in the study.

The two main concerns of the study were: (1) to have all concerned arrive at a common definition of emergencies and patient classifications that they could agree on; and, (2) develop a system of record keeping that was not complex and would not cost a lot of money. The results of that study are enclosed (Workshop Consensus, August 5, 1975).

Smrk., Eval.

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DATA COLLECTION & ANALYSIS - ARKANSAS EMS SYSTEM

When individuals plan for their community's health services they do not work with individual patient data, but rather with aggregate data. The most important factor in deciding which health services and related sources are needed in a given area are its population and rate of growth. Since 1974, Arkansas EMS has assigned a unique geographic identifier to each urgent and emergent patient. This file contains coded information on 3,800 civil jurisdictions, cities, towns and places (incorporated and unincorporated), as well as a county code and grid-code. This data will serve as a denominator for computations of rates and ratios applicable to any desired per capita analysis.

The most innovative application of Arkansas EMS data processing was the technical design and development of the map-coordinate file. This file contains approximately 86,000 bits of geocoded information, identifying primary and secondary ambulance providers, response time zones, highway infrastructure and other data relating to the location of an EMS encounter. A special computer report, showing frequency distributions for all ambulance providers and vehicle units during any given time period can be generated. For example, on June 1975 a density distribution for one district showed that 93% of all EMS dispatched runs were handled by one provider.

By studying the monthly patient residence/hospital destination encounter figures, it is possible to plot "actual" service areas where residents consistently go for treatment. Utilizing this base and relating to a specific diagnosis, it is possible to determine the need for specific services and equipment within a service area.

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NORTH CAROLINA EMS INFORMATION SYSTEM:
DESIGN, DEVELOPMENT AND INSTALLATION

A policy statement approved by the State Emergency Medical Services Advisory Council, on September 19, 1973, placed specific responsibility on the Office of Emergency Medical Services for the development of an EMS information system. This system was further clarified to mean an inventory of ambulance vehicles, emergency facilities, trained personnel, training programs, communications equipment, transportation routes and other components as needed. In addition, the Office of Emergency Medical Services was responsible for evaluating emergency medical services on an ongoing basis. This evaluation was to include accurate information on ambulance calls and runs; patient illness or injury causes, conditions and outcomes; personnel training and performance; vehicle condition and availability; communications utilization; and other systems criteria.

To develop this EMS information collection and reporting system, a contract was let to a consultant. The consultant designed and developed within the funding allotted to the project, an EMS information system composed of Inventory Data, Emergency Department Data and Response Data. The Inventory Data and Emergency Department subsystems are in the final stages of installation. The Response Data Subsystem has only two components, the dispatcher record and the ambulance call report, installed in a demonstration area. Procedures for the distribution and receipt of forms, editing, mark sensing, logging and mailing of documents to the State Office of Emergency Medical Services have not been completed.

Inventory information in the form of reports is presently supplied to each of the eighteen Regional EMS Councils across the state to assist them in planning and identifying their needs. Response data information will also be provided to the Regional EMS Councils, county governments and individual providers to assist them in evaluating EMS within their areas.

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EARLY EXPERIENCE WITH A LIMITED TRAUMA REGISTRY

The need for a trauma registry as an integral part of an emergency medical service system has been well established. A trauma registry should gather information that will provide a profile of trauma within a given area and form the basis for assessment of care given the trauma victim, evaluation of new system developments and functions as a data base for research. We have developed a computerized trauma registry with well-defined limits of data capture that meets these requirements. The advantages of this registry are that it is relatively inexpensive, data capture is performed by the clerk and surgical nurse within the Trauma Unit, the registry form is used directly as a coding sheet and periodic reports are easily obtained. The trauma registry utilizes an IBM system 370 Model 135 which also functions as the hospital's main computer system for administrative, laboratory and other patient care projects. A special registry form has been designed that facilitates accurate and computed data capture. General areas of information collected include identification, cause of injury, admission, nature of injury, procedures, operations, complications, disposition and injury severity score. Editing programs reject incomplete or inaccurate data capture and identify the deficiencies. Periodic reports describing the profile of trauma and an overview of the care provided are generated monthly whereas specific research objectives are examined as individual projects. Early experience with this trauma registry has led to the following observations: accurate, complete data capture can be performed with limited physician supervision; the data collected in this registry provide an accurate overview of trauma and care provided within our hospital and point to certain areas of research interest; the major shortcoming of the registry is follow-up data.

In summary, we have developed a simplified trauma registry that is inexpensive, accurate and meets the general requirements of a registry system. Early experience has demonstrated its effectiveness and suggests the feasibility of expanding it to include other hospitals.

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"EMERGENCY MEDICAL SERVICES INFORMATION SYSTEM"
(EMISIS)

"EMISIS" is a statewide system for collection of ambulance service response data which was developed to comply with recently passed legislation at both the Federal level (Public Law 93-154) and State level (Ambulance Licensing Law, Minnesota Statutes, Section 144.807) (Appendix A).

"EMISIS" was built around an Ambulance Service record (Appendix B). This record, as prepared by the ambulance technician, is an invaluable resource in the planning of emergency health care systems and development of technician training programs. Preparation of operations summaries for individual ambulance services, regional health planning councils and EMS section of the State Health Department is also a feature of the system.

The reports in Appendix C were generated by "EMISIS." At present the various data input into "EMISIS" are screened for gross errors, totaled and reported in quarterly and annual summaries by Comprehensive Health Planning of average response times, average distance travelled, number of cases (illness and accident) by type and severity, number of cases by time of day and day of week, number and type of treatments rendered and others.

Errors are the bane of any statistical reporting method because corrections are very difficult once the raw data has been processed. Consequently no attempt will be made (beyond obvious errors) to correct data found to be in error, however error frequencies will be kept on the data by item.

Plans currently exist to expand "EMISIS" to cover hospital emergency departments and to track the patient from initial entry into, through discharge from "EMISIS." This expansion will be reflected in a more comprehensive service record form which will lead to more and better quality data.

SMRK., Leg., Ste.

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AN IMPROVED RECORD SYSTEM FOR THE EMERGENCY DEPARTMENT

With the increasing numbers of patients visiting Emergency Departments throughout the country, it has become apparent that improved record keeping methods within the Emergency Department are sorely needed. Most Emergency Department records are hand written on a single paged form and frequently are illegible and, therefore, not amenable to audit.

This need for an improved record system was recognized at the Akron General Medical Center and a new Emergency Record employing a packet of multiple forms, interleaved with carbon paper, was developed. The unique aspect of this system is that a typewritten record is developed which is usually in its completed form before the patient leaves the Emergency Department. It provides for a detailed account of all the important factors surrounding a patient's care in the Emergency Department and because it is typewritten provides a permanent, legible document which can be easily audited.

It was Published in the September/October 1975 issue of the Journal of the American College of Emergency Physicians and University Association of Emergency Medical Services.

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COMPUTERIZED EMERGENCY ROOM

In the Summer of 1975, a study was conducted to determine the origins and destinations of ER patients in the fourteen counties, and to obtain other information relevant to their visits. Information was supplied by the emergency rooms on abstract sheets for keypunching and processing.

Information was obtained concerning urgency rating, cause of visit, error in original diagnosis, distribution of time in system by urgency rating, age, sex, zip code, transportation to hospital, use of support services, final diagnosis, physician, and disposition. Results were printed by computer in a format which is useful immediately and allows for further analysis on an institutional level as well as on a regional level.

The results of this study have been linked to zip code maps and zip code population figures, which are a product of a statewide acute care inpatient origin study, and other results of that study. Further analysis of this data has opened the door to comparisons of service areas for different services. The results have also been used as supplementary material to meet the requirements of a grant to establish a health service clinic in a rural area.

Plans are being considered to process data concerning transferred patients to better determine referral patterns and cause of transfer, and to change the data collection instrument from an individual abstract to a uniform log book. It is felt that a uniform log would eliminate the common complaint of duplication of work and inefficient use of time. The study has proven useful and, with further refinement, should become even more valuable.

SMRK/DATA

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The Twin Cities Metropolitan Council surveyed patient origins and utilization patterns among the 38 designated EMS facilities in its region for 14 consecutive days in mid-March. All visits to emergency facilities were included except inpatient or special "clinic" visits for scheduled procedures, the reception and routing of uncomplicated maternity cases, and visits solely for admission.

Data were collected on patient's residence, location of incident, date and time of visit, age and sex, ambulance arrivals, transfers from other primary-or acute-care facilities, planned procedures, severity of condition, whether the patient was treated or not treated, and the disposition of the case. Age was recorded in years for patients older than two and in months for patients younger than two. Severity was defined by four categories: Critical if the condition appeared to be immediately life-threatening, Urgent-Serious if the condition could turn critical without immediate attention or if it threatened function, Urgent-Not Serious if the condition warranted prompt attention but did not threaten life or function, and Not-Urgent/Not-Serious. Disposition of Case was given by seven categories: Deceased, Admitted, Referred to another outpatient department of the same facility, Referred to another outpatient facility or to a private physician, Requested to return to the ER, and Released with no referral or request to return.

Results are now being coded prior to analysis. The survey will provide information about volume, the proportion of severe to trivial cases seen at EMS centers, facility and ambulance service areas, as well as epidemiological information relative to weather, time and other factors. The survey will also serve as a model for standardized EMS patient log. A conference to promote this idea among EMS facilities is planned for early summer; some facilities are already using variations of the survey instrument.

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THE EMERGENCY DEPARTMENT LOG OF THE UTAH EMS INFORMATION SYSTEM

Problem.--The development of the Utah Emergency Medical Services Information System required that data be obtained on all persons being served within the Emergency Medical System. Initial plans resulted in the adoption of an Ambulance Report form and a separate report form called an Emergency Department Patient Self Admission Report form to be completed on each patient arriving at the emergency department by other than an ambulance or paramedic vehicle. This form was pre-tested and determined to be useable. However, when funding was received through the Emergency Medical Services Program of the DHEW, the hospital directors stated that they could not complete a patient report on every patient being seen in their emergency department. This presented a serious problem as to how the information would be obtained on those patients arriving at the ED by other than ambulance or paramedic vehicles.

Solution.--Discussions with various hospital physicians, nurses, and administrators resulted in the idea of developing a Uniform Emergency Department Log. A number of meetings of an ADHOC group from six different hospitals representing ED physicians, nurses, clerks, and hospital administrators resulted in the Utah ED Log. The ED Log contains all of the data items recommended in the EMS Minimum Data Set for facilities except two. A modified version of the Uniform Hospital Discharge Data Set abstract form will be used for follow-up and does contain these two items. The ED Log is now used in the major hospitals and will be implemented in all urban and rural hospitals in the State of Utah by June 1, 1977.

Conclusion.--The implementation of the ED Log in all hospitals in the state will demonstrate the ability of the Utah EMS program to work with providers to meet their needs and also to provide needed information for planners and program managers.

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COMPUTERIZED AUDIT REVIEW - EMERGENCY DEPARTMENT SERVICES

This analytical technique has as its prime objective, the gathering of clinical data, reflecting the management of patients presenting themselves in the Emergency Department. By reducing pertinent data (age, sex, patient complaint, diagnosis, x-ray, laboratory studies, surgical procedures, medications, mode of conveyance, time arrival, time discharged, disposition, urgency, personal physician, emergency physician to numerical code, the level of medical practice can be determined. In this manner, the quality of care can be ascertained, documented as to appropriateness, and departmental continuing education developed. Demographic profiles can be constructed, as well as analysis of population requirements for medical care. Ambulance personnel emergency exposure is evaluated, from which training requirements for ambulance attendants are evolved. The need for critical care resources, within the hospital, can be established, thus developing suitable protocol for the care of emergent patients. Utilization of this computer data monitoring of the service can be daily, monthly or any desired variance.

The code used for classification is the International Classification of Diseases promulgated by HEW. Using this code makes the protocol amenable to easy analysis and adaptability. The protocol is incorporated into the financial accounting system ordinarily used by the Hospital, rendering this audit review study economical because new equipment need not be purchased. This combination also allows the determination of the cost effectiveness in relation to care in the Emergency Department.

The summary, this is a statistical protocol which effectively determines quality emergency care, problems in its delivery, broad educational needs and the cost of this effort.

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NEVADA 1202 PROJECT - DEMOGRAPHIC DATA COLLECTION

In appraising the needs for emergency medical services in Nevada, one must look at Nevada's unique characteristics. Nevada's approximately 605,669 residents and 13.5 million visitors each year are scattered throughout 110,000 sq. miles of desert and mountainous areas where, in many cases, the nearest medical facility is more than 100 miles away. Nevada's economy is geared to tourism, ranching and mining and the attendant problems. Additional demands on EMS are created by the extreme weather conditions which often hamper the delivery of emergency medical care.

The data gathering strategy involved for assisting the current status and future needs for EMS is to contact agencies for existing data and to generate data where no existing information is available. For example, statistics on highway fatalities and injuries were received from the Office of Traffic Safety while data on available hospital facilities is being collected by field research and data on ambulance service is being collected from newly developed Ambulance Run Reports.

The results of the data collection procedure have been somewhat frustrating. Errors in figures had to be corrected, while differences in reporting procedures and time lags make correlation difficult. Another data problem is the use of different time periods that must be used when forming conclusions.

Data that has been collected, edited, and analyzed thus far, includes population figures by age, sex, and county; population densities; traffic fatalities and injuries; licensed physicians; actively employed RN's and LPN's; and visitor statistics. This information, as well as information on geographic, climatological, economic, and social conditions, is being used to describe and project EMS needs in Nevada.

SMRK, Eval.

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COMPUTERIZED AUDIT REVIEW - EMERGENCY DEPARTMENT SERVICES

This analytical technique has as its prime objective, the gathering of clinical data, reflecting the management of patients presenting themselves in the Emergency Department. By reducing pertinent data (age, sex, patient complaint, diagnosis, X-ray, laboratory studies, surgical procedures, medications, mode of conveyance, time arrival, time discharged, disposition, urgency, personal physician, emergency physician) to numerical code, the level of medical practice can be determined. In this manner, the quality of care can be ascertained, documented as to appropriateness, and departmental continuing education developed. Demographic profiles can be constructed, as well as analysis of population requirements for medical care. Ambulance personnel emergency exposure is evaluated, from which training requirements for ambulance attendants are evolved. The need for critical care resources, within the hospital, can be established, thus developing suitable protocol for the care of emergent patients. Utilization of this computer data monitoring of the service can be daily, monthly or any desired variance.

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In summary, this is a statistical protocol which effectively determines quality emergency care, problems in its delivery, broad educational needs and the cost of this effort.

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CONSUMER INFORMATION & EDUCATION

Cardiopulmonary Resuscitation - Citizen Education

In the Panhandle of Texas (seven counties without a hospital, six counties with no physician, one county without even a registered nurse or an ambulance service), citizen education in basic life support was recognized as a priority need. The Panhandle Region comprises 24,900 sq. mi., 330,316 population, twenty-five counties.

An Amarillo cardiologist was certified as the Panhandle coordinator by the American Heart Association. In cooperation with the Amarillo Chapter of the American Heart Association, the Panhandle Emergency Medical Services System held six breakfast meetings inviting representatives from educational institutions, physicians, nurses, dentists, police, sheriff's departments, fire departments, physical therapists, hospital and ambulance services, and members of civic organizations in the local area for an overview of CPR education and to establish priority targets.

The committee immediately discovered our providers lacked training and determined that group to be of the highest priority followed closely by lay people.

A four-man coordinating committee was established to determine criteria and level of training for basic life support for both providers and consumers. In November 1975, twenty core faculty from Amarillo were certified by the American Heart Association as Instructor-Trainers. Faculty included physicians, physical therapists and registered nurses, representing the five local hospitals, a fireman, high school athletic trainer and the Regional EMS Coordinator. The Instructor-Trainer faculty began teaching in their own institutions immediately. American Heart Association provided equipment and literature for all students.

The core faculty then formed teams of four instructor-trainers per team and during the months of January and February 1976, each team taught Basic Life Support every other week-end (sixteen hour course, twenty instructors per course) to providers and consumers from the twenty-five counties. These instructors are then, in turn, committed to return to their communities, hospitals, fire departments, civic organizations, etc., and certify their people according to the level of need (course curricula vary from six to sixteen hours).

Cardiopulmonary Resuscitation training will be implemented in the Amarillo School District for eighth graders and up beginning the fall term 1976 (four high schools, eight junior high schools).

C.E.&I., Rur., Cons., CC.

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THE EMS NEWSLETTER AS A PUBLIC INFORMATION/
EDUCATION TOOL

An EMS grantee agency must establish visibility and credibility to accomplish many of the community and organizational strategies that are essential to EMS system implementation. It must be an acknowledged information source if it is to adequately change community perceptions concerning emergency health care.

An attractive and substantial publication can create an impression of dynamics far beyond reality. By contrast, a poorly packaged publication can be a discredit to an organization that deserves a better public face. Aside from appearance, material content is critical. Excessive reporting of committee reports and meeting agendas creates an impression of tedium and counter-dynamics. Articles of excess length are not likely to be read. Materials relevant to local project activities and progress are essential. However, reports of national EMS developments enhance the organization's image of importance, as well as piercing the readers' veil of parochialism.

Precise regularity in publishing and mailing a newsletter can provide an image of organizational stability and reliability. Likewise, proper attention must be given to mailing lists. Inaccurate addresses, misspelled names, or duplicate copies to the same addressee do not speak well of the sender. Artwork is essential to a quality publication. However, facial portraits will be a turn-off to all but the depicted individual. An impression of action should be captured in all photos of human subjects. Inanimate artwork should be of professional quality and should relate to story materials.

Mailing of the newsletter to other grantees and EMS agencies throughout the nation tends to produce a two-way flow of valuable information. But most important, a serious effort to produce a quality newsletter has proven to be a valuable educational and informational tool in the region of its origin.

CE&I

by James O. Page, J.D., Director
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PUBLIC EDUCATION AND INFORMATION PROGRAMS IN NORTHEASTERN WISCONSIN

Northeastern Wisconsin has EMS systems operating in each of its nine counties. The northernmost counties, basically rural in nature, along with the southern counties pose a challenge for public education and information.

To implement a viable working program for the system, an activity plan was formulated under three general program objectives. Sample methodology for each of the goals under the objectives, along with modes and places of distribution and coordination of effort among pre-existing EMS related agencies was implemented.

Orientation of effort then was developed in three program areas:

1. Public education as to the existence of the EMS system.
 2. Public education in methods of accessing or activating the system.
 3. Public education in first-on-the-scene responses in emergencies.
- Necessarily, in any one methodology, no one objective was implemented to the exclusion of others.

A television public services spot was produced using an all-pro football player to illustrate the necessity of knowing an emergency phone number. A travel-across for the score board at football games was made to inform attendants of availability of EMS services.

Outdoor advertising was used in heavy tourist areas to inform the transients of emergency access numbers. Tourist areas disseminated information about first-on-the-scene accident responses.

Local emergency squads held extrication demonstrations at county fairs. Handbills were distributed explaining EMT's and their level of skill to develop public confidence.

A coloring contest was held with a picture involving the EMS system in action. Finished pictures were displayed in the city emergency building, EMT's were judges, local businesses offered prizes.

Libraries were given copies of pertinent emergency materials and were encouraged to display suitable reading during trauma week.

Pilot programs using red-cross and CPR trainings as suitable in-service for school teachers were developed.

All of the activities combined to make the EMS system visible. Local people were used as much as possible to make the programs work and to insure continued implementation.

CE & I

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Roberta Peneski, Public information & ed. co-ordinator

USE OF STAR OF LIFE EMBLEM IN LIEU OF LEGISLATION

Although legislation has been introduced for emergency medical services in Oklahoma for the past three years, it has not yet passed. As a result there are no comprehensive laws relating to ambulance quality, level of crew training, acceptable communications, or carrying of adequate lifesaving equipment.

In lieu of legislation, and as an incentive to improving services, the Emergency Medical Services Division of Oklahoma State Department of Health announced the award of the "Star of Life" emblem to ambulances qualifying under specified criteria. The program was not mandatory and an inspection for qualification was conducted only upon the request of the purveyor. Inspections were conducted by EMS Division staff representatives.

Funds were obtained from the Governor's Highway Safety Program to provide a complete set of Star of Life decals for each vehicle qualifying under this incentive approach.

The results have been most gratifying with 104 ambulances qualifying to date. Some that failed on the first inspection upgraded their services on recommendations provided by the staff representatives. The 104 represent approximately one third of quality ambulance capability estimated as required for Oklahoma. Although the use of the emblem as an incentive in Oklahoma has been in effect for the past two years, copyrighting of the "Star of Life" emblem should enhance the prestige of the symbol and provide further incentive for purveyors to upgrade services to so qualify.

PE&I., Trsp., Leg.

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SPECTACULAR FAILURES

Public education has been heralded as the savior of mankind, the blanket of tranquility, the end of the rainbow and the answer to all of our social and health problems. In effect, it has been all and none of these.

Some of our more spectacular failures in public education are: (1) smoking and health; (2) nutrition; (3) dental health; (4) alcohol; (5) drug abuse; (6) safe driving; (7) ecology; (8) conservation of energy; (9) first aid; (10) politics, to mention a few. Almost all of these topics that have been addressed by a public education approach have fallen far short of their original goal.

Public education has begged, borrowed and stolen techniques from every other aspect of education; schools, religion, mass media, public relations and advertising, without much success. Long term approach and short term concentrated programs have been tried. Radio, television, billboards, posters, movies, lectures, demonstrations and sound tracks have been employed. Prominent personalities from the civic, political, sports and entertainment fields have been used to motivate the public. The results have been far from satisfactory.

This is not to say that all is lost. The only real answer to reverse our spectacular failures is to admit to ourselves that maybe we can not educate the public in a mass production process that works so well to build automobiles. Furthermore, we should not expect our tools to work on someone else's product any more than their tools have worked on our product.

Education programs can, and should, use all the techniques available, but must be considered an adjunct to teaching, not the main element. Until we learn to take advantage of the good elements and put them to work for us, we will continue to have spectacular failures.

There are ways to improve our spectacular failures, and one is to start with the subject at an early age. A second suggestion is to work in smaller groups similar to class room size. Still another way is to have the public want the education and insist that it be made available to them--adult education. Another approach is to start small and build on those small successes with the help of all of the techniques available. Success begets success.

Last, but not least, we must be ready, willing and able to measure what we have accomplished. Was it really a success? How successful was it if measured three or six months later? Better still, how successful was it if measured one or two years later?

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CONSUMER INFORMATION AND EDUCATION - ARKANSAS EMS SYSTEM

Goals of the CI&E Component of the Arkansas EMS System include the following:

1. Teaching citizens to properly report medical emergencies using the EMS access number, ENTERPRISE 8900, reached via the telephone operator;
2. Helping citizens to recognize situations requiring immediate summoning of emergency care personnel; and
3. Familiarizing citizens with the EMS System's capabilities.

In urban areas these messages were conveyed through television, radio, and newspaper features and news coverage, electronic media public service announcements and EMS "drops" provided to local merchants for use in retail advertisements. Materials were also distributed by utilities and banks (in direct mailings), by school children, by local governmental units, and by industries (in pay envelopes).

Rural consumers posed a special problem. Long unserved, they were slow to believe media public service announcements promising emergency services. In such areas radio messages were supplemented by a rural outreach program. In addition to providing fact sheets and telephone stickers to schools and utilities for their distribution, outreach workers visited rural groceries, seed and feed stores and implement dealers, explaining the EMS program to proprietors and urging them, in turn, to inform their customers.

Outreach activities generated a significant increase in the proper reporting of emergencies, probably because consumers were receiving information from sources already known and trusted. The ratio of ENTERPRISE 8900 calls to non-ENTERPRISE calls logged for each county by the district Resource Coordination Center (RCC) provided a ready gauge for measuring the success of CI&E efforts. The cost of conducting rural outreach was \$650/county, plus the cost of printed materials. Adhesive telephone stickers cost 1/4¢ each and EMS fact sheets 1/2¢ each when ordered in large quantities through the Government Printing Procurement Office.

C.E. & I., Ste., Adm.

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EMS CONSUMER EDUCATION MANUAL

Problem: One of the greatest potential benefits per dollar invested in EMS system development may be in improving public awareness and preparation for emergency situations. There are very few published materials to help local consumer groups to organize public education programs.

Strategy: A consumer conceived and consumer sponsored health education pilot project was supported through a California Regional Medical Program grant. Volunteers and staff consulted and involved people and agencies at all levels of the EMS system throughout California.

Results: A tested product is now available that is both cook book and reference work. Most important, it is a faithful reflection of consumer interests distilled with provider capabilities. It is an example of health education in action, a dynamic process that involves people in changing attitudes and behavior about personal health concerns.

The Manual: It has been designed to assist concerned individuals in their efforts to develop and improve programs to educate and inform the public about emergency medical services availability and utilization. It is a reference source for planning and organizing public education programs and for determining educational messages in four broad areas: 1. Knowledge of EMS - What consumers should know about emergency medical services systems. 2. Access - What consumers should know about entry into the EMS system. 3. First Aid - What consumers should know first aid. 4. Prevention - What consumers should know about the kinds of emergencies that are likely to arise and about preventive behavior.

C.E. & I., Spec.

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PUBLIC INFORMATION/EDUCATION

The Sierra-Sacramento Valley EMS regional resident population is rural-urban and exceeds one million people. Tourist flow through the region easily exceeds two million annually; with concentrations in the high Sierras and Tahoe Basin. Project objectives call for public education and information which instructs this population on the existence and proper use of the EMS System.

Use of commercial television or film is unfeasible in this region because of the costs, lack of public service air time, and adequate T.V. reception in some areas. Message content is often too specific for general broadcast throughout our region.

The Sierra-Sacramento Valley EMS project is currently utilizing a behaviorally oriented instructional media system on a pilot study basis. The system offers the following advantages: Professional quality media at low cost, Systematic Methodology, Locally produced messages, Elimination of dependency on commercial T. V., Evaluation and Data Storage.

Summary - Data collected through this pilot project will provide a measure of the systems informational, logistical and economic feasibility for use on a region wide basis. This system of Data Based Instructional Media Production may offer operational solutions to rural-urban PI/ED problems which is significant to national EMS goals.

C.E. & I.

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THE EMT: AN UNTAPPED PUBLIC EDUCATION RESOURCE

Establishes need for EMS information to be made available on continuing and programmed basis to the public.

Traditional mechanisms of information transmission discussed with inherent weaknesses noted.

Focus placed on personal interacting of EMT and those he serves with his skills. Utilization of EMT as best manpower available nationwide to act as EMS information source for consumer because of his physical placement both on scene and during an emergency in his daily activities as a citizen of his community.

Appreciation of value of EMT by citizenry and position of respect in which he is held.

General lack of optimum use of Emergency Medical Technicians as EMS systems information disseminators. Suggestions included stimulating EMT to become a local EMS spokesman on a person to person basis.

C.I.&E., Pers., PSA

Janet Schwettman
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EMS - REACHING THE PUBLIC

Children between the ages of 5 and 18 make up nearly one-third of Delaware's total population. In an attempt to reach almost 30% of the state's population, the Office of Emergency Health Services in cooperation with the Department of Public Instruction, has developed an emergency medical services information program in the school system.

The program begins in kindergarten with a delightful character named "AMBI", a cartoon ambulance. A curriculum has been developed using Ambi's Safety Program which includes tips on how to prevent accidents, safety procedures, how to act in case an accident occurs, and how to report an emergency. Kindergarten students are taught such basics as their address and how to dial a telephone in order to get emergency help.

Elementary school curriculum begins with minor first aid procedures. Minor cuts and bleeding are discussed. Such topics as water safety, fires, and poisonings are discussed. Mouth-to-mouth resuscitation is introduced to third grade students. Students in junior high school are prepared for babysitting. As the students progress through school, the course provides for reviews and additional training and study.

A positive attitude toward safety needs to be established in the early grades as a foundation for the driver education program in the high schools. Therefore, this course is reviewed in Driver Education training.

Finally, high school juniors and seniors are offered the state's Emergency Care I course.

Through continued use of this program, a large percentage of the Delaware population will be educated in emergency medical services.

CE&I, Ste.

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A HOUSEHOLD SURVEY OF CONSUMER KNOWLEDGE AND ATTITUDES

A household interview survey of actual and potential consumers of emergency medical services was implemented to identify their range of knowledge of and attitudes toward the Emergency Medical Services (EMS) system.

Process - A survey instrument was developed. A biostatistical consultant worked on the technical aspects of the survey process. Staff identified, recruited and trained volunteers to conduct the survey.

Survey Results - In the majority of those persons sampled, the primary deficiency in their understanding of EMS in Ventura County was centered around accessing the EMS system. Individuals were not only unclear on how to obtain ambulance service but they also stated they would call friends, neighbors or relatives first rather than fire, ambulance, or police services if they needed emergency help.

Analysis of the Ventura survey experience suggests nine steps for other communities considering implementation of an EMS citizen survey. Their primary recommendation is to thoroughly investigate all previous work done in the field to avoid expensive duplication of effort.

Outcome - With survey data accumulated and a growing community concern for public education in this area, the design and implementation of a citizen education program was a logical progression. The Task Force realized that it could not influence a simplification of the telephone system and decided to approach the educational effort on an individualized, geographical basis. A leaflet for general distribution is now in production, a script has been written for a Tel-Med tape, and efforts are being made to develop a slide series.

CE&I., Eval.

Carolyn Clarke
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EMS Public Education in Ventura, California

Early in 1975, the Ventura Health Alliance received a six-months' grant from California Regional Medical Program to initiate a county-wide EMS public education program. The county's Emergency Medical Care Committee had recognized the need for public education as evidenced by results of an EMS Consumer Survey sponsored by the County of Ventura, the Heart Association, and the Ventura Health Alliance.

An EMS Educational Task Force was organized as a subcommittee to the Emergency Medical Care Committee. The composition of the Task Force is a crucial EMS issue which had to be resolved before a major portion of the program can be implemented, i.e., the myriad of emergency telephone numbers in the county; the process the group utilized to develop goals and activities; the goals the group decided to pursue; the progress toward reaching those goals; and the problem regarding funds designated for use for educational materials. These items should be of value to other areas beginning an EMS educational effort.

The group did not meet after June of 1975. Several agencies and organizations represented on the Task Force continued their public education efforts during the past year.

CE&I., Cou.

Ruth Simerly
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THE EDUCATIONAL COMPONENT OF AN EMS SYSTEM

The finest emergency medical service system in the world cannot prevent premature deaths and disabilities--its major goal--if its capabilities are not understood and utilized by people comprising the service population.

Elementary? Of course, yet consumer education can be overlooked in EMS system planning, development and implementation. This is not happening in Georgia where a public information/education program has begun under Medical Director Charles B. Mosher, M. D.

Accidental injuries normally result in systems utilization; critical medical illnesses may not. Therefore, heart attack is receiving priority attention in Georgia.

Heart disease is the state's number one killer. The annual death toll stands at 12,000 lives, and slightly more than 50% are believed to result from first attacks. Obviously, Georgia people either do not recognize the occurrence of heart attack, deny the medical implications or fail to act appropriately.

A multi-media approach is being used to increase recognition of symptoms of heart attack and to encourage appropriate response when suspect symptoms occur; i.e., call an ambulance immediately.

The Georgia Heart Association and Emergency Health are discussing a change to the "recognition and response" approach instead of attempting to reach a private physician first, or a hospital emergency room via private automobile. The treat of cardiac arrest to an unattended patient is being stressed.

CE&I., Org.

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BASIC LIFE SUPPORT IN OFFICE BUILDINGS

PROBLEM: Approximately 60% of coronary deaths in the United States occur outside of a medical facility. Advance Life Support via Mobile Intensive Care Units (MIC) can dramatically reduce this mortality rate if the victim is treated within the critical 4 to 6 minutes following clinical death before irreversible cellular death occurs. However, in high rise buildings in Chicago as in other metropolitan areas, although MIC units are operational they are frequently unable to reach the victim within 4 to 6 minutes.

GOAL: To provide Basic Life Support (CPR) in high rises within the critical time limit, in order to sustain life in a pulseless, non-breathing individual until the arrival of an MICU.

STRATEGY: Pilot Program: Public Safety Officers Foundation offered all employees of the Old Republic International Corporation building a five hour CPR class.

RESULTS: Teams of rescuers trained in CPR were available at the side of a victim with a maximum of 90 seconds. Re-testing of rescuers took place at 6 months and only 17 persons requalified. Causes: 1. skill deterioration, 2. normal attrition of personnel, and 3. lack of interest for participating in program.

As of this writing, no persons in the Old Republic building have required resuscitative skills. However, in the past year PSOF has trained rescuers in twelve other Chicago high rises and saves have been effected including a pregnant woman (counted as a double save).

PE&I., Pers.

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EMS, PEOPLE, AND PRINT

The public's use of emergency medical services (EMS) is marked by extremes. On one hand, people are reluctant to enter the EMS system; sometimes the delay is fatal, as in the case of many heart-attack victims. On the other hand, people use ambulances and hospital emergency rooms when the problem is not really emergent. How can we remedy this?

The answer is to give the public specific, detailed, practical education so they will know how to recognize what is and is not an emergency; the kind of help to seek; how to obtain it, and what to do until help arrives. All media of communication should, of course, be used in this effort but print has unique advantages in that it alone yields something that can be used not only to convey new information but to serve as a permanent personal reference. Moreover, information in print can be tailored specifically to the age, educational, and socioeconomic levels of the different audiences who need and use EMS. Language barriers can also be easily overcome.

Print media can also be used to apply pressure to governmental bodies to persuade them to regard emergency medical services in the same light as police and fire protection, and to give them the same kind of support.

PE&I, Cm/Pr.

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EMS PUBLIC EDUCATION AND INFORMATION

THE PROBLEM

Development of a comprehensive EMS public information and education program requires consideration of many factors, including degree of consumer involvement, target groups, utilization of the media, message delivery, and selection of program elements. Often, due to a lack of familiarity with other programs, EMS public information specialists needlessly duplicate efforts of others working in the same area, overlook successful approaches implemented in other areas, or initiate programs proven to be ineffective in other areas.

PROBLEM SOLUTION

Through joint efforts of the Northern California Emergency Medical Care Council and the California Regional Medical Program, a task force was established comprised of public information specialists from various EMS related organizations in California. The task force met several times during 1975 to share experiences and develop a comprehensive EMS public information and education manual with widespread applicability in rural, suburban, and urban EMS systems.

RESULTS

An "EMS Consumer Education Manual" was published in October, 1975, covering the following topics: 1) Planning the EMS Public Information and Education Program; 2) Basic Program Elements; 3) Delivering the Message; and 4) Different Community Approaches. It also includes samples of EMS public information and education materials and programs developed by various organizations throughout the United States.

Copies of the manual may be obtained by contacting:

PE&I

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INDEPENDENT REVIEW AND EVALUATION

PHYSICIAN AND NURSE EDUCATIONAL SURVEY

The assessment of hospital emergency care capabilities, combined with an Office of Emergency Medical Services-sponsored statewide survey of the educational backgrounds and interests of emergency department physicians and nurses, point to a need for continuing education programs in emergency medicine in order to assure a basic level of competence and knowledge in all emergency departments across the state.

In March, 1975, the Office of Emergency Medical Services (Massachusetts Department of Public Health) sent surveys on continuing education to the MD's and RN's working in the emergency departments of all acute-care hospitals in Massachusetts. In addition, a short version of the physician survey was sent to the chief emergency department physician in each institution. This survey was the first in Massachusetts specifically on emergency medical education and the first distributed to physicians statewide on any educational topic in over four years. The purpose of the surveys was multi-fold: (1) to determine particular interest in refresher education in both manipulative and clinical skills; (2) to correlate interest in continuing education with professional background, membership in specialized associations (such as EDNA or ACEP), time spent per week in emergency medical practice and so forth; and (3) to ascertain preferences for course organization (size, frequency, etc.), location, use of laboratories and other format options.

The volume of survey responses received increases as one moves away from Boston; in many smaller hospitals, nurse survey returns approach 100 percent and follow-up discussions indicate that many head nurses and physicians hope OEMS will fulfill educational gaps which cannot be met within the local institutions.

In general, interest was highest in trauma and cardiac areas and in techniques and knowledge essential to stabilization. As telemetry becomes more widespread, EKG familiarity will be essential.

The results of the surveys are being used in planning the RN and MD continuing education programs.

Eval., Res., Pers.

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DEVELOPMENT AND UTILIZATION OF CLINICAL ALGORITHMS FOR EMS PERFORMANCE ASSESSMENT

With the passage of the EMSS Act of 1973 and the emphasis on pre-hospital emergency care, substantial resources have been invested in the training of EMT's. To date, however, there has been little systematic assessment of their performance.

In a research project, submitted to the Bureau of Health Services Research, H.E.W., the Center for the Study of Emergency Health Services seeks to address this issue. Clinical algorithms (explicit protocols in a branching logic format) will be developed for several clinical conditions. The research will seek to identify what factors contribute to variations in the level of performance. In addition, the impact of refresher training will be assessed.

This project will develop a research tool that may be adapted to performance assessment of other EMS personnel. Also by identifying the effects of various structural factors on performance, results can help to structure more effective EMT and paramedic programs.

Eval., Res.

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Center for the Study of
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EVALUATION OF EMS SYSTEM USING UNITS OF CARE

Evaluation of the EMS System to determine whether the "EMS Systems Act of 1973" had some effect on morbidity or mortality of acutely sick and injured patients or an evaluation of the level of care given to acutely sick and injured patients, compared to some standard of care, has been negligible.

Attempts have been made by professional evaluation people and firms, but have often bogged down in some microscopic problem such as: How do Spanish speaking indigents communicate to a 911 Center in the Southern Half of "X" County?

If we are going to evaluate an EMS System, we first must define the system. One definition might use "Units of Care." If Units of Care is acceptable with its 10 components, we then have 10 check-points, or divisions, of the System.

Evaluation of the EMS System should not be or become a peer review function or a regulatory function, but should indicate System weaknesses. Competence is an issue for like professionals through their own review boards.

Evaluation should address the Systems approach, broad in scope but meaningful in results

It is the opinion of this writer and some professional evaluators that "Units of Care" could be developed into an effective evaluation design, easily understood and reasonably implemented.

Eval., Spec., Adm., SMRK

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EVALUATION - INTERNAL OR EXTERNAL?

In dealings with seven current EMSS 1203 and 1204 grantees, it has become apparent that initial confusion existed regarding the "real" intent and "value" of evaluation. Statements in the Act itself and subsequent EMSS Program documentation have not totally clarified the issue. Specifically, any efforts on the part of an individual or organization, external to an EMSS project, to provide only an independent evaluation must result in virtually useless documentation. The value of an independent review and evaluation, as called for under Component 13 of the Act, lies in the feed-back to project management on matters which directly influence their decision-making. This lack of a feed-back can result in marginally useful information.

In providing this external evaluation, information for internal project evaluation on a continuing basis is a must. Among the items which have been highlighted in assisting EMSS project management in full-filling their functions are the following:

1. A clarification of general project objectives into ones whose achievement can either be measured or observed;
2. An identification of evaluative measures which will assist project management in assessing the extent to which project objectives have been achieved;
3. A clear cut linkage between project activities and the accomplishment of project objectives;
4. The development of a minimum set of project management report formats which can provide timely and accurate information on which decision can be based;
5. The introduction of visual exhibits which serve to highlight changes in the general behavior of the set of quantitative evaluative measures;
6. The desirability for a monthly progress letter briefly indicating what was accomplished during the month, what problems were encountered, what was done to correct these problems, any modifications to prior plans for the following months, and an indication of how expenditures are going relative to plans.
7. The creation of an awareness that involvement is vital of personnel within the system as forms and reports are developed to assure both understanding and cooperation;
8. The minimization of the N.I.H. (not-invented-here) factor as pre-hospital, emergency facility, and critical care unit reporting forms are developed (consider using others).

These eight items have proven valuable for internal and external evaluation.

Eval.

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INFORMATION SYSTEMS FROM WHICH TO EVALUATE EMS SYSTEMS

In order to critically evaluate a system's functional capability, it is necessary to first define the system particularly the information collection, storage and distribution component. To be useful as an evaluation tool, the information system must be "functionally complete", and easily accessible especially regarding data entry and retrieval. Thus, the problem is reduced to establishment of a DATA-BASE and an information system useful for effective manipulation of said data base.

There are many techniques available for data-base definition. Unfortunately they all seem to generate exhaustive sets of information with attendant large scale storage and little use. Data-base definition is greatly enhanced by a systematic approach that differentiates "needed information" from the complete available set. The technique used to accomplish this differentiation is "Information Utilization Monitoring" and its background, concept and application will be discussed.

As EMS systems develop and evolve, a useful and functional information system is necessary to provide an evaluation of services both by unit, by unit type or across units. A definition of a modular information system suitable to this application will be presented and alternative methods for implementation described. Clearly, to be effective, the information system to provide the evaluation must be implemented at the onset and utilized recursively - it must be an integral part of any EMS design. The rationale and philosophy behind this concept will be presented and discussed.

Eval., SMRK

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EVALUATION OF THE NORTHEAST FLORIDA 8 COUNTY EMS PROJECT

The study approach involved initial assistance to Project Management in the determination, definition and statement of Project goals, followed by development of a local and regional system description and an evaluation plan. Project Management was assisted as required in development of data collection forms and identification and correction of normally encountered field problems relative to forms completion. Project reporting was defined based on the forms and supplemented where necessary and possible by manual gathering of police data, vital statistics, medical examiner data and emergency room and hospital data.

A formative evaluation of project goal achievement was performed. Additional analysis and interpretation of project data covering the formative aspects of regional and local system development were categorized by Management and Organization, Communications, Transportation, Education and Training of EMS Personnel, Emergency Departments and Public Education and Information.

Analysis and interpretation of the Emergency Health Care Delivery Component operational aspects are limited primarily to pre-hospital field treatment and operations and organize the evaluation by input, process and output measures.

The final report is in three volumes: Volume I, Evaluation of the Northeast Florida Eight County Emergency Medical Care Project (HSM 110-72-344); Volume II, Appendices; and Volume III, a supplemental report covering changes in the Emergency Department of a major regional medical center, a study of region-wide Acute Myocardial Infarction patients and, additional input, process and output measures for the Emergency Care Delivery Component covering the first quarter of 1975.

Eval.

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EVALUATION OF BURN PATIENT CARE DELIVERY

The results of treatment of the severely burned patient are not as good as they could be. One of the obstacles to improving treatment is the lack of effective standards of care. Standards of care have not been developed because data was not available to establish baseline results of therapy resulting from the current treatment. The National Burn Information Exchange (N.B.I.E.) was founded in 1964 and several of its goals are; 1) to establish "baseline results of burned patient care" by citing specific results taht can be achieved under optimum conditions; 2) to provide information for the improvement of the burned patient's care, by reporting those specific techniques and principles that have been proved valuable in the Burn Centers, Units and Programs; 3) to further develop the expertise of the N.B.I.E. membership by comparing methods and results from larger number of cases.

The cooperative effort by the many physicians and burn care facilities listed in this article now make it possible to have reliable baselines upon which improved treatment can develop.

Eval., Org., CC

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EVALUATION

East Central Michigan Comprehensive Health Planning Council is a subgrantee of the Michigan Department of Public Health, who is responsible for independent review and evaluation. Emergency Medical Services evaluation is performed on an ongoing and consistent basis.

Elaborate data charts have been compiled quarterly to demonstrate changes. Areas which have been addressed are: Public health; physician, nurse, and emergency room manpower; vehicle and types of ambulances; prehospital and in-hospital training levels; hospital emergency room facilities; public safety agencies; hospital and ambulance communication centers/operations, frequencies, and equipment levels.

Validation of the data has been achieved through onsite visits by the EMS staff and through outstanding survey questionnaires, such as:

- The computerized emergency room abstract survey.
- The hospital emergency department ICU/CCU survey with onsite visits.
- MDPH communication survey with onsite visits.
- Training level telephone survey.
- Burn, cardiac, and psychiatric/substance abuse questionnaires.

All questionable data was cross checked. For example, training manpower names are documented and compared with the graduate lists.

Eval.

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USE OF PERFORMANCE GUIDELINES AND TERMINAL PERFORMANCE OBJECTIVES IN TRAINING OF EMTS.

The length of a training program for EMTs does not assure that they are prepared to treat acutely ill or injured patients in the field even under the general supervision of a physician, and certainly does not necessarily attest to their ability to perform psychomotor skills necessary in such care. In order to standardize training and therefore be able to evaluate skills in a meaningful fashion, specific performance guidelines for each psychomotor skill required of the EMT must be developed. The length of the training program will then be a reflection of the time necessary for the EMT to be able to perform each skill to the satisfaction of the instructor rather than an arbitrary number of hours. Performance guidelines must not only enumerate the step by step procedure but also set the procedure into a proper time frame. The American Heart Association has developed performance guidelines for each of the psychomotor skills required in the delivery of basic and advanced cardiac life support.

Eval., Pers., Org.

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A CARDIAC ARREST RECORDING SYSTEM

This abstract will describe a project funded by the Colorado Heart Association, developed and currently being tested in the Emergency Department at Colorado General Hospital for record keeping during cardiac resuscitation.

Our project tries for an automated system which records the vocal direction of the resuscitation by the team leader and simultaneously records the electrocardiographic monitor pattern. In the Emergency Department the senior medical resident assumes the immediate direction of the resuscitation attempt. By using a wireless microphone worn about his neck and using his discussion of physical, laboratory and treatment data for recording, we are able to incorporate several types of data which is locked temporally with ECG monitor pattern.

The microphone signal travels through an FM receiver, picks up a 15 second time pulse indicator, and proceeds into the first channel of a two-channel cassette recorder. The impetus for this project stems from an interest in the sudden death patient, our desire to do more detailed projects concerning their treatment and our inability to obtain accurate and detailed information.

This project, if successful, will act as a stepping stone from which other projects can be based and an additional spin-off will be a mechanism for audit and teaching of the care of the sudden death patient.

Eval., CC., Comm.

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THE ABBREVIATED INJURY SCALE - AN INJURY SCALE FOR EMS

Research accident investigators, worldwide, use the Abbreviated injury scale (AIS) for ranking of injuries sustained by accident victims. The AIS was developed by a group of physicians, engineers and other researchers who by consensus ranked injuries by severity. The criteria of Energy Dissipation, Threat to Life, and Permanent Disability or Impairment were used. The scale was originally published by the American Medical Association and the Society of Automotive Engineers and was used initially by the multidisciplinary accident investigation teams funded by the U. S. Department of Transportation, various European governments and automobile manufacturers who conducted accident research. In recent years, the scale has been used in animal and cadaver experimental research and in clinical research including Emergency Medical Services.

Examples of the AIS are as follows:

- AIS 1 Lacerations, superficial, not into subcutaneous tissue
- AIS 2 Concussion with less than 15 minutes unconsciousness, no neurological signs, with or without skull fracture
- AIS 3 Fracture midshaft of femur with displacement
- AIS 4 Ruptured spleen
- AIS 5 Aortic laceration
- AIS 6 Decapitation

Continuous surveillance of the AIS is maintained by the Committee on Injury Scaling of the American Association for Automotive Medicine. The most recent revision of the AIS is available from Health and Safety Associates, Inc., P.O. Box 222, Morton Grove, Illinois 60053 at a cost of \$3.00 per copy (prepaid).

Eval.

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Impact of a Statewide Trauma Program in a Locality

This is a longitudinal study in a small midwestern city of changes associated with the inauguration in the locality of the trauma program of the State Health Department. The program involved designating one of the two hospitals as the Trauma Center (TC). Data was gathered in both hospitals, before and after the designation, from log books, interviews with all patients using the ER's during four weeklong periods between 1972 and 1975, and direct observation. Over 1,000 interviews were completed. Results six months after the TC had been in full operation showed emergency services were delivered more efficiently, directly and professionally. The total caseload in the designated hospital increased dramatically in the year after designation and consisted of a more highly educated population, but was more likely to be made up of "routine" than urgent or emergency cases.

Eval., Res.

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EVALUATION PROJECT FOR ARKANSAS HEALTH SYSTEMS FOUNDATION

The Arkansas Health Systems Foundation is currently in receipt of a grant that was made under provisions of P.L. 93-154. One of the requirements placed on the grantee in the development of an EMS system is the provision of "...periodic, comprehensive and independent review and evaluation..."

As a result, Minnesota Systems Research, Inc., a private non-profit research organization, is to provide to the Arkansas Health Systems Foundation a "...review and comment upon, plus provide consultant assistance on design evaluation methodology..." on four major program areas of evaluation:

1. Program objectives
2. Subsystems operation
3. Programs impact if the "tracer diagnosis" method were to be used
4. Top level EMS management operations, including structure and role of Arkansas Health Department operations, staffing patterns and executive personnel requirements, role of the Governor's EMS Advisory Council, role of the Arkansas Health Systems Foundation and its Board of Directors, and all aspects of top level EMS management, which, in the opinion of the consultants, deserves analyses, evaluation and recommendation.

By means of this contract with an independent and unrelated organization, the Arkansas Health Systems Foundation as grantee is evaluating portions of the Arkansas EMS program and meeting the requirements of the law for "independent review and evaluation".

Eval., Fed. \$., Ste.

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"DECISION-RELATED RESEARCH ON TECHNOLOGY
UTILIZED BY LOCAL GOVERNMENT -- RESCUE OPERATIONS"

Research on rescue equipment utilized by local rescue squads and EMS systems is being conducted by The BDM Corporation under the direction of the National Science Foundation, Division of Advanced Productivity Research and Technology. The technologies addressed include rescue/extrication tools, operational support equipment, and rescue vehicles.

The research completed to date has been directed toward: 1. operating conditions germane to the selection and operation of rescue technologies 2. equipment/vehicle performance functions and associated attributes required for the subsequent specification of performance standards, 3. a series of optimal extrication equipment packages providing maximum effectiveness at specified costs, 4. the life cycle cost for rescue vehicles of varied sizes as well as the methodology by which these costs are determined, 5. an estimate of the existing market for rescue vehicles and equipment and 6. the experimental tests required to provide quantitative documentation of equipment and vehicle performance capabilities.

The continuation of this research in a second phase has been identified. The primary tasks in this future research will include: 1. the execution of the experimental tests, designed in the first phase, encompassing field testing of equipment performance and the use of computer simulation for the evaluation of vehicle performance, 2. the establishment of performance specifications and standards where applicable, 3. the expansion of the optimal packaging algorithm to reflect a single, overall measure of effectiveness for the entire rescue unit, 4. a detailed survey and improved estimate of the market for rescue technologies and 5. the development and dissemination of a User's Manual.

Eval., Eqmt., Trsp.

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EMERGENCY MEDICAL SERVICES PATIENT OUTCOME MEASUREMENT

The Emergency Medical Services Systems (EMSS) Act has resulted in an increase in Federal expenditures for emergency care. However, methods of evaluation are required to assure that these funds are invested in innovations and delivery systems which will meet the objective of saving lives. The state of the art is not advanced enough to provide a uniform and readily usable measure of patient outcome.

Currently available methods for patient outcome measurement include mortality, diagnoses, urgency of encounter, treatment provided, and patient disposition. These measures, unfortunately, tend to be indirect indicators of patient outcome and often lack specificity to the contribution of the EMSS to patient health status. More recent measures developed to add sophistication and sensitivity to evaluation are biomedical indicators and functional measures. These measures record vital signs, patient functional abilities, and related data, and are the most direct indicators of physiological status. However, they are subject to considerable variability and are often only used at an individual point in time, thus indicating patient status in a status rather than dynamic context.

While patient outcome measurement requires considerable further development before having wide applicability, this may be a desirable approach to evaluating the impact of the EMSS. A combination of existing methods, recorded routinely over the time interval of treatment and with follow-up evaluation, may provide the eventual solution to the evaluation problem.

Eval., SMRK

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The Role of Evaluation in the Development of an Emergency Medical Services System.

An important aspect of the process of planning and implementing changes in the EMS System is evaluation. System-wide interventions must be assessed in terms of their impact upon patient care. Only by using patient outcomes as an indicator of system performance can the quality of care be effectively determined. The Albermarle County Virginia Experimental Medical Care Review Organization (EMCRO) developed. Defendable criteria based upon both the clinical experience of physicians and a critical review of the literature. The resulting guidelines for patient management consist of diagnostic and therapeutic processes which are of proven benefit to the patient. Any process which has not been shown to improve patient outcome is either excluded or clearly identified as unproven but possibly effective. The EMCRO physicians have also collected data about patient outcomes. The criteria generated using the results of the data collection and analysis are termed validated outcome criteria. Validated or defendable criteria can be developed for emergency conditions and the performance of the EMS System assessed. In this manner new technology and techniques can be examined in terms of their impact upon patient outcome.

Eval.

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THE ILLINOIS REGIONAL TRAUMA SYSTEM:
A CURRENT EVALUATION

This study was designed to assess the systems approach to emergency medical care in Illinois in terms of patient outcomes -- specifically, to evaluate system impact on mortality rates resulting from trauma.

The assessment of the Regional Emergency Medical Service system was accomplished through an expanded highway fatality study for the Region I-B. This fatality study was supplemented by a computerized analysis of all trauma patient records in the Region for those patients entering the system as a result of vehicle-related accidents. The evaluation period for this study was January 1, 1971, through June 30, 1973 and consists of three periods: the baseline period, the implementation period and the operational period.

Thirteen hundred forty-nine patient records or five percent of the total vehicle-related deaths and injuries in the Region during the implementation and operational period were examined.

The data from the highway fatality study indicates that the system may well have had a favorable impact on mortality rates resulting from vehicle-related trauma. In comparing the operational period of the study to the baseline and implementation periods, the percentage of deaths to accidents shows a significant decline. Over the same period, the percentage of deaths to injuries, while showing a non-significant decline does, nonetheless, reflect a decrease. These decreases are emphasized by an increase in reported accidents in the Region and travel for the state as a whole during the evaluation period.

Eval., Ste., CC.

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AN EVALUATION OF THE DIAGNOSTIC ABILITY OF ADVANCED EMT'S*

The diagnostic ability of Advanced EMT's must be acute if emergency medical service systems are to function at anywhere near their optimal level of efficiency. This study compares the initial diagnosis of the Advanced EMT with that of the emergency department attending physician for 147 patients transported to a major university-based hospital during 1974. The sample accounts for 46% of all patients receiving pre-hospital emergency care by EMT's and transported to this hospital for 1974.

A physician's assistant was consulted to determine whether or not the EMT's had made a correct diagnosis and given proper treatment to each patient. The results indicate that the EMT's made correct diagnoses for 75% of the cases, incorrect diagnoses for 17% of the cases, and no diagnoses for 8% of the cases. The EMT's provided proper treatment in 63% of the cases, improper treatment in 8% of the cases, and no treatment in 29% of the cases. It is important to note that although 17% of the EMT's diagnoses were incorrect, treatment was incorrect in only 2% of those 17%.

The study indicates that the Advanced EMT's, probably because of the nature of their training, are more capable in treating extremely ill/injured patients than moderately or slightly ill/injured patients.

Eval., Pers., Md.C.

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A KNOWLEDGE AND SKILLS EVALUATION

A quality emergency health care system rests heavily on the quality of the people in the system. Prehospital care is largely the responsibility of Emergency Medical Technicians (EMT) so that his/her training is of prime importance. This study evaluates the effectiveness of EMTs training in western New York by obtaining independent measures of:

1. the knowledge retained by EMTs, measured by a nationally used paper and pencil test,
2. the performance of EMTs in real situations, measured by physician observers in six emergency departments and by supervisory ratings.

Eleven ambulance companies, selected to be representative of rural, urban and suburban locations cooperated in the study. Commercial, volunteer fire, independent volunteer, and hospital-based ambulance organizations were sampled.

The knowledge test showed that knowledge retention compared favorably with other regions in the U.S. There were no significant differences between scores on this test due to sex, type or location of company, indicating that knowledge retention was uniform as well as good.

Performance was generally rated high by supervisors and physicians, although there was no significant relationship between the two separately derived individual performance scores. There was a small significant relationship between knowledge retention and supervisory ratings in the positive direction, indicating the paper and pencil test was a valid measure when supervisory ratings were the criterion.

Recommendations based on an analysis of the results and interviews with persons concerned with EMT training were:

1. More course emphasis should be given to the following areas: EMT responsibilities, splinting and fractures, cardio-pulmonary resuscitation and mental health.
2. Instructor skills should be improved by instructor training.
3. Physicians should have a better briefing prior to teaching to ensure consistency of treatment guidelines.
4. The emergency department observation section needs closer organization.

Eval., Pers., Trsp.

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ORGANIZATIONAL EVALUATION OF EMS DEMONSTRATION SITES

This research, supported in part by the National Center for Health Services Research, the Health Services Administration, and the Michigan Association for Regional Medical Programs, concerns the evaluation of five federally funded EMS sites (Illinois, Arkansas, Jacksonville, S.E. Ohio, and San Diego) as well as a general overview of EMS in a non-demonstration setting (Michigan). The evaluation was carried out in early 1974 through site visits, interviews, readings, and attending various conferences and lectures.

The central problem of emergency medical services is a lack of effective organization. Most studies have focused on a single model or system rather than an examination of alternative organizations or a comparison of systems. Of the four systems segments of EMS examined, two, access-dispatch-communication and emergency room-hospital support facilities are considered as conducive to systematization and promote co-ordination. The remaining two, transportation and personnel training are not as conducive to systems growth.

The paper then continues with a general overview of each of the five demonstration sites, highlighting aspects of each site which encouraged or impeded the development of its EMS system, and draws some conclusions. Although each of the sites attacked its organizational problems differently, in general certain EMS functions such as hospital co-ordination are best accomplished at a state-wide level; other functions such as access-dispatch-communication are best co-ordinated at a regional (multi-county) level; and still others such as transportation are best left to each local community.

The paper and report are in three versions:

- a). Report to the Michigan Association for Regional Medical Programs.
- b). The Organization of Emergency Medical Services, Parts I and II.
- c). Health Care Delivery Systems: EMS as Prototype.

Eval., Fed. \$.

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EVALUATION METHODOLOGY FOR DETERMINING REGIONAL IMPACT OF FACILITY CATEGORIZATION FOR CRITICAL TRAUMA PATIENT

The intent of the Emergency Medical Service (EMS) Act of 1973 (P.L. 93-154) and the goal of the National EMS program is to provide early and effective care to all categories of needy emergent and critical patients on wide area and regional basis. It is also the intent to favorably impact the current unacceptable mortality and morbidity rates that presently exist across the country.

The critically injured trauma victim is one of the key planning operations and program evaluation patients that are being utilized to conceptualize, provide improved emergency and critical care for and to monitor to assess program success of a Regional Systems Approach.

The key elements to developing a Regional Appraisal are listed: 1. Determining Regional boundaries for program responsibility, 2. Defining patient population to be treated, transported, and triaged by some specific indicators such as (a) Mechanism of Injury, (b) Type/Location of Injury(s), (c) Magnitude of Injury(s), 3. Establishing a Systems Concept and a Descriptive Narrative of : (a) How the System should respond to these chosen victims - from the primary, at scene care and onward through the Multi Hospital/critical care unit phases, (b) Consider threshold at patient parameter and systems constraints of the intended response, (c) Developing a data base and collection system and (d) establishing the Scientific design of the intended study in incorporating the above considerations.

In the initial year(s) of a Regional trauma system the concept, operations narrative and patient compliance distribution and redistribution phenomenon can be measured. Subsequent years the effectiveness of this approach (lives saved and morbidity lessenes) can be further evaluated as system stabilization occurs. Some of the key trauma patient categories that land themselves to this Evaluations approach are the 1. Multiple systems injury by violence, and vehicular accident (Boyd/Sheaff, Illinois, Chicago), 2. The Spinal Cord injury (Meyers, Chicago), 3. Central Neurologic injuries and 4. Major Burns (30%).

Only by showing that Regional impact occurs for all critical trauma victims at risk (and others) and that an effective care and triage system can a Regional Trauma - EMS Systems Approach be justified. Therefore the entire population chosen all are an appropriate subgroup must be evaluated within the area-region of program responsibility. Early and current experiences in Regional Trauma System care will be presented.

Eval.,Fc./Ct.,CC,Reg.

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THE EVALUATION WORKBOOK FOR EMERGENCY MEDICAL SERVICES

The U. S. Department of H.E.W., Public Health Service, is responsible for funding a major health initiative to improve the delivery of emergency medical services. A significant Congressional appropriation has been made and it appears that additional Federal support will be forthcoming. This support is stimulating allocation of considerable local resources. As a result, emergency medical services (EMS) is rapidly becoming the third public service comparable with fire and police activities in the community. Consequently, a major responsibility of the Public Health Service is the evaluation of the EMS initiative in order to determine the impact of the assistance provided under the EMS Act; develop a framework in which EMS systems may be evaluated in an independent fashion; assist in providing standardized information approaches to improve EMS system management; and provide leadership in strengthening future policy both for grantees as well as the Federal Government.

The government determined that the appropriate method to meet these general objectives was to first develop a minimum data set which would standardize the terminology and elements used by grantees in internal and external evaluation of their system. The second step in the process was to develop a Workbook for EMS Evaluation. A contract was let to Arthur Young & Company to develop the Workbook.

The Workbook was developed in 5 chapters:

- (1) Introduction - This section of the Workbook presents an introduction to evaluation including the state of the art of EMS Evaluation; the uses of the Workbook; and general instructions on how to fill out and use the Workbook. In addition, the reader is given an overview of EMS evaluation problems.
- (2) Narrative - The narrative of the EMS System is structured for the grantee to present a written discussion of the management and patterns of system operation and emergency medical care. The outline includes questions to answer in the written discussion. The outline is directed to obtaining current status and resources as well as future plans for management, systems operation and patterns of emergency care.
- (3) General Emergency Care - This chapter is designed to obtain inventory, process and compliance measures for the activities involved in a basic life support system. It is subdivided into 6 parts which include a Status Overview, Glossary, Resource Inventory, Process Measures, Compliance Measures and the section on appropriate methodology.
- (4) Critical Care Services - The first six sections are a Status and Glossary for each of the six critical care areas of Trauma, Burn, Coronary Care, High Risk Infant, Poison and Behavioral Emergencies. The last section is systems compliance measures, criteria and methodology for the six areas.

The paper will discuss the development of the Workbook and its uses.

Eval., Cm. Pr.

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The EMS act is unique in that it requires that in addition to ongoing evaluation as a management responsibility the grantee must have an independent evaluation of the program. The legislative act provided the broad brush from which to promulgate an approach to independent evaluation. Unfortunately, not only is there a paucity of experience in undertaking evaluation of health programs in general, but in arriving at methodological approach for evaluation and the subsequent independent evaluation. In this paper the problems of independent evaluation are discussed as based upon the EMS evaluation workbook developed for HEW, Division of EMS by Arthur Young & Company.

An independent review of the evaluation process can take the form of an audit. Such an audit review, in addition to being a grant requirement, serves to support the validity of the evaluation process for both the Federal government and the system itself. Validated evaluation results are then used in the policy and decision making process.

An independent review of a systems evaluation process would involve two major activities: (1) A review of the process and procedure for patient treatment from incident to outcome and identify the information collection points, staff responsibilities for information collection, reports and records used for collection, reporting procedures (periodic), and data analysis methods; (2) A complete random check of case records to determine whether procedures are fully complied with, records are completed timely and accurately, and data collected is compatible with identified measurement criteria.

The Workbook section dealing with quantitative measures lists and defines a set of criteria which would be appropriate for evaluating an EMS system. An individual system might develop a list with somewhat different elements, however, the working criteria should be displayed in roughly the same manner as the Workbook with definitions. The system should have a completed projected versus actual chart. The independent reviewer can then use this chart as the basis for an evaluation process audit.

The independent reviewer can perform the audit by sampling the criteria measurements listed on this chart and tracing those measurements back to the data collection stage.

Outside of these basic activities, the reviewer can audit any other facets of the evaluation process which seems appropriate, given the above review.

The audit or reviewer is basically trying to determine whether the evaluation process (and components) produces comparative measurements of the system which are fair and accurate. A statement to this effect would be required.

Eval, Cm.Pr.

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DISASTER LINKAGE

FEDERAL, STATE, AND LOCAL GOVERNMENT RADIOLOGICAL EMERGENCY RESPONSE PLANS
IN SUPPORT OF FIXED NUCLEAR FACILITIES

In its regulations concerning emergency planning, the Nuclear Regulatory Commission (NRC) requires that its licensees develop a supportive emergency preparedness interface between the emergency response organizations of the nuclear facilities themselves and the emergency response organizations of Federal, State, and local governments.

Information of potential importance to emergency planners is made available during the nuclear facility licensing process. Highly unlikely sequences of events are postulated and their potential consequences analyzed by the license applicant and by the NRC staff for each plant. For purposes of emergency planning relative to nuclear facilities, preparation is done for potential consequences of accidents. The NRC's expectations as to the likely consequences of accidents are represented in the Final Environmental Statement which is published for each plant.

The NRC recognizes that accidents with more severe potential consequences than design basis accidents can be hypothesized. Emergency plans properly designed to cope with design basis accidents would also provide significant protection against more severe accidents, since such plans provide for all of the major elements and functions of emergency preparedness. An added element of confidence can be gained, however, if States and local governments assure that their plans for responding to radiological emergencies are coordinated with their plans for dealing with disaster situations.

The Energy Research and Development Administration's Radiological Assistance Program, the Federal Interagency Radiological Assistance Plan (IRAP) and other radiological emergency assistance plans which are a part of the Federal capability, provide significant additional emergency resources in the event of a serious accident.

Dist., Pl., Spec.

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THE PILOTS VIEW OF THE DISASTER RESPONSE SYSTEM

One of the first initial rules taught by a Flight Instructor to a fledgling pilot is to "expect the unexpected". To be an Ace Pilot, you have to: Anticipate, Concentrate, and Execute.

The background of aircraft evacuation during an accident started with a single open cockpit Swallow Air Mail plane. Later, in the mother of the air transport fleet, the 21-passenger DC-3, the passengers had to evacuate the way they entered, through the main cabin door. In 1952, the 44-passenger United Air Lines DC-4 utilized the first evacuation chute and over-wing exit for evacuation in a series of thirteen tests at Cornell University. This set the present FAR Regulations requiring each new aircraft to be evacuated in ninety seconds, with one half of the exits inoperable.

The first simulated air carrier aircraft disaster drill was held at the Oakland Airport on May 1, 1971. This test proved that despite the FAR Regulations requiring each air carrier airport to have a written disaster plan, it was not a plan, unless it was tested to correct the faults.

With the advent of the wide-bodied jets, airports and communities have had to implement mutual aid mass disaster plans. The airport, municipalities, fire departments, police, hospitals, medical associations, civil defense, military, etc., have to pre-determine the three C's of disaster planning: Command, Communications, and Cooperation. This can, and has, and has not, been done depending on local jurisdiction and attitudes.

Slides and comments on recent problems in actual aircraft accidents will be discussed.

Dist.

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PREDICTION OF NATURAL DISASTERS: THE EXAMPLE SET BY LAVA EMERGENCIES

Natural disasters are a source of suddenly developed demands for massive emergency medical services. Because there are so many geographical locations in which these demands may occur, prior warning becomes a vital issue in resource allocation over time and location. Prediction of the exact time, location, and magnitude of any disaster would optimize allocation of EMS. At this time, all types of natural disaster are subjects of some form of research effort for the purpose of prediction and prevention. One example of natural prediction that has a history of success is the prediction of volcanic eruptions. Active research in predicting volcanic eruptions is continuing in the Soviet Union, Japan, the United States and Italy. Particular success in prediction of lava flow eruptions has been demonstrated in Hawaii. The summit eruption of Mauna Loa in July of 1975 and its previous northeast flank eruption in the 1940's were accurately predicted. The capacity to predict this kind of emergency drastically changes the threat to population by making protective measures possible.

The threat spectrum for both victims and EMS teams includes cinder inundation, projectile inundation, high temperature (1000oC) projectiles and lava, high temperatures gases (500oC), dense poison gas as well as the associated effects of earthquake and, in coastal areas, tidal waves. A classic example of volcanic disaster was the Martinique eruption in the late nineteenth century where the reported major casualties were in the tens of thousands of people.

Threat characteristics for representative volcano emergencies are discussed, in the context of the prognostication of disasters. Details of past experience are used to show the time and physical environments in which EMS will have to function.

Dist., Fed. Ag.

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The EMS Aspects of Major Disasters

There are two major differences between day-to-day EMS and EMS in a major disaster. One is that the case load usually is larger than the normal capacity of the EMS System. The second is that, unlike the day-to-day situation when the other emergency services—police, fire, etc.—give priority to assisting the Medical Services, in a major disaster each concentrates on accomplishing its primary mission. In such circumstances, the public safety and welfare may require the government to coordinate the unilateral activities of the individual emergency services because the day-to-day arrangements for operational coordination among them may not be sufficient.

The planning for disaster coordination by government is done by agencies with names like civil defense, emergency services, disaster planning—but names are not important. What is important is that, when necessary, a government can meet its responsibilities for the public safety and welfare by performing this coordination function.

The kinds of EMS questions considered by a government in developing a plan for the conduct of coordinated emergency operations are similar to those EMS planners must consider in developing a plan whereby the EMS System would deal with the mass casualties, natural disasters, and national emergencies. EMS planners, however, are concerned with medical requirements whereas governments are interested in operational interactions and overall requirements.

Governmental questions involve subjects such as arrangements for notifying hospitals of the mass casualty emergency or overall direction and coordination at the disaster scene. They include the relationship of a hospital disaster plan to those of other hospitals and the government emergency services, as well as problems associated with the mobilization of medical and other emergency manpower and resources at the disaster scene and, if necessary, the hospital level.

Dist., Fed. Ag.

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AREAWIDE MOCK DISASTER DRILL

On October 1, 1975, the Richmond metropolitan area hospitals conducted a mock disaster drill. While this drill was not as coordinated as it could be, it did much to inform the public of the EMS system since it was extensively covered by the various news media.

In an effort to achieve greater integration of system components in future drills, the Central Virginia Hospital Council asked the Central Va. EMS Council to coordinate future mock disaster drills. The Council will be working with the Disaster Preparedness Committee of the Hospital Council in the planning and coordination of a truly integrated community-wide hospital and transport service mock disaster drill where all the various emergency departments, rescue squads, and public safety agencies will be in continuous two-way radio communication with one another.

Before a totally regional drill encompassing all providers throughout the region can be conducted, two-way radio communications equipment must be installed in many of the mobile units operated by rescue squads in the rural areas of the region. For this reason, the Central Va. EMS Council has made the purchase of this equipment one of its highest priorities in the next year.

The drill being planned for 1976 will be more coordinated than this past year's drill as it will include the hospitals and rescue squads serving the metropolitan areas where two-way radio communication is established. Future year's drills will be expanded to include all EMS system components throughout the Central Va. EMS Region as two-way radio capability is implemented.

It is felt that a comprehensive regional disaster plan can be developed and then tested through mock disasters. The primary purpose of such drills is to evaluate the effectiveness of the total EMS system in providing emergency medical services in the region during mass casualties, natural disasters, and national emergencies.

Dist., Pers.

Central Virginia Emergency Medical
Services Council, Inc.
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EMERGENCY PROBLEMS FOR DISASTER PLANNING

Numerous studies of the health problems of natural disasters, particularly tornadoes were made during the 1960s. In almost every study, two problems emerged. First, a breakdown in communications, and two, a lack of direction in the field operations.

At the time of the occurrence, relatively few hospitals had radio communications and often the first warning of major disasters occurred when patients began arriving on their doorstep. Phone lines, if still existent, became clogged and no calls could go in or out. Even inter-hospital communications could not proceed because of the switchboards being tied up by requests for information.

This lack of communications prevented community rescue plans from being put into effect, and rescue efforts were most often disorganized with rescue parties covering the same area, improper triage and some hospitals immobilized because of great numbers of patients with other hospitals waiting empty-handed.

Mandates by the F.A.A. are now requiring airports to develop and more importantly to test disaster plans. Like the hospitals, these must involve community resources including health, law enforcement, traffic control, fire and civil defense. The newer, larger transports make it even more probable that there may be a large number of injured survivors on landing or take-off. Similarly, the growing wave of violence in America, with airport bombings, emphasize the necessity of a well-tested plan.

Shipments of radioactive and other hazardous materials continue to increase. Radioactive material presents a special hazard because of the dangers of contamination of ambulances and hospitals during the rescue effort. There must be a continuing effort to train rescue personnel in the handling of radioactive and other hazardous materials.

Dist., Pl., Spec.

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DISASTER SERVICES

The Los Angeles County Fire Department, although somewhat undermanned, is well trained, well equipped, and capable of rendering mutual aid. Our fire stations are strategically located throughout the County. Widespread disaster plans and reciprocal agreements are in effect to provide assistance as required.

Our rescue Squads provide a way in which mobile intensive care can be implemented in a widespread area and yet flexible enough to be used for many types of medical emergencies.

During the 1971 earthquake, the Los Angeles County Fire Department utilized a great deal of manpower and equipment to render the necessary services to the stricken area, especially in the Sylmar area. Olive View Hospital and Veterans Hospital were extensively damaged. This Department performed the rescue services by providing fire fighting equipment and personnel to physically remove debris while searching and extricating victims, heavy equipment to remove debris, helicopters to fly in triage teams and to fly victims to hospitals, paramedical personnel who rendered immediate aid during extrication and to assist these triage teams, plus the administrative and logistical support that was needed.

Health Services provided triage teams and necessary medical supplies to aid us in rendering the necessary services to the many victims of this earthquake.

The earthquake taught us valuable lessons in disaster planning. The Los Angeles County Fire Department and Los Angeles County Department of Health Services and other agencies work in a cooperative effort in planning and implementing of disaster operations. We have reached the point where Los Angeles County provides quality medical care to the victim in the field and expedites the transportation of victims to the proper medical facilities.

Dist., PSA

Richard H. Houts
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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 nationwide, 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.

Dist.

Gerold K. V. Klein, M.D.
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A PLAN FOR MEDICAL RESPONSE TO AIRPORT DISASTER

The need for a system of pre-triage at an airport: The outcome for the casualty often depends on the care received in the first minutes following the incident. This pre-triage care should begin at the time the casualty is first seen, through extrication, and until he arrives at the triage area of a hospital.

Many factors make it unlikely that teams of physicians and nurses will be present at this time: traffic, weather, security needs, and morbid curiosity seekers. Therefore, the initial pre-triage care will depend largely on trained personnel at the airport, medical supplies available, communication, transportation, and security.

I. Pre-triage supplies stored at O'Hare Airport - two echelons:

- A. Fifteen portable canvas bags of medical supplies (24 pounds each). To be used at the scene of the accident, by trained personnel.
- B. A larger quantity of "back-up" supplies, used to establish a pre-triage area in the bunk-rooms of the main fire station.

II. Training of O'Hare Airport lay personnel.

- A. Subjects: Hemorrhage, shock, burns, fractures, transportation of casualties, cardio-pulmonary resuscitation, protection against ionizing radiation, emergency childbirth, and one lesson of miscellaneous topics.
- B. Sixteen hours of training given in classroom of Crash One Fire Station.
- C. Examination, and certificate upon successful completion.
- D. O'Hare has paramedics on duty at all times, to supervise trainees.

III. Criteria for moving the casualty from O'Hare to area hospital:

- A. Casualty must be stabilized.
- B. Appropriate vehicle and trained attendant to accompany patient.
- C. Traffic lanes must be open, to avoid delay in transport.
- D. There must be communication with area hospitals.
- E. Area-wide communication for distribution of casualties.

Dist., Pers., Pl., Comm.

Max Klinghoffer, M.D.
127 E. Vallette Street
Elmhurst, Illinois 60126

MUTUAL AID AGREEMENTS

CUSTOMS AGREEMENT FOR CANADIAN HOSPITAL

The North Slope Borough EMS region covers approximately 88,281 square miles. Scattered in this area are seven small villages. These villages are all isolated and weather conditions often make evacuation procedures difficult. One of our villages - Kaktovik - is much nearer to the Canadian hospital in Inuvik, N.W.T. than to the IHS hospital in Barrow. Evacuation in emergencies would be faster if sent to Inuvik and facilities there are more extensive than at Barrow. In non-emergent situations, patient flow would continue through IHS, Barrow.

The Director of the North Slope Borough Health Program contacted custom officials in Anchorage and the following agreement was reached.

They will permit the entry and departure, without custom supervision, of foreign aircraft for emergency medical evacuation if: 1. the situation is a definite medical emergency which cannot be postponed without threat of serious consequences. 2. after each incident, a report be sent to district office specifying the nature of emergency, type and registration number of aircraft and names of all persons involved including pilot and passengers. 3. the sole purpose of the flight be the evacuation of subject patients and only necessary personnel accompany the flight with no merchandise to be carried. 4. customs maintains the right and obligation to withdraw this permission if and when the privilege is abused.

Although all details have not yet been worked out, this letter gives us a basic groundwork for faster evacuations for Kaktovik.

Ms. Elise Patkotak
EMS Coordinator
North Slope Borough
Health Program
Barrow, Alaska

MAA, Int.

BI-STATE E.M.S. IMPLEMENTATION

The Agassiz Health Planning Council is a bi-state comprehensive health planning agency responsible for the coordination and determination of health planning functions throughout 22 counties in northeast North Dakota and northwest Minnesota.

EMS has received much emphasis over the past two years relative to planning within the region. The Council has been responsible for identification of needs as expressed within EMS 1203 and 1204 grant applications for Minnesota and North Dakota respectively. The Council's participation in the process of determining needs relative to EMS funding in both states has contributed to the development of a Mobile Coronary Care (MCC) program which serves adjoining communities separated by state boundaries (Grand Forks, ND and East Grand Forks, MN). Because the ambulance service is North Dakota based, required equipment needs such as the vehicle, radio and defibrillator are provided for with North Dakota 1204 funds. The educational institution developing the Advanced EMT training program is located in Minnesota and thus it is proposed that the Minnesota 1203 grant application include a budget request for necessary training equipment. In addition, the Minnesota Department of Education has assured the region that funds will be made available for instructional salaries and United Hospital of Grand Forks will provide in-house clinical training support. It should also be noted that the Advanced EMT training program will not only serve this initial MCC program but will support other ambulance services throughout the region as dictated by expansion of their capabilities.

The implementation of this bi-state MCC program clearly demonstrates how separate state entities can develop and implement complementary grant programs that ultimately will improve the status of health care and save lives throughout the region.

MAA., Trsp.

AGASSIZ HEALTH PLANNING COUNCIL
Donald E. DeMers, Executive Director
Dana L. Tinnes, EMS Planner
123 DeMers Avenue
East Grand Forks, Minnesota

BIRMINGHAM/OVER THE MOUNTAIN (ALABAMA) MEDICAL/RESCUE PROGRAM

In 1973 contracts were developed between the EMS Demonstration Project (funded by the Alabama Regional Medical Program for one year) and the Cities of Birmingham, Homewood, and Vestavia Hills to provide a medical/rescue service in their fire departments. The Project agreed to provide enough money for purchase of a medical/rescue unit and pay the salaries of half the firemen staffing the service. The Cities agreed to pay the salaries of the remaining half of the firemen to establish the service following specifications provided by the Project. Each city also had to release eight firemen to participate in a four month medical training program held at the University of Alabama in Birmingham. The Cities also agreed for these units to assist each other in response to emergency medical needs (mutual assistance pacts). Traditionally these cities have never worked with each other on any program. The Cities of Birmingham, Homewood, Vestavia Hills and Hoover agreed to participate in the Project. The federal funding was terminated in 1974 and all cities have continued the service with their own funds at a cost of approximately \$100,000 per unit.

MAA, Urb.

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Ida Martha Reed
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NEVADA 1202 PROJECT - MUTUAL AID AGREEMENTS

A coordinated emergency medical service system requires services in one area to be correlated with or contingent upon those in others. This means all individuals actively participating in EMS, plan and communicate regularly.

Mutual aid agreements are a way to facilitate coordination. The lack of appropriate agreements has seriously jeopardized Nevada's ability to develop a coordinated and efficient emergency medical service system.

In the rural and wilderness areas of Nevada, emergency medical services are usually provided by volunteer groups working in conjunction with county agencies - usually the Sheriff's Department. Our experience in Nevada has been that the ethnocentric conservatism of the remote areas has prevented previous attempts to formulate written agreements. Our current efforts to implement written agreements are being preceded by health education to establish the need for these documents.

To correct this problem, we have begun a concerted effort to discover existing agreements. This will help us identify system weaknesses and formulate appropriate recommendations.

County commissioners, EMS providers, and EMS field coordinators have been asked to identify agreements within their respective jurisdictions. We were cognizant of and have corrected duplications.

The data demonstrates the need for state mutual aid protocol. The query identified eight mutual aid agreements; six reciprocal and two back-up. The reciprocal agreements are intrastate; one formal, four informal, and one proposed. Both back-up agreements are proposed, formal and interstate.

MAA., Fed. §

James P. Hawke, Chief
EMS Planning Section
Carson City, Nevada 89710

INTERNATIONAL EMS

THE USE OF A VACUUM MATTRESS IN EMERGENCY RESCUE VEHICLES

The vacuum mattress is an established means of transport of injured persons the world over. There are numerous indications for its use. It assures a safe and comfortable support of the patient no matter what type of rescue vehicle - an ambulance, a helicopter, or an airplane - is used.

Int. Eqmt., Trsp.

R. Frey, P. Durner, W. Sohngen
Institute of Anaesthesiology
Johannes Gutenberg University
Mainz/Rhine

EXPERIENCE WITH THE TRANSPORT OF HEAVILY INJURED PERSONS BY AIRPLANE

Based on our recent experience with the transport of heavily burned patients from USSR, Cameroun, South Africa and Algier to the Federal Republic of Germany we would like to point out the unique advantages of the transport in a specially designed airplane, as "Mobile Intensive Care Unit".

Rescue actions like this one demonstrate the need for an international co-operation. Internatinal centers charged with the responsibility of organizing such rescue actions across national borders would be beneficial. Basic medical research in this field is also needed.

Int., Trsp., Cou.

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FEDERAL GRANTS

ADMINISTRATION OF A SECTION #1203
EMERGENCY MEDICAL SERVICE SYSTEM IMPLEMENTATION GRANT

It is of utmost importance that the planning and implementation for Emergency Medical Services be done within the parameters of a regional health system agency. Implementation in this sense of the word must be defined as motivation, coordination, and assistance to develop resources within the geographic area of a health service area.

Because of the dependency nature of Emergency Medicine on the other components of a health system - manpower, services, and facilities - it is nearly impossible to divide it out and look at it as a separate, existing entity.

Planning as defined in Section 1202, and implementation as defined in Section 1203 of the National EMS Act, must be done within a correlated, coordinated pattern of regional health systems development.

The years activity that has been experienced by East Central Michigan Comprehensive Health Planning Council, Inc., strongly supports the above theory. The key to developing an ongoing, self-sustaining Emergency Medical Service system is the involvement of the volunteers, consumers, providers, and public elected officials at the local community level. This does not occur in isolation from the total health planning process. It becomes much easier to solicit the support of the community if the community is aware that emergency medicine, and its delivery system, is a portion of the whole.

Administration of the 1203 grant in East Central Michigan has been a year-long process of involvement and motivation of the community structure, to allow change to occur. Within a short period of time, the involved consumers, health care providers, and elected public officials, have developed the foundation on which continual growth and maturity can occur.

Administration of a 1203 implementation grant by this agency, though it may not have moved as rapidly as we anticipated, has moved successfully.

Fed. \$., Adm., Reg., P1.

Ramona K. Zielinski
Executive Director
East Central Michigan Comprehensive
Health Planning Council
Saginaw, Michigan

FROM 0 TO 60 IN NOTHING FLAT

In fourteen months the City of Portland, Maine, moved from a primitive form of emergency medical care to one of the most sophisticated EMS municipal operations in the Northeast. Originally structured as an autonomous division of the City Fire Department, the division has, for convenience and with support from the unit, now been transferred to the City Health Department.

Supported by an EMS Grant and an Ad Hoc Citizen's Committee Report, the City started from bare walls to build an EMS organization staffed by nineteen of the Northeast's best qualified EMT's. MEDCU, as the Medical Crisis Unit is known, operates two EMT staffed ambulances, one at each of two bases, 24 hours per day. This is the only emergency medical service organization in the City (occasionally backed up by the City Fire Department Rescue Squad personnel during overload periods). Logging more than 7,000 responses in the first year of operation, the unit has magically transformed itself into a highly respected and much emulated model for basic life support in a municipal setting.

The unit's phenomenal rate of maturation continues as the unit is now involved in first moduals of advanced life support. By the end of it's fourteenth month MEDCU will have five(5) I.V. trained technicians operating in the field.

Costs of the municipal service, serving 90,000 people daily, are in part reduced by a fee for transportation arrangement. With 55% of all billing paid by third party payers, and an overall collection ratio of 44% from all sources, the unit generates income equal to approximately 30% of its own operating cost.

Significant because they developed through the planning and implementation phases of EMS within a few brief months, the organization is rapidly pursuing improvements that are having local, state and regional impacts.

Fed. \$, Urb., Trsp., Fin.

H. Edward Walker, Director
Medical Crisis Unit
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Portland, Maine 04102

GRANTEE MANAGEMENT OF PHS-EMS FUNDS

Receipt of a 1203 award can mark the beginning rather than the end of fiscal headaches for the EMS program manager. Inadequate organizational preparation for business management can result in the entanglement of program managers in time consuming business matters at the expense of involvement in community relations and staff leadership. The limited availability of guidance and assistance from PHS regional offices, the lack of precedent on many fiscal management concerns and the inexperience of the grantee can combine to produce a multiplicity of problems which can cripple program plans and endanger the life of a program.

A 1203 grantee must:

1. Function in accordance with general and specific PHS policy on allowable costs, property management, matching funds etc.
2. Understand and follow the sequence and timing for prior approvals, reports, etc., necessary for coordination with program plans.
3. Maintain an accountable financial management system for spending, inventory, record keeping, etc.
4. Relate to pertinent legal requirements for incorporation, personnel policies, tax status, etc.
5. Relate program plans to budgets and to a confusing array of funding sources.

The solution employed by LAEMS is the full-time assignment of a management level staff person to these functions, as well as to related administrative and fiscal management duties, which assure continued familiarity with both program activities and business office operations. This staff serves as a contact point for the director, program staff, a separate business office staff and PHS regional office staff. This arrangement frees the director for community relations and organization as well as helping the agency achieve full management independence.

Adm., Fed \$.

by Ron Roche, Deputy Director
Lakes Area Emergency Medical Services
Buffalo, New York

"MBO/PPB: A MANAGEMENT SYSTEM
FOR EMS PROJECTS"

The nature and timing of first-year 1203 grant cycles retards effective program management by grantees. The uncertainty of funds until commencement of the fiscal year, the need to recruit staff upon notice of funding, the need to commit staff and resources to preparation of a subsequent grant proposal, and the uncertainty of continued funding create an unstable organizational base. To obtain optimum results in this atmosphere, a management system is needed to establish program goals, develop strategies, set completion dates, monitor progress, commit individual staff members to functional achievement, and link dollars to individual tasks.

A Management by Objectives program was developed which recognized each of the EMS subsystems. Staff members were assigned to subsystem development on the basis of individual backgrounds and capabilities. EMS system and subsystem goals were established in keeping with federal regulations and regional needs. Subsystem strategies were personally developed by staff members with responsibility for implementation. Completion dates were also set by staff members, as were total dollar requirements for achievement of subsystem goals. The Planned Program Budget process thus gave individual staff a perception of the relationship between resources and achievement.

The fourth quarter uncertainty of continued funding was ignored in developing the MBO program. Completion dates for various subsystem strategies continue throughout the fiscal year. Quarterly reviews provide management and staff a scheduled opportunity to measure progress and revise objectives and strategy, if necessary. If excess reverence for reports can be avoided, MBO/PPB can be an excellent tool for employee development, as well as program management. Employees operating within this system tend to have a high degree of personal commitment to strategies they have personally devised.

Adm., Fed \$.

by James O. Page, M.D., Director
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Buffalo, New York

EMERGENCY MEDICAL SERVICES SYSTEM DEVELOPMENT

- NORTHEAST FLORIDA EIGHT COUNTY PROJEC -

In 1966-67 several funeral homes and private ambulance firms in Jacksonville discontinued ambulance services because of rising costs. Others also threatened to suspend service. The City's fire division (Department of Public Safety) moved in to fill the gap.

Initially the City's ambulance service consisted of only five station wagons including three fire chief vehicles with the financial assistance provided by the DHEW, the State of Florida and the Governor's Highway Safety Commission much has been accomplished in improving emergency medical care in Northeast Florida. Currently there are 29 primary rescue vehicles serving a population of more than 720 thousand persons in the Eight County area. All units have radio communications with 18 designated emergency facilities in the area. More than 800 technicians have completed required training and registered by the State Division of Health. The ill and injured in the area are receiving better emergency care today than ever before. This was made possible only through outside financial assistance provided at the state and national level.

Fed. \$., Reg.

Frank O. McClendon, Jr.
Executive Director
Northeast Florida
Eight County EMC Project
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A FORM THAT WORKS!

The Portland (Me.) Medical Crisis Project (MEDCU) is a 1204 effort to expand emergency medical services in Southern Maine. For several years a state ambulance report form primarily designed as a data collection instrument existed in Maine. In August, 1975 this form ceased, temporarily, to be available. MEDCU seized this opportunity to develop a form emphasizing patient care without negating data collection potentials. The form has been profoundly well received.

In designing the form, the following characteristics were determined to be desirable: simplicity and acceptance by the medical staff. The new form was conceived with the intention of including as much information recommended by DHEW standards as possible, and at the same time isolate that information pertinent to immediate patient care in an easy-to-read section of the form. It was also determined to be essential that the person filling out the form could, upon reviewing the form several years later, be able to remember and discuss the circumstances. We determined this was best achieved when the form was a transcript of observations as opposed to a set of check marks. A substantial area was therefore segregated so the attendant could write his personal observations.

The form has been well accepted by the staffs at these communities' hospitals. Nurses and physicians are now reviewing the form before looking at the patient.

Given the proper instrument and an expression of interest by hospital personnel, EMT's are recording a more complete patient status and history which is ultimately resulting in better patient care.

Fed. \$., SMRK/DATA

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FEDERAL AGENCIES

FIRST RESPONDER/EMT TRAINING

According to research findings, approximately 50% of those who die from traumatic injuries, die at the scene or in transit to the hospital emergency department. ACT Foundation reports that mentality relating to patients with ventricular fibrillation—their chance of recovery is 25 out of 100 for a response time of five minutes, 1 out of 100 for 10 minutes and 1 out of 10,000 for 12 minutes. Rural ambulance response time cannot in most areas be reduced below 20-30 minutes. Metropolitan ambulance response is often hampered by heavy traffic congestion.

In the rural States, such as Wyoming, professionals and volunteer citizens other than ambulance attendants are trained as EMTs. In metropolitan areas, such as Washington, D. C., fire fighters are trained as EMTs. In Seattle and Chicago employees in high rise office buildings are being trained in CPR. The Garden City, New York Fire Department fire fighters are trained EMTs and Certified Instructors by the Heart Association to conduct CPR training programs for the local citizens. Australia has been conducting for years a training program for the motoring public in a course directed to the care of victims of traffic accidents. EMT classes are conducted on a State-wide basis administered by each State EMS agency. Approximately 160,000 people have been trained and certified by their State agency to date.

The Department of Transportation's Emergency Medical Services Branch has spent a great deal of effort during the past seven years developing training programs to upgrade the patient care capability of those involved in the pre-hospital phase of the EMS system. The course specifically directed to the first responder is entitled Crash Injury Management.

Federal funding assistance through the National Highway Safety Program is available through the appropriate State Governor's Representatives for Highway Safety. Planning should be made well in advance of the upcoming fiscal year to assure funds are allocated for this training effort.

Robert E. Motley, EMS Advisor
U. S. Dept. of Transportation
Washington, D. C. 20590

Fed. Ag., Trsp.

SLOW START FOR EMS SYSTEMS

Progress in developing regional emergency medical services (EMS) systems has been slow. Although efforts to develop systems have resulted in improvements in emergency medical services, self-sustaining regional systems having area-wide control of EMS resources have not been achieved.

As a result of Federal funding, communities throughout the Nation have purchased better equipped ambulances, improved communications capabilities, procured equipment for hospital emergency departments and other treatment centers to better diagnose and treat emergency patients, and trained more people to provide emergency medical services. In addition, local governments and communities have become more aware of the need for improvement of emergency medical services and of their responsibility to provide such services. This increased awareness and capability to provide emergency services has probably resulted in some decreases in mortality and disability due to traumatic injury or illness.

Despite this progress, regional management organizations are having difficulty identifying firm sources of permanent financing for administrative and operating costs initially borne by Federal grant funds. Also, they have little control over the level of financial support for emergency medical services being provided by local governments and EMS providers. Consequently, continued viability of the regional management organization and continued operation of the EMS system at the level planned with Federal support and influence is not assured when the Federal funds stop.

In addition, regional management organizations have not been able to obtain commitment of resources from local governments and providers to the regional system concept. Consequently, they are having problems meeting EMS Systems Act requirements with respect to the following system components: (1) communications, (2) transportation, (3) facilities, (4) patient transfer and access to care, and (5) standard recordkeeping and system evaluation.

Regional management organizations are applying for and receiving Federal funds without obtaining financial and conceptual commitment. Greater assurance of long term viability for a regional system should be obtained before significant Federal funds are invested and before the regional organization loses the influence of Federal dollars on local governments and providers.

Fed. Ag., Fed. §

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Rockville, Maryland 20852

THE FEDERAL COMMUNICATIONS COMMISSION'S ROLE IN MEDICAL COMMUNICATIONS

The Federal Communications Commission (FCC), has the responsibility for licensing and regulation of the use of the radio (RF) spectrum by the general public. The Commission's rule provisions for the licensing and operation of radio communications systems for most medical activities are contained in the medical services category of the Special Emergency Radio Service (SERS). Eligible persons include hospitals, doctors, ambulances and rescue organizations, and other persons with medical communications requirements. Operations in the VHF region do not normally permit the development of full capability, extended range medical communications systems due to prohibitions against mobile relay operations. Restrictions also exist against the use of bio-medical telemetering techniques in the 150 MHz band. Full capability medical radio systems can be accommodated in the 450-470 MHz band (UHF). Here the Commission has allocated some two dozen frequencies exclusively for medical communications. Persons planning to use radio in support of their medical operations should obtain a copy of Part 89 and become completely familiar with the type of operations permitted in the Special Emergency Radio Service before making any large monetary investment in radio equipment. To the extent feasible, the Commission will provide guidelines as to the radio communications aspect of any EMS system. Further, EMS area-wide systems plans that are filed with the Commission are available for public inspection at our headquarters.

Fed. Ag., Comm., Leg.

Richard Taube
Federal Communications Commission
Washington, D. C. 20554

FEDERAL PREPAREDNESS AGENCY ACTIVITIES AND INTERESTS
RELATED TO EMERGENCY MEDICAL ACTIVITIES

The Federal Preparedness Agency (FPA) serves as the central point of leadership and coordination within the Federal Government for the coordination of National, State, and local programs concerned with emergency preparedness.

Empowered with broad authority, the Federal Preparedness Agency provides planning guidance and performs a review function with respect to emergency plans and programs of the Federal, State, and local governments. FPA is not an operational unit.

The director of FPA is responsible for furnishing the President overall reports and recommendations concerning the emergency preparedness programs and the state of preparedness of Federal, State, and local governments to carry out their emergency functions.

Emergency health preparedness is one of the important program areas of interest to FPA. In any national emergency, the demand for health resources and health services would be immediate, and in some cases, overwhelming. To the extent the day-to-day response to health emergencies is effectively planned for and met, then the larger demands imposed by a national emergency will be more susceptible to being met through expansion of proven day-to-day systems in mass-casualty situations.

Fed. Ag., Dist.

Leslie W. Bray, Jr., Director
Federal Preparedness Agency
Washington, D. C. 20405

RESPONSE TO NATURAL DISASTERS

Hurricanes, floods, and tornadoes cause more than two billion dollars damage annually in the United States. They have killed more than 27,000 people in the past 50 years and the injuries are in the hundreds of thousands.

Loss of life has decreased markedly, especially in the past 20 years, with improved accuracy in forecasts, warnings, and communications.

But the number of people now exposed to these violent storms is increasing at an alarming rate. More than half of the population of the United States is located on or near our coastlines. Under the threat of hurricanes, there is real concern for the number of people who must be warned, evacuated, and provided shelter. Tornadoes in increasing numbers are threatening the highly populated urban areas. Together with unchecked flood plain development, the potential exists for great loss of life from these violent storms all across the United States.

The National Weather Service considers its most urgent problem to be the development of its ability to deliver warnings of severe weather to all people in danger within minutes. An ensemble of dissemination and communications methods will be discussed along with anticipated improvements in data processing and display.

The National Weather Service's issuance of accurate and timely warnings sets off a chain of action and reaction that become the most important ingredients in the warning systems. These events, including dissemination by the mass news media, and actions by civil preparedness organizations at the community level, will be examined and discussed, and the importance of planning by the community, its institutions, and its people will be discussed.

Special emphasis will be placed on the public awareness of their vulnerability to natural disasters and their knowledge and willingness to comply with recommended actions.

Fed. Ag., Dist., CE&I,
Comm.

Richard E. Hallgren
Deputy Director, National Weather Service

Herbert S. Lieb
Chief, Disaster Preparedness

EMS - WHERE YOU WORK

A new respect for Emergency Medical Services has begun in America. And with this new "EMS Era," a whole host of new problems, new issues, new solutions have emerged.

From all over America, our diverse geographic regions report innovative EMS programs saving countless lives. We're proud, justly so, when we are identified with an EMS "pilot" group which is credited in unraveling incredibly complex radio telemetry systems or trauma nursing problems.

But there is another side of the coin that only the families of employee injured and maimed at the worksite see. No amount of rhetoric is defensible. My colleagues from our prestigious Bureau of Labor Statistics tell me that we EMS professionals have a long way to go before we can rest comfortably. For example, in 1974 there were 5,915,800 work related injuries and illnesses on the job. In 1973 the count was 6,078,700. This covered all private sector jobs, including agriculture, mining, railroad, except self-employed and domestic service workers. The percentage drop in the injury rate from 1973 to 1974 is minuscule. What is important here is that one out of every 10 workers were injured or contracted a work related illness. In 1973 (the latest report date) 5,700 workers died as a result of injuries or illnesses suffered on the job. No matter how you slice it, that's totally unacceptable and something must be done NOW to markedly drop the injury, illness and fatality rates. The big question, HOW?

Medical costs today, at the worksite or at home, are skyrocketing. People are concerned. They know that lives cannot be saved by a quick "fix." People have a right to expect the very best where their lives are concerned. They want top-line equipment used by the best professionals available. This costs money, lots of it. With tight fiscal constraints on governmental and corporate budgets, where's the money going to come from?

CETA, the Department of Labor's Comprehensive Employment and Training program may provide a very modest answer to at least the paraprofessional training aspects of local EMS systems. More about this at conference.

American workers and employers alike know that somehow a competent, professionally operative EMS system can be installed within quick reach of their worksite. They expect us, EMS professionals and lay groups alike, to develop such a program. And you know what? They're right! For 200 years, it's always been that way. It's the American Way. Let's hope that our deliberations at this conference are constructive, not divisive. We are being called on to make "hard" decisions, despite ever shrinking budgets and nagging shortages of paraprofessional man and woman power. We are trying to deal with today's EMS priorities while paying yesterday's bills. Productivity...squeezing the fat out of our EMS systems is called for. If a life is worth saving, then we will do just that.

US LABOR DEPT.. LEONARD BURCHMAN. DIR. INTGVTL. REL.. 601 D NW. WASH..DC
Fed.Ag., CC, CE&I, Spec.

Program Participation Plan and Abstract

A presentation of the objective and the implementing elements of the DOT/EMS pre-hospital Emergency Medical Care program and system development pursuant to Standard II "EMS" of the Highway Safety Act of 1966 (amended). The presentation will encompass a full treatment of the development of concepts, criteria, standards and guidelines pertaining to the major components of the pre-hospital Emergency Medical Care system as follows:

- a. Professional capabilities to include training and operations.
- b. Transportation equipment to include surface, marine, and air.
- c. Communications with common system approach to total emergency service resource coordination.
- d. Management, evaluation and coordination for system development and operations.

The presentation will also address program implementation through State planning assisted by Federal block grants and its responsiveness to priorities established at State and community levels.

Fed. Ag.

Philip H. Bolger, Director
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Office of the Secretary of
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Washington, D. C. 20590

EMS Aspects of Major Disasters

The two major differences between day-to-day EMS and EMS in a major disaster are that the case load usually is larger than the normal capacity of the EMS System and the second is, unlike the day-to-day situation when the other services - police, fire, etc. - give priority to the Medical Service, in a major disaster each public service concentrates on accomplishing its primary mission. In such circumstances, the public safety and welfare may require the government to coordinate the unilateral activities of the individual emergency services because the day-to-day arrangements for operational coordination among them may not be sufficient.

The planning for disaster coordination by government is done by agencies with a variety of names - but names are not important. What is important is that, when necessary, a government can meet its responsibilities for the public safety and welfare by performing this coordination function.

The kinds of EMS questions considered by a government in developing a plan for the conduct of coordinated emergency operations are similar to those EMS planners must consider in developing a plan whereby the EMS System would deal with the mass casualties, natural disasters, and national emergencies. EMS planners, however, are usually concerned with medical requirements whereas governments are primarily interested in operational interactions and overall requirements.

Governmental questions involve subjects such as arrangements for notifying hospitals of the mass casualty emergency or overall direction and coordination at the disaster scene.

Fed. Ag., Dist.

John W. McConnell
Assistant Director for Plans and Operations
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EMERGENCY MEDICAL SERVICES PROGRESS REPORT FOR THE
UNITED STATES OF AMERICA WITH FUTURE PROGRAM PROJECTION

17-10

The appreciated need for improved emergency medical services in this country started in 1966 with the National Research Council's white paper entitled, "Trauma, the Neglected Disease of Modern Society." This document reflected much of the professional concern for the lack of a comprehensive approach to the accident victim and called for most of the essential components that now exist in the Emergency Medical Services System Act of 1973. Prior to this, the National Highway Safety Act of 1966 has provided support to Local governments for elements of Emergency Transportation Care and other Health and Public Safety agencies have provided some support for certain elements of an Emergency Medical Services System.

In 1972 the then Assistant Secretary for Health Merlin K. DuVal stated, "Nowhere is this lack of accessibility more crucial and yet more widespread...than in the area of emergency care. Any description of our current emergency medical services becomes a litany of inadequacy and neglect." Subsequently in 1972 a special Presidential initiative provided some \$15 million to demonstrate the feasibility of the EMS systems approach. The five demonstration projects (States of Arkansas, Illinois and regions of Jacksonville, Florida, San Diego, California and Southeast Ohio) have been completed and significant lessons have been gained: (1) EMS systems can be developed so they will be locally continued; (2) When developed, EMS systems do have a significant impact on patient care services including morbidity and mortality; (3) That regions need at least 4 to 5 years for development and stabilization (BLS and ALS), (4) Successful EMS systems require the involvement of the health authority and medical leadership; (5) EMS systems need initial Federal support for organizational and program development to coordinate other Federal health initiatives and to develop a base for local support; (6) EMS systems development are difficult and frustrating enterprises that must involve the community, the medical provider, governmental and political interests.

The Robert Wood Johnson Foundation, in 1973, established a national grant competition for the development of Regional EMS systems by emphasizing access, communications and regionalization of emergency medical care. Enactment of the Emergency Medical Services Systems Act of 1973 (P.L. 93-154) was a major effort on the part of Congress to meet the demand and need for coordinating the development of Regional Emergency Medical Care delivery systems and providing \$100 million authorization. The major provisions of the EMSS Act may be outlined as follows: A. Grants and Contracts; (1) Feasibility Studies and Planning (Section 1202); (2) Establishment and Initial Operations (Section 1203); (3) Expansion and Improvement (Section 1204); (4) Research (Section 1205); (5) Training (Title VII of the PHS Act) B. EMS Systems Requirements (Section 1206(b)(4)(c)). In order to

establish an EMS system that will provide improved emergency medical care to any and all emergency patients within a region, a sound integration of the fifteen mandatory Congressional components is required as stated in the EMSS Act. The EMSS Act requires that where plans are developed and systems established, expanded and improved, the following components of a system must exist: (1) the provision of manpower; (2) training of personnel; (3) communications; (4) transportation; (5) facilities; (6) critical care units; (7) use of public safety agencies; (8) consumer participation; (9) accessibility to care; (10) transfer of patients; (11) standard medical record keeping; (12) consumer information and education; (13) independent review and evaluation; (14) disaster linkage; and (15) mutual aid agreements. C. Technical Assistance (Section 1206(b)(5)), D. Administrative Unit (Section 1208), E. Interagency Committee on Emergency Medical Service EMS (Section 1209), F. Annual Report to Congress (Section 1210)

Last November, on the anniversary of the passage of the EMSS Act, President Ford reaffirmed that emergency medical care was of a high National priority and this January he attended a special White House Conference on EMS systems.

The DEMS reports that of 235 nationally possible EMS systems 125 are planning EMSS under section 1202; 83 are initiating EMSS under section 1203; and 27 are expanding EMSS under section 1204.

Fed.,Leg. Fed.\$

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DEVELOPMENT OF U.S. POLICY
FOR
EMS TELECOMMUNICATIONS

During the 1968-1972 time period the realization that Emergency Medical Services (EMS) could save the lives of many accident and heart attack victims stimulated an outpouring of activity among professional, lay, and governmental organizations. Technology and methodology for delivering high quality emergency medical care existed for each element of an EMS system. The importance of effective and affordable EMS telecommunications to link those elements, i.e., ambulances, hospitals, and the various medical functions, became apparent. Needed was recognition that an EMS Radio Service utilizing its own allocated radio frequencies should be established on a national basis.

In 1973 the Office of Telecommunications Policy (OTP) undertook an extensive review of the telecommunications aspects of EMS. This review culminated in a report providing policy and planning guidance for establishing an EMS telecommunications system plan adaptable to both urban and rural areas. The establishment on a national basis of common radio frequencies for the priority use of EMS units at the scene of medical emergencies was an essential part of that guidance.

The initiatives taken by the OTP to accomplish the foregoing and the concomitant actions of the FCC are described in the paper to be prepared by Mr. L. R. Raish.

Fed. Ag., Comm.

Don Jansky
Office of Telecommunications Policy
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STATE EMS

THE ROLE OF A STATE HEALTH DEPARTMENT IN DEVELOPING AN EMS SYSTEM

An agency that serves as the focal point for a state's EMS system is necessary in order to ensure that consistent policies, methods and criteria are applied through the state. In most states, there are two options for where the focal point should be: in the state health department, or in the state public safety division.

In Massachusetts, the focal point is in the state health department, which has established a separate division for emergency medical services. Besides EMS, the state health department (MDPH) also has programs in hospital determination of need; hospital regulation, alcoholism, drugs, poison centers, neo-natal systems, health planning, health statistics, and physician assistants. In addition, MDPH serves as the focal point for all health providers in Massachusetts, and for public health information. MDPH is responsible for enforcing the state ambulance law.

EMS's purpose is to improve the quality of care given patients and to make it easier to achieve by eliminating the competition which would arise if the EMS division were placed elsewhere. By contrast, the public safety agencies are not oriented to, nor interested in, expanding their jurisdiction to the health care field, and therefore incorporate their new responsibilities in EMS within the context of their usual public safety responsibilities. Since the EMS system is more than a fast trip to the hospital in any vehicle, its broader context, and the leadership of the medical community, is required. In Massachusetts, the OEMS has coordinated not only with the related MDPH programs, but with the B agencies, the medical society, the hospital association, nursing association, and affiliated health organizations. Having the focal point for EMS in a health-oriented state agency has enable the majority of organizations and individuals who must be involved to be quickly integrated, by utilizing established mechanisms and channels for communication and eliminating the need for developing an orientation to these groups' needs and concerns.

Ste., Adm.

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Initial Organization of a State-Wide EMS Task Force

"The development of an emergency medical service system in the State of Maine has been facilitated by the hiring of an experienced physician to head the state-wide planning and implementation effort and provide him with a maximum of administrative support through a contract with Medical Care Development, Inc., a nonprofit corporation that has administered RMP and other programs in the State. 1202 funding allows for the establishment of regional EMS offices in Presque Isle, Bangor, Portland, and Lewiston. The Director of Emergency Medical Services is situated in Augusta, the State capital, and relates directly to the Director of the 1203 impact area in the Kennebec Valley Health Service area. The Regional Coordinator in the Aroostook area has also been designated as the Coordinator for the Aroostook-Northeast area. The Regional Coordinator in Southern Maine functions as Coordinator for the Tri-County and Southern Maine areas. In addition, an Assistant Director in the Department of Human services is responsible for licensing of personnel and ambulances as well as DOT and Department of Education liaison. Educational integration is facilitated by a formal agreement between the Commissioner of Education and Cultural Services and the Commissioner of the Department of Human Services, which permits the Director of Emergency Medical Technician Training and Education for the State to relate directly across departmental lines to the Director of Emergency Medical Services. The Kennebec Valley 1203 Project also has a full-time physician director and is concerned with implementing an EMT-II pilot training project including personnel from volunteer, municipal-based and hospital-based ambulance services. The communications system for the impact area is being upgraded with the simultaneous addition of operational UHF telemetry. Categorization, evaluation of critical care facilities with the development of protocols and transfer agreements is being done simultaneously state-wide and in the 1203 impact area."

Ste., Cou.

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 State of Maine
 Medical Care Development, Inc.
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REGIONALIZATION IN NORTH DAKOTA

After examining existing data developed by the Division of Health Facilities of the North Dakota State Department of Health, it became apparent that the four major cities of Grand Forks, Fargo, Minot and Bismarck factored themselves out in terms of seeing more patients than any other cities in North Dakota.

These were termed AHEC Hospitals as they support the University of North Dakota's Medical School in its efforts in these cities in providing education for its fourth year medical students and continuing education for all types of medical personnel within the given AHEC Region.

A second obvious split in the data separated out the cities of Devils Lake, Jamestown, Williston and Dickinson on the same basis. These cities were arbitrarily termed Secondary Care Centers. The remainder of cities which have hospitals were of a smaller nature and were termed Local Care Centers.

Data was gathered which indicated where ambulance services delivered the majority of their patients. Further data gathered indicated where hospitals transferred their patients to. It may be noted that the AHEC Hospitals and the Secondary Care Hospitals received transfers, while local hospitals received no transfers. After looking at these data, plotting patient movement and analyzing the existing medical resources within each region, the regional lines were drawn. The lines of each EMS Region are coterminous with the AHEC Regions as established by the University of North Dakota Medical School.

It was determined that each region could take care of 95% of its emergency patients within that region based on that which is stated above. The remaining 5% requiring advanced life support were either transferred into another region where proper care could be provided, or were transferred out-of-State to specialty facilities.

Subsequently, contracts were developed with health planning agencies in three of the regions, and a district health unit in the fourth region, for implementation of EMS programs in their respective regions. Personnel were hired to carry out the mandates of the EMS Act as it relates to that specific region.

Ste., Reg.

Robert P. Freise, Director
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Georgia Office of Highway Safety and Emergency Medical Services

Upon the enactment of the National Highway Safety Act, Georgia began funding EMS programs. GOHS matching monies have been used for 141 ambulances and corresponding communications equipment. Funding from this office has helped in the establishment or completion of EMS in over seventy local political subdivisions. The first state ambulance specifications were prompted by GOHS.

In 1972, legislation was passed providing for the licensing of ambulance services within the State of Georgia, and also making provisions for training of EMT's. GOHS was instrumental in providing EMS training. Through projects with the Georgia Department of Education, EMT-A training has been made available at little or no cost to over 5,000 certified EMT-A's.

Individual projects have provided schools in ambulance maintenance, emergency vehicle operation and control, and others. CIM training has been given to all State Patrolmen and many local uniformed officers. Medical equipment for CIM application is placed in all State Patrol cars. A statewide EMS communication plan is in current development through a grant to the Georgia Department of Administrative Services.

Few agencies have sponsored EMS to the extent of GOHS. At the end of FY 1975, over \$1,800,000 had been dispersed in this activity. Thanks to this office and the cooperation of other state agencies, the citizens of Georgia, no matter where they may reside or travel, will be afforded prompt emergency medical service response, transport, and care.

Ste., Fed. \$., Leg., PSA.

Carlton Fisher, Director
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EMS IN NEBRASKA

Nebraska is better known for Cornhusker football than for sophistication in medicine, but the state is definitely avant-garde in EMS. Formal training of ambulance attendants, a precursor to the EMT-A program, was initiated in 1968. The first 911 center in the United States was in operation in Hebron, Nebraska in 1968. More than 90% of the ambulance services in the state, since 1972, have had radio communications with hospital base radio stations.

Four of the six EMS regions in the state received 1203 funding in 1975. State legislation has been enacted to provide for ambulance attendants. Over a hundred ambulances have been purchased with 50% federal funds from the Highway Safety Program and more than 400 ambulances are in service for the state population of 1.5 million. About 85% of the ambulance services and rescue squads are manned by volunteers.

In 1974 the Central EMS Area in the state received a Robert Wood Johnson Foundation grant to establish an EMS communications system as a demonstration project. The knowledge and experience gained from this project are being used in the development of EMS Communications systems in all areas of the state.

Enabling legislation to permit advanced EMT-A's to perform fully within their skills and qualifications is under consideration by the Nebraska Unicameral.

Ste., Fed. \$, Pers., Trsp.

State of Nebraska
Department of Health
Bureau of Health/Medical Care
Administration
Division of Emergency Health/
Medical Services
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THE STATUS OF STATE-LEVEL EMERGENCY MEDICAL SERVICES PROGRAMS IN 1976

A strong impetus for state-level EMS planning and program development was provided as early as 1967 by Standard 11 of the National Highway Safety Act. However, it has only been within the past two or three years that strong state-level programs have emerged on a wide scale. To determine the current status of these state efforts, a mail survey of the 50 state EMS directors was conducted in January and February 1976. This paper summarizes the results of this survey.

Survey questions covered four aspects of state EMS programs: (1) Organization and activities of the EMS Division; (2) EMS-related legislation, both previously enacted and currently planned; (3) How, and at what level, the state EMS program is financed; and, (4) The extent of EMS regionalization in the state.

Responses to the survey indicate that, while most states now have active EMS programs, the financial and legislative support provided to EMS Divisions varies widely.

Similar variations in the degree to which emergency medical services have been organized regionally were noted. Although most states now have defined boundaries for their EMS regions, in many cases regional organizations have not yet been developed.

Ste., Pl., Eval.

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WEST VIRGINIA DIVISION OF EMERGENCY MEDICAL SERVICES

The West Virginia Division of EMS was established by Executive Order of the Governor on October 15, 1975. Four of the fifteen components were selected as priorities for the first year of operation at the same time addressing the remaining eleven.

TRAINING - The identification of a state lead agency for EMT training was accomplished through efforts of regional and State EMS personnel and through cooperation between the Department of Health and Vocational Education. A uniform, standardized course curricula is being developed to provide basic EMT training throughout the state. Certification, regulation and continuous monitoring of the program will be accomplished by the Department of Health.

COMMUNICATIONS - A statewide UHF - duplex skeleton using the mobile relay concept and taking advantage of FCC Docket 19880 has been initiated. The concept of expansion of the OH-9 Communications Project throughout the state was made relatively simple once the effectiveness and efficiency of the system was presented to those concerned.

EVALUATION - EMTs and paramedics were included in the manpower data program of the Division of Vital Statistics by the unexpected development of a window in the programming of the eleven mandated manpower categories. Data assembly on patient flow and EMS catchment areas was made possible by a statewide two week standard patient log study provided by the State Division of EMS.

Public information and education efforts are directed towards Advisory Councils, Governmental Agencies and Regional Workshops. Match Book Covers, EMS Lapel Pin, TV Public Service and Educational programs are for general information.

Ste., Pers., Comm., Eval.

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REGIONAL RESOURCE COORDINATION - ARKANSAS EMS SYSTEM

Emergency Medical Resource Coordination Centers (RCC's) serving 24 Arkansas counties are prepared to deal daily with such human crises. In those counties, when a citizen dials "0" and asks for ENTERPRISE 8900, the telephone is answered by an emergency medical technician who has at his fingertips information allowing him to intervene immediately and effectively in almost any medical emergency situation.

Resource Coordination Center personnel have direct lines to state and local law enforcement agencies, fire departments, and mental health programs and maintain voice contact with both district hospitals and mobile emergency units in the field. RCC personnel maintain constant status on physician availability and know how to obtain specialized resources, such as a four-wheel drive vehicle capable of pulling an ambulance over icy roads. An added plus, resulting from regional coordination, is the availability of vehicle back-up when a home unit is in service.

In addition to providing centralized dispatch, the RCC has the capability to quickly focus all the state's resources on any single emergency situation. A sophisticated locator system shaves minutes from the response time of centrally dispatched emergency units. In addition, the RCC's carefully kept records document response times, types of emergency calls, mode of system access and other information useful in monitoring system performance.

Ste., Trsp., Comm.

Gary Jones, Director
Bureau of Emergency Health Services
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REGIONAL EMERGENCY MEDICAL SERVICES DEVELOPMENT
IN NORTH CAROLINA

After enactment of the North Carolina EMS Act in 1973, one of the initial thrusts of the newly created Office of Emergency Medical Services (EMS) was to develop Regional EMS Councils across the state. Within a year OEMS had signed contracts with sixteen Lead Regional Organizations (Councils of Government) for development and support of Regional EMS Councils, with two more soon to follow, providing coverage for the entire state.

Although there was early mutual disenchantment with this arrangement, council development was stimulated by the prospects of receiving a \$12,500 grant from OEMS for administrative support of the council and grants to EMS providers.

OEMS has relied upon the regional councils to assess needs and set priorities for expenditure of funds within their respective areas. A state grant program has been established to provide implementation funds for the EMS Councils.

The regional program has developed a strong relationship between the state and the regions. The regions are now the strongest supporters of the state and, at the same time, our best critics.

Ste., Reg., Cou.

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HELICOPTER UTILIZATION IN A STATEWIDE EMS SYSTEM

The State of Illinois is 400 miles long. The EMS is the first statewide system, which covers dense urban areas, as well as remote rural areas.

Three helicopters provide emergency medical transfers and function in very sophisticated EMS systems. The heart of the system is an elaborate communications network connecting designated trauma centers.

Administrative matters are carried out by trauma coordinators and coordinate the patient transfer to higher echelons of medical care.

The manner in which only three helicopters cover the entire State is a tribute to the system itself, as well as the DOT of the State of Illinois.

It is efficient usage of these three aircraft, in a systematized approach to the care of the critically ill and injured that we will describe.

Ste., Trsp.

S. Duane Moore, Chief Helicopter
Pilot, State of Illinois
J. W. Otten, M.D., F.A.C.S.

HAWAII -- UNIQUE AMONG THE FIFTY STATES

Hawaii, the fiftieth state, is unique in that its local jurisdictions are not contiguous but consist of a long chain of volcanic islands almost exactly in the middle of the Pacific Ocean.

The Populated part of the state includes urban Oahu with four-fifths of the State's population (850,000) and the rural counties of Hawaii, Maui and Kauai.

Hawaii's general coastline ranks fourth among the nation's states and territories. Water injuries are common. Hawaii's unique mountain terrain with peaks of up to 13,677 feet generate hiking, hunting and skiing injuries. Winter storms cause flooding along and near intermittent mountain streams.

Active volcanoes on the island of Hawaii are another hazard and eruptions have caused extensive property damage but lives are rarely lost. Earthquakes are common and the potential for loss of life and property damage is significant. Tsunamis, frequently but improperly called 'tidal waves', have caused tremendous property damage and large losses of life in the past.

These major geographic and climatic factors have a direct impact on the State's Emergency Medical Services System. The high visitor influx and poor highway systems in the rural areas further compound the delivery of emergency medical services in Hawaii.

Although these factors create additional EMS planning concerns, Hawaii is fortunate to have a centralized State Department of Health which administers and operates the EMS systems in three of the four counties. It is also charged with the statewide coordination of a comprehensive EMS program, which includes the fourth and largest county, Honolulu.

Ste.

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The Emergency Medical Services Division of the Arizona Department of Public Safety has been legislatively mandated to provide funding for the establishment, maintenance and upgrading of ambulance services and emergency receiving facilities in Arizona. To date, approximately \$775,000 has been awarded through the service contract program to ambulance companies and hospitals throughout the state.

Twice each fiscal year, grant applications prepared by the Emergency Medical Services Division are mailed to each ambulance operator and hospital administrator in the state. These are completed as to the specific items needed (equipment, operating subsidy, salaries, etc.), the amount of funding required and the appropriateness of the need. These are then returned to the EMS Division and to the local Health Planning Council in each area for review and comment. Following this, a Service Contract Advisory Panel meeting is called. The panel is composed of members of various state and local agencies having an interest in statewide emergency medical services. Applicants are not allowed to serve on the panel in order to assure objective evaluation of each request. Awards are made on the recommendations of this panel and each applicant may receive all, part, or none of the request.

During the period of the contract, site visits are made to each recipient to insure proper utilization of the grant funds and further evaluate the needs of the grantee for future requests.

Ste., Leg, Fin., Spec.

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REGIONAL ORGANIZATIONS

THE CASE FOR MANAGING PREHOSPITAL EMERGENCY SERVICES
AS A COMPETITIVELY BID, PRIVATELY OPERATED, REGIONALIZED,
REGULATED PUBLIC UTILITY--
THE CENTRAL OKLAHOMA EXPERIENCE

This report describes a unique technical methodology for analysis and solution of prehospital service delivery problems. Unlike most EMS design efforts, the analysis was carried out by holding constant the desired quality and response standards, while varying organizational and financial options.

Operational and financial data from systems currently utilizing each of the five models were extrapolated from to obtain reliable predictions relative to both system performance and financial characteristics, as each model was in turn analyzed on three geographic scales--Oklahoma City, Oklahoma County, and the five county Central Oklahoma SMSA. The five models analyzed included: (1) a publicly regulated "non-system", e.g., the then current Oklahoma City model; (2) the Jacksonville, Florida model; (2) the Los Angeles model; (4) the Arkansas model; (5) an altered version of the Louisiana Acadian Ambulance system.

Researchers concluded that prehospital care exhibits the characteristics of a service function which can be most effectively and efficiently managed as a regionalized, competitively bid, privately operated, monopolized, regulated public utility. Of special interest is the fact that the adopted model is designed to produce extremely sophisticated on-board clinical and response capabilities, while requiring no Federal, State, or local government dollars in the developmental or operational phases.

Reg. Adm., Fin., Res. Eval.

Jack Stout et.al.
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A COMPETITIVE SELECTION PROCESS FOR
DESIGNATING A REGIONAL EMS RESOURCE CENTER

Erie County, New York, is the location of more than 20 hospitals with emergency services. Medical resources in Erie County are the usual terminus for inter-hospital transfers from throughout the multi-county region. In Erie County, there are several mobile intensive care unit programs operating with little uniformity and no coordination between programs. Patient transfers from the rural areas are believed to be based largely on physician loyalties and inadequate information. There is no system for assuring critical patient transfers to the most appropriate facilities. The federally-funded lead agency lacks statutory authority or power to mandate changes in policy or procedure, or to designate a single hospital as the focal point for developing centralized impact on the various problems.

Recognizing the competitive instincts of most hospital organizations, and the attractiveness of potential federal funds, the lead agency has initiated a competition among the hospitals in Erie County. A "Request for Proposals" was submitted to all hospitals, listing criteria items, and asking respondents to state in writing how they would satisfy the criteria. Competitive proposals are to be submitted to the County EMS Committee for designation of one of the respondent hospitals as a "Medical Alert Center" with a position established as "Patient Transfer Officer." Once the designation occurs, the lead agency will prepare a funding application (Section 1203) requesting assistance to establish the designated hospital for its regional role in EMS.

Several hospitals are known to be preparing responses. There has been no challenge to the lead agency's creation of competition in the hospital community. By placing the selection process in a County EMS Committee, the lead agency hopes to avoid potential conflict fallout. Though service as a "Medical Alert Center" will be costly to the designated hospital, competition for a pivotal and visible role in EMS appears to inspire a willingness to participate.

Reg., Fed \$., Trfr., Fc./Ct.

by James O. Page, J.D., Director
Lakes Area Emergency Medical Services
Buffalo, New York

EMS AND MIS

Lakes Area Emergency Medical Services, Inc. is a federally funded, non-profit organization dedicated to improve the delivery of emergency medical care thereby reducing death and disability to persons in its region. The geo-political area served is eight counties in western New York.

Translating the current EMS system into one consistent with the federally specified EMS system requirements results in a socio-technical system of enormous complexity. In sheer numbers, the local system contains 40 hospitals, some 300 ambulance services and approximately 10,000 professional, allied professional and paraprofessional medical personnel. These resources are spread over 6,531 square miles of land and serve 1,776,800 people. Central to the activities carried on by LAEMS, i.e. administration, evaluation, implementation, planning and research, are the decisions made by its personnel which guide this complex organization. Recognizing that proper and timely information is a prime requisite for sound decision-making, a method by which data from the operating LAEMS system could be systematized and made available to project personnel would greatly aid their functional activities. This latter concept, data collection, processing etc. when done in a systems way is what has become known as management information systems (MIS). Thus an activity is underway which, via a two-step approach -

problem identification - determining informational requirements of organizational members, and

solution development - designing a good management information system ,

seeks to satisfy this critical need.

Reg., Fed. \$.

by R.E. Barnes and J.N. Braaten
Research and Evaluation
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THE ECONOMICS OF REGIONAL EMERGENCY MEDICAL SYSTEMS

The planning and evaluation of emergency medical services has been hampered by a serious lack of information regarding the economic aspects of regional EMS systems. Such information has been the focus of a two-year study of the cost and revenue implications of various approaches to EMS system development and operation.

During the project period, five in-depth analyses of the economics of selected "regional" EMS systems in both rural and urban areas have been conducted. As a result of the information gathered from these sites, a number of reports of use to EMS planners and providers have been developed:

1. Economic Guidelines for Regional EMS Systems.
2. Federal Assistance for Emergency Medical Service Systems.
3. The Economics of Regional Emergency Medical Services Systems.
4. Impact of the Emergency Department on Hospital Finances.
5. Selected Case Studies.

Additional important issues related to third-party financing of emergency medical services are currently under study. Further information regarding the project may be obtained from:

Reg., Fin., Adm.

William F. Hamilton, Ph. D.
Robert E. Mittelstaedt, Jr.,
J. William Thomas
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S.C. APPALACHIAN REGION EMERGENCY MEDICAL SERVICES ORGANIZATIONAL STRUCTURE

The purpose of this discussion is to relate the experiences of the South Carolina Appalachian Health Council in implementation of regional emergency medical services system.

The Health Council is an Appalachian Regional Commission 202 Health Demonstration Council and a 314(b) Comprehensive Health Planning Agency. Since its inception in 1966, the Council has developed numerous health plans and studies which have been successful in attracting over \$35 million of implementation funding through the Appalachian Regional Commission. The planning methodology utilized by the Council provides for the involvement of health care providers and consumers in a planning process which is designed for implementation. The Council has utilized this approach successfully in a number of areas in the past. Presently, in the area of emergency medical services, the Council utilizes its EMS Advisory Committee, which is representative of consumers and providers throughout the region, to make policy recommendations concerning EMS and to develop investment strategies. Because of the complexity of the EMS program, a number of task forces have been formed to provide input for planning and implementation to the EMS Advisory Committee. These task forces are considered as panels of experts actually working in the region. There are task forces for the areas of communications, critical care, emergency department capability, evaluation, training, and transportation.

This organizational structure provides a mechanism for consumer, provider and governmental input. Because of its prior successes, we feel that it is the most viable approach to providing regional emergency medical services.

The EMS organizational structure in Appalachia South Carolina provides an example of one alternative organizational structure for implementation of regional EMS systems.

Reg.
Adm.
Fin.
Cons.
Cou.

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IMPLEMENTATION OF A MULTI COUNTY EMS SYSTEM

The Emergency Medical Services System preliminary implementation program (1203-A), directed by the Trinity Emergency Services Association, was submitted by the Tarrant County Hospital District and co-sponsored by the hospitals in the Round Up Division of THA, the Dallas/Fort Worth Airport and the eight counties, Erath, Hood, Johnson, Parker, Palo Pinto, Somervell, Tarrant and Wise.

In the successful implementation of any program involving a multiplicity of geo-political and philosophical subdivisions, public education is of paramount importance. If the residents of the area are to be amalgamated into a cohesive action group, they must first agree that an identifiable problem indeed exists and requires attention and secondarily, that its solution requires a unified and co-operative approach.

In addressing the problems in Emergency Medicine, the pivotal groups obviously are the health professionals (physicians, nurses, hospital administrators, etc.). Assistance from these groups was essential in formulating an acceptable approach to program implementation. Next, an informational program was generated defining both the problem and the suggested solution. This program was presented to political divisions, (i.e. City Council, County Commissioners), major public safety groups, (fire, police, utility) and general population with the agreement that positive action was essential - the public support and success of the program were insured.

Summary. The degree of success of the program is directly related to the time and energies expended in contact with the public and the solicitation of the involvement and support of all strata of the affected population.

Reg., Pl., Adm., Cons.

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EMERGENCY MEDICAL SERVICES NAVAJO-HOPI-ZUNI-RAMAH REGION

The health status of the 150,000 Navajo, Hopi, Zuni, and other citizens of the 27,000 square mile geographic area has been cited as 27 years behind that of the general U.S. population. "Accidents" are the leading cause of death at rates three times higher than the national average; the rate of paraplegia, related to trauma, is nine times higher. An advanced Regional Emergency Medical Services System is being developed through the combined efforts of the Navajo, Hopi, and Zuni Nations. Numerous agencies and organizations have provided technical expertise and funds for the initiation of this ambitious program.

The stated program objective was that development of an Emergency Medical Services system of excellence will be realized through:

1. Training of EMS personnel,
2. establishing an effective communication capability,
3. placement of emergency vehicles in strategic locations through the region,
4. initiating an ambulatory patient transport system,
5. developing a search and rescue capability, and
6. assisting in the promotion of a disaster plan for the region.

Currently thirteen modular type primary response ambulances are located at health facilities throughout the region, eight suburban ambulances function as backup units. The Indian Health Service has recently purchased nine new modulance ambulances to be used for transportation of the critically ill and injured from a facility of lesser capability to one which can adequately meet the patient's needs. Air transport transported 5,670 patients for a cost of \$387,795.68. More than 200 individuals have been trained in the 81-hour Dunlap Course.

A communications network has been designed, and has been installed. Our educational component is directed through several smaller programs such as the 911 project, public information, and the Advisory Council. The development of this system has been profoundly influenced by Tribal cultural differences, by Indian and non-Indian differences, and by the uniqueness of the health delivery system itself. The system is operational and provides services not available three years ago.

Reg., Trsp., Comm.

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EMERGENCY MEDICAL ACTIVITIES WITHIN THE MEMPHIS MEDICAL REGION

A revolutionary new ten-county three-state communications system designed to provide and monitor radio and telephone link-ups in emergencies has begun in the Memphis, Tennessee, area. Headquartered in the Memphis-Shelby County Civil Defense Emergency Operations Center, the Mid-South Resource Coordination Center communicator keeps track of over 65 ambulances and 18 hospitals and relays inquiries from ambulance personnel to the nearest hospital Emergency Department equipped to handle the type of injury involved.

Persons in need of emergency medical care reach the R.C.C. by dialing (901) 523-1313. All long-distance calls are automatically accepted. The system also has direct telephone link-up with all local police and Civil Defense agencies in Tennessee, Arkansas, and Mississippi, as well as the National Weather Bureau. Currently the system operates in Shelby (Memphis), Fayette, Tipton, and Lauderdale Counties in Tennessee; Crittenden, Lee, Cross, St. Francis, and Phillips Counties in Arkansas; and DeSoto County in Mississippi. The program is funded by a \$383,423 grant from the RWJ Foundation of Princeton, New Jersey, \$67,500 from Civil Defense funds, and approximately \$25,000 from local hospitals.

The system operates on the VHF frequencies of 155.340 mHz, 155.205 mHz, and 155.280 mHz. The main transmitters are located in Memphis, Tennessee, with auxiliary transmitters in Covington, Tennessee, and Helena, Arkansas. Coverage is approximately 100 miles. The system was designed, installed and is presently managed by Health Systems Management, Inc., a not-for-profit corporation in Memphis, Tennessee.

Reg., Adm., Pl., Urb., Comm.

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EMERGENCY MEDICAL SERVICES IN MOBILE COUNTY

In the spring of 1972, Mobile County and the surrounding areas had no organized Emergency Medical Services of any kind. Of five ambulance companies in Mobile, only three had 50% of their personnel trained beyond standard first aid, and the others had less than 30% of their personnel with adequate training.

The equipment required on the vehicles may or may not have functioned properly. There were no local sophisticated EKG machines, or persons capable of using these machines. A group of interested citizens saw the need for an organized effort toward reducing the number of deaths and crippling injuries and met to establish the Mobile County Emergency Medical Services Council. The successful goals set by the Council were: a. training-education, b. improved transportation and c. establishment of an area Emergency Medical Services System.

The main accomplishments were in upgrading ambulance service and training of ambulance personnel and conducting Emergency Department nurses Course. In 1973, a Tri-County Task force was developed which was able to receive a grant from the Robert Wood Johnson Foundation for \$274,000. To date, all hospitals (12) in the area have the capability to communicate with ambulances and other hospitals in the area. Also, a seven-digit number for patient access to the system is being used.

A City Fire Rescue Service was initiated in the Fire Department of Mobile in May, 1975, and is staffed with Advanced Emergency Medical Technicians.

Reg., Cou.

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FORMATION OF EMS COUNCIL BOARD OF DIRECTORS

The Central Virginia Emergency Medical Services Council was incorporated on July 7, 1975. The bylaws of the corporation initially provided for an eight man Board of Directors. This Board includes one appointee from each of the two Comprehensive Health Planning Councils serving the Central Virginia EMS Region, one appointee from each of the two Planning District Commissions, and the chairmen of the Council's four advisory committees.

While the Council is fortunate to have highly qualified and energetic people serving on its Board, it was felt from the outset that the above Board makeup could not assure that there was adequate representation of all key EMS system segments, provider, political, and consumer. Board members felt that for the Council to be truly effective, it must have the input of all pertinent parties involved in EMS activities and local government within the region. Such representation we term a "constituency of record." This constituency is a group of individuals that can offer both support for and constructive criticism of the overall direction of Council activities so that the end result of our efforts will be the highest quality emergency medical care for the citizens of this region.

In an effort to develop this constituency, the Board has recently voted to amend the bylaws to allow for expansion of the Board from 8 to 28 members. The proposed Board makeup calls for a threefold increase in political appointees, permanent appointees from organizations like the Central Virginia Hospital Council, E.D.N.A., A.C.E.P., Richmond Academy of Medicine, and the Va. Association of Volunteer Rescue Squads, and additional consumer appointees.

An underlying objective of this Board expansion is to obtain more representation and input from key persons working in EMS in the rural areas of the region. These areas face more problems than urban areas in their efforts to improve the delivery of emergency medical care; however, the active involvement of these individuals on the Board greatly increases their chances of success.

Reg., Cou.

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THE SUCCESS STORY OF KENTUCKY'S EMERGENCY 5

Delivering emergency health care to an eighteen county region which contains a large metropolitan area as well as many rural counties is a difficult task and requires careful planning.

To develop such a plan the counties which surround metropolitan Louisville three years ago organized an EMS planning council called MEDICS (Medical Emergency District Inter County Services). Funded by a grant from the Ohio Valley Regional Medical Program, MEDICS developed an EMS plan for seven counties in Kentucky and ten in southeast Indiana. The Kentucky portion of the plan became part of the Commonwealth of Kentucky's state plan which was funded from federal and state sources to a total of five million dollar's worth of projects. To qualify for its share of these funds, MEDICS organized an implementation agency called an EMS Consortium. The Consortium now serves as an umbrella organization for the Kentucky counties.

Our region was so successful in planning and implementation that it was recently doubled in size to include a total of 18 counties. It is now Kentucky's Region 5 EMS Consortium. We call it Emergency 5. Utilizing all existing services, our ambulance system is composed of municipal, county, volunteer, and private operators. Federal, state, and local dollars funded the salaries for 87 technicians and financed the purchase of 29 new ambulances.

Programs of central dispatching, training, billing, purchasing, and disaster control are being developed. A regional categorization of hospitals allows each hospital emergency department to assume a certain share of the emergency load depending on its capability. In addition, two way radio communication will soon let technicians talk directly with hospital physicians and nurses.

Education (to teach patients how to gain access), evaluation (to monitor patient care), and funding (to keep the system going)--these are becoming the Consortium's major functions and where we are now expending our major efforts.

There is really nothing unusual about our program, except that it worked. Starting with fragmented, non-conforming ambulance services, it is evolving into an excellent regional pre-hospital care program. The story is the same all over the country--we have found a better way to save lives and prevent permanent maiming from accidents and injuries.

Reg., Urb., Rur., Pl.

Emergency 5
Dr. Robert S. Levy, Chairman, Advisory Board
Mr. Hayden Ballard, Coordinator
505 W. Ormsby Avenue
Louisville, Kentucky 40203

EMS In Memphis, Tennessee

As a participant in the workshops on critical care, my presentation will concern specifically the Memphis Medical trade area which includes portions of five states. The problems which have arisen and some of the successful solutions to these problems in development of an area-wide critical care plan will be presented.

Specific planning and implementation of several critical care units (acute spinal cord, burn, neo-natal, rape crisis and poison information) will be presented, as well as specific recommended protocols for pre-hospital care of various injuries and illnesses.

There will be a discussion of the inclusion of several nonmandated diseases in the critical care program (acute stroke, acute renal failure, and organ procurement). Specific plans for integrating these into the overall critical care plan will be presented.

Another area of special interest will be standards for providers of air transportation and an outline of a curriculum which has been prepared for personnel designated to accompany critical patients during transportation.

Reg., Urb., CC, Trsp.

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REGIONALIZATION OF EMERGENT CARE
IN A RURAL COMMUNITY*

A categorization program is being developed that addresses the needs of all emergency patients in Central and Western Virginia from the time of injury until discharge from the hospital. This program focuses on the critical patient groups identified in the National Emergency Medical Systems Program. First, guidelines for the care of these patients at the site of injury and in the emergency facility were established. Included in these treatment plans were recommendations and indications for the transfer of patients to the regional medical centers with critical care units.

These guidelines were presented to the emergent hospitals in urban communities and after an inventory of their facilities, mutual aid agreements between hospitals were developed. Urban medical centers extended this planning to involve the outlying emergent facilities in adjacent rural communities that refer the critically-ill patients. Based upon these mutual aid agreements, a plan for transfer of patients between the medical centers by the most expeditious route is being developed concomitantly.

Once these plans for regionalization of emergency care has been finalized, evaluation of the hospitals' compliance with the proposed system of care for each critical patient group must be determined.

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Reg., Fc./Ct., Rur.

A SOCIO-TECHNICAL STRATEGY-IMPLICATION FOR EMS PLANNING

The development of the Capital Region EMS grant proposal was accomplished by addressing several problem areas. First it was necessary to effect change and generate coordination in the regional and state populations. In conjunction with this was the task of conducting research, data analysis and EMSS conceptualization. Another problem was to reach individuals with diverse socio-economic backgrounds.

Internally a management by objectives approach was used for effective manpower utilization and monitoring. A socio-technical planning approach was operationalized allowing the staff to optimally utilize these community resources. A public education program was developed and geared to reach the multi-varied target populations.

A linkage system was then initiated with formal organization and primary groups through participation in activities of the Project and a community out-reach model respectively. Finally research (identification of regional EMS needs) was accomplished by input from EMS Subregional Councils and a Regional Needs Seminar. Analysis and EMSS conceptualization was a product of four technical committees, EMS Sub-Committee, Categorization, Behavioral Emergency, and Management and Finance Committees.

In conclusion, this socio-technical planning model allowed the staff to maximize its internal resources and supplemented them with community resources making it feasible to accomplish the task of systems planning. These tasks effected systems change through education, support through community outreach, and EMSS conceptualization through technical committee input. The plan was tailored for the Capital Region, however, with appropriate modification it could conceivably have implication for other planning regions.

Reg., Pl.

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URBAN EMS

EMERGENCY MEDICAL SERVICE SYSTEM IN FORT WAYNE, INDIANA

The Fort Wayne, Indiana Emergency Medical Services was initiated in early 1973 by John Farquhar, M.D. The department is now situated in the governmental structure as a separate but equal department under the Public Safety Department. We are therefore totally tax supported. Fort Wayne E.M.S. began on October 7, 1973 using three ambulances during peak hours and two ambulances the rest of the day. Each ambulance is manned by two licensed Emergency Medical Technicians. Each ambulance is equipped with two-way voice communications on the primary dispatch frequency and the ambulance to hospital frequency. Each ambulance carries standard bandaging and oxygen equipment with a portable cardiac monitor/defibrillator built into the wall, hare traction splints, O.B. kits, and extrication equipment. Our average response time is 5.12 minutes. We have initiated a dual response program using fire department pumps running on all suspected heart attacks. The pumps have an average response time of 3 minutes and all personnel have been trained as CPR rescuers, so that they may start cardiopulmonary resuscitation immediately. A future use will be to allow two firemen to do CPR while 2 paramedics initiate advanced patient care procedures. Fort Wayne EMS averages 41.09 runs/day with a cardiac arrest patient every other day. A thorough study on each critical patient shows that 158 patients would not be alive today, had EMS not intervened with the initial step of patient care system. 96% of these patients were in cardiac arrest at one time during the patient-EMS interface. We feel this system produces high quality patient care at the basic care level.

Urb., Comm., Trsp.

R. L. Gilbert
Administrator
Fort Wayne, EMS
Fort Wayne, Indiana

THE URBANIZATION OF A COUNTYWIDE E.M.S. SYSTEM

In July of 1974, with the demise of our only private ambulance service, the City of Bellingham and Whatcom County combined to form a joint Countywide Ambulance Service under the Bellingham Fire Department. It immediately became obvious that with the severe financial limitations facing all local governments, and yet serving a population of 100,000 people spread over 2,500 square miles some type of system would have to be developed to maximize our capabilities.

To achieve this goal, it was decided to urbanize the entire county as one large metropolitan area. Within this urbanized zone three levels of operation and training were chosen to achieve this maximal effort. The countywide ambulance crews were equipped and trained as paramedics. Primary and secondary level of response was developed. In the city there is the simultaneous dispatch of a Paramedic Ambulance Crew and a Fire Department Engine Co. In the county a Volunteer Fire Department Aid Crew and the Countywide Ambulance Paramedic Team are simultaneously dispatched. We are able to get some type of basic life support to city residents in less than 4 minutes and to 60% of the county residents in less than 8 minutes. We hope to train 30% or more of our population in basic life support (CPR) technique.

Applying city-county cooperation with the aid of local and federal funding we are implementing a most efficient and effective emergency care system.

Urb., Fed. \$

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Whatcom County EMS
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ORGANIZATIONAL ASPECTS OF THE URBAN EMS SYSTEM

The organization of any effective Emergency Medical Service System requires the development of a firm pattern of liaison between the operational and the medical aspects of the EMS program. The larger and the more complex the municipality being served the greater is the need for lending structure and definition to the above concept. Structured medical input and overview of EMS development must work hand in hand with the operational aspects of the EMS program if a truly effective and well organized service is to emerge.

The failure of urban areas to develop appropriate EMS programs too often relates to the lack of having made provision for strong guided administrative leadership in the medical sphere. Without much leadership medical definition and control is easily lost, and thereby the EMS program fails.

The complex of agencies involved in urban EMS planning must solidify themselves into effective liaison programs with each other to insure that conflicting efforts and reduplication does not undermine the program.

Coordinated input between the EMS agency complex will lead to a successful program. No one agency can go at it alone, each agency has something very unique to provide and each by the nature of ordinance, and officially designated responsibilities has a very definite role to play in EMS program development.

Urb., P1.

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Board of Health
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DEVELOPMENT OF A PARAMEDIC PROGRAM
IN AN URBAN RURAL COMMUNITY

Whatcom County, extending from sea to mountains, is located in northwest Washington State. It has a population of 120,000 spread over 10,000 square miles. Its largest city, Bellingham, has 45,000 people. The only ambulance-emergency care system is provided through the Countywide Ambulance Service staffed by members of the Bellingham Fire Department. This service took over only 1½ years ago after the failure of private firms. In an effort to upgrade the level of care provided by ambulance personnel, the Seattle Paramedic Program was adapted to our urban-rural community. Using the local resources of physicians, hospitals, city and county governments, and the community college over 1,100 hours of didactic and practical teaching was given. The unique ability to gain the cooperation of the city and county officials to provide local and federal funding, the physician community to provide teaching, and the acceptance of the general public of the need for better emergency care has permitted our program to go from non-existence to paramedic level in such a short time.

Urb., Rur., Pers.,

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EMERGENCY MEDICAL CARE

Philadelphia, Pennsylvania, like many large communities, has recently been involved with several mass casualty situations - a two-ship collision and fire, and a refinery fire. The imminence of the Bicentennial Year has spurred the Office of Emergency Preparedness, in cooperation with the Philadelphia County Medical Society, to practice more coordinated exercises.

Organized preparedness began after World War II, when a group of physicians from the Philadelphia County Medical Society formed a "City Defense Committee." This committee soon began to discuss other types of disasters and the committee was expanded to become the "Emergency Medical Care Committee." Non-medical, supporting organizations were later added and were called "Emergency Service Organizations." A further extension occurred when representatives of the seven surrounding "Disaster Committees" were added.

Since 1960, annual disaster drills have been conducted. Each major hospital simultaneously conducts a mass-casualty exercise and reports its activities to a central office within its own county.

A plan was printed to support the overall organization, the Committee on Emergency Medical Care has been assisting the Fire Department, which is charged by the City of Philadelphia for manning emergency rescue vehicles. These specially-equipped ambulances are called on to aid individuals or groups requiring resuscitative measures on location or on the way to hospitals. Manning these vehicles are "Emergency Medical Technicians" of various grades of training up to and including the capability of administering intravenous medications, use of electroshock therapy for cardiac defibrillation, and administration of oxygen.

Urb., Cou., Pl.

Dr. Arthur Tarrow
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DENVER METROPOLITAN HOSPITAL CLUSTERING PHENOMENON

In a metropolitan area of greater than 1.5 million inhabitants, with twenty-six (26) licensed hospitals, two major federal facilities and almost 7,000 beds, some systematic organizational structure must be established to effectively handle emergency care patterns. In the Denver-Metro area, with the support of the Denver Regional Council of Governments and the Metro Denver Hospital Council, eight sub-area service care areas and corresponding sub-area councils have been designated. The eight sub-areas each have representatives which meet as the Denver-Metro EMS Council. Each sub-area council includes a representative from: each hospital in a cluster of two or more hospitals with shared or overlapping service areas; representatives of other private, quasi-public, or public agencies; and a consumer who provides or receives emergency medical services in the sub-area. It is the intent that hospitals in each cluster voluntarily selected one member facility in the sub-area to serve as the emergency care Primary Receiving Unit. All emergencies are routed to the Primary Receiving Units unless the facility has reached a critical mass load. All hospitals in a given service care area may still maintain emergency departments as a courtesy to their attending staff, their respective patients and as a back-up to the Primary Receiving Unit.

Urb., Fc/Ct.

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RURAL EMS

PROVIDING PATIENT CARE TO A SMALL, REMOTE TOWN IN OREGON

Sprague River, Oregon, is a small town of 240 citizens with a growing retirement community with all the ensuing serious emergency medical requirements. The town is too small to support a doctor and the nearest hospital is in Klamath Falls, a solid hour's drive away.

The Sprague River Women's Home Extension Group recognized the problem and instigated the first of many "self-help" activities: A First Aid class. The citizens of Sprague River then bought an old ambulance to transport seriously ill and injured people. However, there were no trained personnel and there was no operating budget. The Emergency Medical Services Section of the Oregon State Health Division was contacted and a "Rural Emergency Medical Technician Instructor" was sent to Sprague River to train a class of EMT's. Next, this group of public service minded volunteers organized a Volunteer Ambulance Association. The Association then began having cake sales, dinners and an annual Bar-B-Que to raise funds to operate their emergency medical service.

A "Be Kind to Your Heart Day" was declared and a borrowed sphygmomanometer was used to check anyone's blood pressure. No fee was charged, but donations were accepted and the proceeds were sent to the Heart Fund. Many of the senior citizens require oxygen service, periodic vital signs checks and other paramedical services which the Volunteer Ambulance Association's EMT's can perform. There is no charge for these services, but donations are accepted and the money put into the operating budget. Nominal charges are made for transportation services, yet ambulance drivers and attendants do not receive remuneration; the proceeds go into the association's bank account. Through a combination of frugal budgeting, hard work, borrowing and a tremendous sense of community pride and responsibility, together with financial help under the Emergency Medical Services Systems Act of 1973, this small, rural community now has a corps of highly trained Emergency Medical Technicians, a 1975 Ambulance, and a fine garage to house it in.

Rur., CE&I, Cons.

Elva Koepke
Sprague River, Oregon

RURAL RESCUE SQUADS AS FIRST RESPONDERS

Legislation designed to upgrade emergency medical services, while necessary and advantageous, has also placed a great burden on ambulance services in rural areas. Since the Northwest Missouri EMS Region is primarily rural, alternatives must be sought which can assure a high quality of emergency medical care while at the same time considering the limited financial and manpower resources in these rural areas. Many rural ambulance services are manned by volunteers who do not have the time and money to be highly trained in EMS, and their skills are not utilized to the extent that they can maintain highly technical EMS skills. Small communities also many times do not have the funds needed to equip and maintain a licensed ambulance service.

An alternative which is being implemented in one county and considered by another is the use of Rescue Squads in the smaller outlying communities in the role of First Responders. The idea is that these Rescue Squads are close at hand, are equipped with extrication and certain first aid equipment, and therefore, can extricate (if needed) and stabilize the patient until the arrival of an ambulance. The Rescue Squad would not under ordinary circumstances transport the patient.

This alternative can have certain advantages. First, immediate aid is available since Rescue Squads are well dispersed. Secondly, the acquisition and maintenance of EMS skills is much more feasible because Rescue Squads act only as First Responders until the arrival of the ambulance. The ambulance and crew can be stationed at a hospital and can be engaged in medical care on a full-time basis. And finally, costwise, it is more feasible to limit the number of licensed ambulance vehicles in a given area.

Rur., Pers.

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Two questions of great importance are (1) how to achieve a truly functional and operational link between rural community hospitals and major city medical centers; (2) how to gain the cooperation and consensus necessary to effectively categorize larger hospitals and, among them, designate trauma centers and other critical care units.

Item 1: Conceptualization of an EMS System - Although it was difficult to elicit a definition, there is no difficulty eliciting problems involved with attempts at systems planning: (a) Lack of local input; (b) inability to obtain physician input in planning; (c) inability to elicit meaningful support from the regional university school. (1) Most university physicians recognize such participation to be - in the long run - academically very uncreditable; (2) Many places, the university is looked upon as a threat - instead of ally - by the private practice community, in rural and metropolitan communities.

Item 2: Categorization of facilities and patients; consolidation of resources: Places which do not already have a trauma center designated has been unable to formally do. Efforts at consolidation are a joke.

Item 3: Treatment protocols and transfer agreements.

Item 4: Training Programs: Injury for injury, salvage of critical patients in the rural environment requires the same level of expertise and sophistication in a life support system as that in the urban setting. The difference is that a rural community usually cannot independently fund such a system. If outside EMS funding were available for a predominantly rural region, the obvious place to spend a lot of would be in the rural areas of that region. (This would even serve the vested interests of "city folk", since two-thirds of the trauma fatalities occurring in rural areas are city dwellers.) When it came down to the hard nitty gritty of cash on the table, dollars for training were channeled first to where they could maximize political impact, rather than survival impact: i.e., metropolitan - versus rural - communities.

Item 5: Evaluation - There has been no serious funding effort for data acquisition. If we believe that in the future we will have to show results in order to continue to be funded, we'll have to start worrying.

Rur., Adm.

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MEETING THE E.M.S. NEEDS OF VISITORS TO AREA RECREATIONAL FACILITIES

The Brazos Valley Region in Texas has one major lake used as a recreational facility. Since the opening of Lake Somerville in 1969, consistently growing numbers of people use it and a proportional increase in the number of accidents with injury has been noted. The lake and surrounding park occupy an area of approximately 39,800 acres. At the nearest point, a hospital with basic emergency room capability is 15 miles away.

Last summer a study of the resources available and methods to improve emergency medical care at Lake Somerville park was undertaken. Resources were inventoried and information gathered from the Parks Service and Corps of Engineers personnel.

Existing facilities include two boats, one at each marina on the lake, for emergency transportation - not equipped with emergency medical supplies; one Corps of Engineers manned boat equipped with emergency medical supplies and 2-way radio for communications with the Sheriff's office and; three Texas Parks and Wildlife Rangers who patrol the park area are first-aid trained and carry a limited amount of medical supplies in their vehicles. The most commonly reported injuries are burns, snake bites, minor cuts and sprains, according to the Rangers.

The Town of Somerville has organized a volunteer rescue squad and ambulance service available upon request, but there is a scarcity of telephones in the lake area making the service inaccessible.

Emergency Medical Services program staff, Texas Parks and Wildlife personnel, the County Judge, and the local chapter of American Red Cross are currently working cooperatively to institute the following services in the recreational area: wide distribution through marinas and local businesses of brochures containing emergency telephone numbers and a map showing the location of the nearest ambulance and hospital; a supplemental referral map posted at entrances to the various camping areas showing the location of marinas, ambulances, public telephones and hospital; establishment of first-aid station staffed with Red-Cross certified volunteers during peak visitation; standardized procedures for transporting critically ill or injured to appropriate facilities and; M.A.S.T. helicopter landing sites at strategic locations around the lake. Funding for some of these projects is expected to come from local service clubs.

Rur., Spec.

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EMTACT: The Development of a Rural EMS System in Alabama

The Emergency Medical Technical Association of Coosa and Tallapoosa Counties (EMTACT) was started in 1971 to meet the threat of loss of ambulance services in the area. The area was primarily rural with pulpwood, farming, textiles, and lake-area recreation as the chief occupations. The area was also one with the lowest per capita incomes in the state. The first phase (1971-72) saw the development of a training program for EMTS under an existing Fire Science program at the local Junior College; the evaluation of needs along the AMA guidelines; and the purchase of one ambulance. The Second Phase (1972-74) consisted of the expansion to a two county agency for planning and the initial financing of ambulances by joint city-county governments. The communications systems was also established. Phase three (1974-present) saw the incorporation of the system with the mayors and probate judges as the board of directors; the allocation of \$0.25 per capita per year for equipment replacement; the expansion of training programs; additional ambulance placement to provide 20 minute response time to entire system (4 min to 80% of population); and development of newborn transport capability. Future plans call for the establishment of central dispatch to be operated by the prison work release center; establishment of extrication training and training range; and the expansion of hospital emergency facilities.

Rur., Pers., Fin., Comm.

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FLORIDA'S RURAL EMERGENCY MEDICAL SERVICES CONFERENCES

Keeping the unique situation of rural medicine in mind, Florida is presently offering a series of "intra-state" one-day clinical conferences in rural areas. These small, local meetings offer up-to-date scientific information to physicians and nurses in their local area. This project was developed to assist rural physicians and nurses keep abreast of the rapid progress being made in emergency medical knowledge and skills, and their associated delivery capabilities. A deluge of new ideas, approaches, and information make it impossible for physicians and nurses, especially rural physicians and nurses, to rely solely on printed materials and attendance at national meetings to remain adequately informed and educated. National organizations, such as the American College of Emergency Physicians, have found it increasingly necessary to disseminate information through publications, self-assessment examinations, intensive postgraduate courses, and additional scientific meetings on the state level.

Meeting sites are geographically spread throughout the rural areas of Florida. A registration fee of \$25 is charged for all attendees and a maximum of 25 participants are registered for each conference.

The following objectives have been set for this program:

1. To assist rural practicing physicians and rural nurses in keeping up-to-date on new developments in emergency medical care.
2. To bring the new advances in emergency medicine from the major urban medical centers to rural physicians and nurses.
3. To provide the practical skills and training necessary for life support.

Rur., Pers., Ste.

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SUMMARY OF EMERGENCY SERVICES FOR THE COEUR D'ALENE, IDAHO AREA

Coeur d'Alene is a resort city of 18,000 in northern Idaho. The basic population for whom emergency services must be provided is 45,000 persons expanding to 100,000 during the summer. The hospital is a single, 190 bed general and acute care institution which has through a hospital district, limited taxing power. The medical staff numbers 45 with 50 percent involved in family practice; the remainder representing all specialties except neurosurgery, nephrology, neonatology and radiation therapy.

The emergency department has not had full time staffing, the calls taken in rotation by members of the medical staff as required by hospital bylaws. Emergency visits average 1,000 monthly with approximately 25 percent having no private physician.

The quality of the emergency services concerned the staff. They recently voted instituting full time coverage. While the concept has never been questioned, financing has been a problem. The hospital board would not underwrite salaried physicians, however they appointed a Director of Emergency Services indicating willingness to support him up to financial assistance during formative establishment of emergency room service. This when completed will consist of four physicians on a fee for service basis. The service begins May 1976 with two physicians providing night, weekend and holiday coverage. The rapidity with which services will be expanded fully is now unknown.

The question is partially resolved in terms of providing emergency services. The general staff will rotate back up calls until full time staffing occurs. Income potential is unknown now; however, it is assumed with the rapidly expanding population that demand for services will expand sufficiently to make the department self-supporting.

Rur., Pers., Pl.

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Idaho EMS Task Force

Vice President Inland Empire Emergency Medical Service Coordinating Council
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VOLUNTEER AMBULANCE SERVICES IN A RURAL SETTING**VOLUNTEER AMBULANCE SERVICES IN A RURAL SETTING**

Health care is a vital service, whether it be in a large urban area or in a sparsely populated rural area. As population decreases, the number of ambulance calls on a per capita basis naturally does the same. It is for this reason that fully staffed ambulances are not economically practical for a rural area.

In our three county medical control area, located in the "Thumb" area of Michigan, we have nineteen ambulance services; eighteen of which are staffed by volunteers and one being a full time service run out of a local hospital. Our primary service area covers approximately 2,100 square miles with a population of over 130,000 and, as of June 1976, we will fortunate enough to have 166 trained EMT's.

In our area all of our volunteer groups take great pride in the services they perform in the health care field, and look at those they serve with a feeling of friendship and compassion.

One particular service in our area has implemented increased public education programming to better alert the general populous as to the need for good ambulance service and, in return, the area they serve has shown their support by many financial gratuities. Response time is good and the level of training is exceptional with our many dedicated volunteers.

The EMS system in this rural part of Michigan has proven that a high caliber of primary care at the scene can be, and is, administered by a volunteer ambulance at a minimum of expense to the respective community.

Rur., Trsp.

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RURAL EMS

The rural setting is one of long distances, various delays (detection, dispatch, arrival time, etc.), sparse population, low incidence, decreased support, and perhaps relatively lengthy transport time. These same factors may produce critically ill or injured patients who can benefit most from optimal care at the scene and during the relatively long transport times required.

Telemetry may be especially useful in the rural system because of its effect on quality control. The telemetry system may be especially helpful with the partially trained or less well practiced rural EMT in terms of providing on-line consultations in both diagnosis and resultant decision making. The fact that medical support in the rural area may be quantitatively low should not be a bar to this system. Modern communication techniques make it possible for the doctor to be mobile, not restricted to the hospital, and yet immediately available. Portable equipment permits two-way voice communication and data reception for the doctor at home, in his office, or even in his car.

Another advantage of the complete communications capability in the rural setting is its utilization for continuing educational needs. There may not be enough clinical calls received by each member of the paramedic team to permit him the practice necessary to perfect clinical skills. The communications and telemetry capability is even more necessary in the rural setting because of this low utilization, difficulties in training, and increased time factors.

The argument that continuing educational needs can be met by retrospective examination of records decreases the quality of care immediately available to the victim in the field.

It is clear that the EMS system is slowly building across the U.S. As of July 1975, there were approximately 89 regions receiving planning support, 93 establishing funds, and 27 being far enough along to qualify for expansion funds. Thus, there may be 30 or 40 systems now deemed adequate - mainly in the urban setting. In terms of nationwide, we are not half done; we are really only half started. With less than 10% of the country termed adequate, there is ample time to plan for rural systems and it is still early in that process. Training and communications for the rural systems are more difficult and, perhaps, even more important than in the urban setting.

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Rur., Pers.,
Comm., Md.C.

RURAL EMS: REGION FIVE, ILLINOIS

With reference to Rural Illinois, the greatest problem was the lack of specialty capabilities with small rural hospitals. Within the 27 counties there were 31 small hospitals, the smallest one with a bed capacity of 27. There were six counties without a hospital but each county was served by at least one physician with office capabilities. The lack of specialty capabilities necessitated transferring out of the region many patients a distance of 100 to 375 miles.

When the EMS or Trauma System as it was called then began, there was one Regional Center, designated by virtue of it being associated with a Medical School at Southern Illinois University, one areawide and five local centers located geographically throughout the region. The designation of these centers was accomplished by a board comprised of representatives from all hospitals within the region. Each hospital made a self assessment of their capabilities and submitted their findings to the board. A team appointed by the Director of EMS made on-site visits to each hospital who desired to be a trauma center. These findings were also submitted to the board for designation of the trauma centers.

Poor roads and long distance of travel created another hazard. The correction of this problem was accomplished in two basic ways: by airplane and helicopter.

At this time, we discovered the need for a RN trained to make these transfers.

A system was devised that the transferring hospital coordinate the transfer.

This left the problem of transporting the patient from the scene to the hospital, and treating the patient in the small hospital. In many cases, the patient was treated by a nurse before a physician arrived.

Rur., CC., Trfr.

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RURAL HEALTH

THE FUNERAL HOME JUST STOPPED OPERATING THE AMBULANCE Service!!!

I don't believe it! They can't! What do we do now? These reactions are those of most people in a rural setting. State regulations now govern the operations of ambulance services in the State of Missouri, and many local operators are quitting business because they cannot meet the minimum standards set down by law.

Immediate reaction is panic, disbelief, and confusion. The Regional Emergency Medical Services Office in Columbia was contacted. Their initial assessment of Moniteau County indicated there was a large number of people interested in taking the DOT 81-hour Emergency Medical Technician course. These people preferred that the class be taught in California because it was the area of greatest concern. Normally persons are referred to an established UMMC regional training center for this training, but courses could not be started or completed in time for trained personnel to begin operating the ambulances by December 1. The course was started in California by the Regional Emergency Medical Services office on September 17. Many long, hard training sessions, including some weekend training and occasionally three classes a week, were necessary to complete the course before December 1.

What first seemed an impossibility became a reality when every student completed the final written exam and displayed the skills necessary to satisfactorily complete the course and become a working EMT.

Each student is now volunteering his time as an ambulance attendant, thus becoming a valuable member of the basis life support system of his community and county. Any rural community faced with the problem of losing their ambulance service provider(s) could learn an important lesson from the EMT's in Moniteau County.

Rur., Trsp.

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A Model Comprehensive Emergency Medical Services System for Central Virginia

Our program involves the implementation of a comprehensive EMS in a rural planning district comprising one major medical center with a strongly independent and conservative population.

The political-socio-economic structure is typically rural except for the city of Charlottesville. A private corporation based in Charlottesville operates two ambulance-equipped aircraft which are based at the Charlottesville-Albermarle Municipal Airport. The medical emergency transportation is provided, without charge, by nine volunteer rescue squads. At the initiation of this program, only one of the rescue squads had vehicles equipped for radio communication with the Medical Center and some rescue squads were not even capable for communicating with their dispatchers during ambulance runs. These rescue squads execute approximately 14,000 runs per year. The Medical Center is the only facility that provides EMC coverage for 24-hours a day.

Design Criteria - The overall goal of the EMS system, to reduce mortality, morbidity and disability due to medical emergencies. Our systems design was guided by five major principles: 1. The EMCS must be designed as an integral part of a comprehensive health care system (CHCS) and not as an isolated part. 2. The new system must not only be accepted, but actively supported by providers and consumers. 3. Knowledge of first aid measures, familiarity with access and high quality medical care are crucial components. The backbone of the design is a dedicated information system. The data collected on each patient going through the system are based on the improvements in functional status. 4. The system must make maximal use of existing facilities. 5. Benefits and drawbacks of any system changes are to be evaluated on a periodic basis.

Rur., Pl., Eval.

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RURAL HEALTH INITIATIVE
IN
WEST ORANGE FARM WORKERS HEALTH SERVICE CLINIC

The West Orange Farm Workers Health Service Clinic provides basic health services typical of a physician's office, including laboratory, X-ray, and some pharmacy services. Rural Health Initiative funds are being used to expand the services provided to meet the health care needs of a patient population that is largely migrant, extremely rural, and widely dispersed. The impact of grant funds during the first six months of operation has been very noticeable. The acquisition of additional staff has resulted in a 100 percent increase in the number of patients the clinic is able to treat. The clinic now has a functioning outreach program that enables it to maintain two supplementary clinic sites and to operate a preventive medical program for the service area. The site pays for emergency medical services provided by two hospitals, Orange Memorial and Mercy in Orange County with whom it has contractual agreements. The clinic authorizes emergency treatment for its patients. The site has made arrangements with the Orange County Fire Department ambulance service for the purpose of transporting critically ill patients to hospitals in Orange County, and with the six ambulance services in Lake County to transport clinic patients to one of the hospitals used by the site. The Social Services Department of Orange Memorial Hospital is helping the clinic to educate patients regarding availability and use of emergency medical facilities, and screens patients when they arrive for emergency treatment.

Rur., Spec.

Don Scheer
West Orange Farm Workers Health Services Clinic
Apopka, Florida

RURAL HEALTH INITIATIVES
FOR
DARKE, MERCER, SHELBY REGIONAL HEALTH SERVICES, INC.

Rural Health Initiative funds are being used to expand the health care delivery capacity of the project through the addition of staff and the development of laboratory and pharmaceutical dispensary facilities. DMS, Inc., operates two clinic sites which provide a full range of medical services, including mental health services and some dental services. Mobile well child, immunization, and "sick call" services during peak summer months supplement clinic operations. Hospital care is arranged for with specialists in the service area as well as referrals to teaching hospitals located in Dayton and Columbus. The project has also coordinated its services with the activities of the local public health agencies. Emergency medical services are coordinated through a 24 hour on call arrangement of paramedic providers with telephone consultation and standing orders by physicians. EMS Planning Grant funds have been used to train community volunteers from Darke and Shelby Counties at Dayton Hospital as paramedics. These paramedics staff the community-owned and operated ambulance service in Darke and Shelby Counties. Project patients may use emergency treatment facilities in any of the area hospitals when required.

Rur., Reg., Fed. \$

Susan Kamp
Darke, Mercer, Shelby Regional Health
Services, Inc.
Greenville, Ohio

RURAL HEALTH INITIATIVES
FOR
MID-COLUMBIA GORGE RURAL HEALTH CARE SYSTEM

The development of the Regional Rural Health Care Delivery model has included the integration of services provided by the Stevenson and White Salmon clinics. Hospital services are available for residents of Klickitat and Skamania Counties, and referrals may be made to hospitals in Hood River and Portland, Oregon. The project is expanding its delivery of health services, and is instituting educational procedures and programs within the medical community. Clark College in Washington has certified the three National Health Service Corps physicians in White Salmon as EMT instructors. Twenty-five community members who took a course in EMT, funded by the community, are now certified EMT technicians and serve as volunteer ambulance personnel. These volunteers operate a community-owned ambulance service in White Salmon. The Corps physicians also staff the Skyline Hospital emergency room, which serves the western portion of Klickitat County and the eastern portion of Skamania County. This has solved the major problem of lack of emergency treatment facilities in the service area.

Rur., Reg., Pers.

Marily Thaden
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LEGISLATION / ORDINANCES

IMPLEMENTATION OF AMBULANCE LAW COORDINATED
THROUGH MASSACHUSETTS EMS PROGRAM

Under the 1973 Ambulance Law, the Massachusetts Department of Public Health is enabled to inspect and certify all "ambulances." In addition, the Department is enabled to license all "ambulance services." The over 400 services in the Commonwealth which fall within this definition include municipal police and fire services, non-profit associations, volunteer groups, and proprietary services. Types of ambulances they operate include several classifications. A set time has been established for meeting the training standards of each class, and for phasing out the use of "Cadillac"-type and "dual-purpose" vehicles as first-line emergency ambulances.

The licensure and certification process for these hundreds of services and their vehicles and personnel is by no means comparable to that of traditional licensure and inspection programs. Both the Ambulance Law and its regulations are EMS systems-oriented, requiring the development of a multi-level system of ambulance availability that is completely integrated through an EMS communications network with the hospital EMS networks now being developed and implemented throughout the state.

The regulations establish different standards for vehicle specifications, equipment, training, etc., depending on the use to be made of each ambulance. The ambulance services will be assessed for their conformance to basic standards concerning their personnel, training, operations, back-up agreements, communications, operating protocols and procedures, insurance and many other issues.

Leg., Trsp.

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EMS RULES AND REGULATIONS IN ARKANSAS

In March, 1975, ACT 435, (EMS Act of 1975) was signed into law by Arkansas' Governor. In accordance with Act 435, the first draft of rules and regulations governing emergency medical care was developed jointly by the state-level EMS Advisory Council and the Arkansas Department of Health. This 78-page draft was endorsed by the Council and distributed to all interested persons for public comment during August, 1975.

Objections quickly surfaced. The Department and the EMS Council, revised the original draft to accommodate some major objections. A public hearing was conducted on October 29, 1975. Additional objections were expressed at that time.

This draft was revised to permit a licensed nurse to perform EMT functions aboard the vehicle without completing EMT certification requirements. The second objection was resolved by permitting the Advanced EMT to perform endotracheal intubation under the aegis of the Arkansas Society of Anesthesiologists. The third objection, directed at a provision requiring mandatory dispatch by regional Resource Coordination Centers, was eliminated by making dispatch acceptance voluntary. Remaining objections related to fear that licensure would put some out of business.

Following all efforts to compromise, opposition was still evident. A bill was introduced in the state Senate, sailed through both Houses and became law on January 27, 1976, requiring that before any rules and regulations are promulgated by the Arkansas Department of Health that final approval be given by the General Assembly.

Leg., Pers., Ste.

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THE ADVANTAGE OF OPENENDED EMS LESIGLATION

In September of 1971, the Alabama Lesislature passed the Emergency Medical Services Act known as the "Ambulance Bill". The most unique feature of the act was the authorization given the Alabama State Board of Health to promulgate rules, regulations, and standards necessary for regulation of ambulance operations, training requirements, and licensure.

The first effective date of the regulations was November, 1972 and contained sections on Definitions, Licensure, Training, Medical Equipment and Vehicle Specifications, Communications, and Record Keeping. The approval mechanism involves the State's EMS Advisory Board, named in the bill, a public hearing of the proposed regulations and final approval of the State Board of Health. Changes can be accomplished within 60 days of Advisory Board approval and recommendation to the State Board of Health.

The dynamics of the EMS program requires the flexibility for change of regulations that the Alabama law provides. Two revisions have been accomplished since November, 1972 with the last being in July, 1975. Such flexibility assists in the acceptability of the State EMS Office and the controls exercised by the office in helping EMS activities to progress within the state. The successes of the legislation/regulation method for EMS activities are paving the way for another piece of legislation on hospital categorization.

The last public hearing for regulation revision produced such a strong showing of support of EMS activities in contrast to the first hearing and reading of the regulations, that the chairman of the State Board of Health likened the gathering to an "old fashioned Baptist tent revival." Such has been the progress of EMS in Alabama, assisted in no small measure by the "open ended legislation".

Leg.

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AUTHORITY FOR AND REGULATION OF ADVANCED
PRE HOSPITAL CARE PROGRAMS

Since 1968, advanced prehospital care programs have been developed in at least 41 states. Since 1970, at least 28 states have developed some form of authorization and/or regulation of such programs. The legal schemes have taken three basic shapes: (1) statutory authority and definition; (2) statutory authority and delegation of rule-making to a regulatory agency or board; and (3) broad interpretation of a medical practice act or physician assistant statute.

The first of the approaches is to be found in the pioneering Wedworth-Townsend Act, enacted by the California Legislature. Although the California approach provides great clarity and definition, political access to the statute subjects it to annual debate, uncertainty and change at the behest of special interests. The second approach was used in North Carolina, where a very bland statute authorizes the State Board of Medical Examiners to approve a training program and establish rules and regulations for mobile intensive care operations. The rules and regulations adopted are identical to the California Wedworth-Townsend Act but are not subject to annual scrutiny by the state legislature.

The third approach has been taken in Nebraska and Pennsylvania. However, there is a question whether such medical practice acts or physician assistant laws were intended for approval of prehospital advanced care. EMS officials in at least two states using such a device state that they don't feel the authority is adequate.

In practice, the North Carolina approach would appear to be preferable. It allows for necessary change in the professional and thoughtful domain of the Board of Medical Examiners. And it removes this important area of health care regulation from the dangerous political arena of a state legislature.

Leg., Ste.

by James O. Page, M.D., Director
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INDIANA HOSPITAL ADMINISTERED E.M.T. TRAINING

In the 1974 session of the Indiana General Assembly, the Emergency Medical Services Commission was given the authority to develop and promote a statewide program for the provision of emergency medical services including training of personnel engaged in emergency medical care and treatment.

In June 1975, the Commission received a grant award from the U.S. Department of Health, Education and Welfare, Allied Health Professions Special Projects which was to provide training of persons for emergency ambulance service. The grant was implemented by a contractual agreement between the EMS Commission and each of the state's fourteen Regional Coordination Hospitals, thus establishing a focal point for inter regional training. The contract restricts the use of funds to those persons who are, or will be engaged in the provision of emergency ambulance service. The implementation of training programs have in many cases been approved on the basis of equipment grant awards from the Indiana Department of Traffic Safety. In proposing to provide training for the entire state, the inefficiency of duplicating services and the futility of attempting to bring all trainees to a central location was recognized. These pitfalls have been avoided by a coordinated effort directed by the Commission in utilizing other resources available in local and area medical facilities.

The final result of this effort has been the equitable distribution of high quality medically oriented training in rural areas of the state as well as urban centers, with the ultimate improvement in the care of all patients needing emergency medical services in Indiana.

Leg ., Fed \$., Pers., Ste.

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PLANNING

EMERGENCY MEDICAL SERVICE PLAN DEVELOPED AND OPERATIONAL IN SULLIVAN COUNTY

In the winter of 1974, in the north central section of Sullivan County, school bus loaded with small children being returned to their homes was struck by an automobile driven by a middle aged man and wife who were returning home from a shopping trip. The road conditions were very hazardous due to snow and freezing rain.

The hospital is the center of our Emergency Medical Service Plan, with two equipped emergency vehicles and fully trained Emergency Medical Technicians working in nursing care providing emergency coverage 24 hours per day. A call came into the hospital base radio station describing a school bus and auto collision by the local law enforcement agency outlining the needs for emergency medical assistance to the children and the couple. Planning calls for and has trained Emergency Medical Technicians in most all communities with a map at the base station showing the distance to all areas with a list of trained Emergency Medical Technicians and their home phone numbers. The ambulance units were dispatched with trained Emergency Medical Technicians in charge of the vehicles which would require about 25 minutes travel time to the scene. The base then placed calls to the homes of two Emergency Medical Technicians living in the area. These calls were received by the parents of the Emergency Medical Technicians who called the report to the Emergency Medical Technicians by CB Radio.

The Emergency Medical Technicians were within a few minutes of the scene and almost immediately our plan placed Emergency Medical Technicians at the scene where they were able to take charge of the disaster and stabilize the patients who were transported to the Milan Hospital for treatment and care.

Pl., Pers., Trsp., Comm.

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A SOCIO-TECHNICAL STRATEGY-IMPLICATION FOR EMSS PLANNING

STATEMENT OF PROBLEM

The development of the Capital Region 1203 EMSS grant proposal was accomplished by addressing several problem areas. They were: influencing affected populations, conducting research, and EMSS conceptualization with limited staff expertise, manpower and time. Another task area was educating a population with diverse socio-economic background to the concept of EMSS.

METHODOLOGY

To impact these problem areas a management by objectives approach was used for effective manpower utilization and monitoring. Also a socio-technical planning approach was operationalized allowing the staff to optimally utilize community resources.

By utilizing all mass media, seminars, presentations, and EMS distributions, a public education program was developed. A linkage system was then initiated with formal organizations and primary groups through participation in activities of the Project and a community outreach program. This involved an outreach into the community by the staff and the utilization of opinion leaders, formal and volunteer organizations, primary groups (civic clubs) and common messengers (providers) to influence political structures to support EMS.

Finally the identification of regional EMS needs was accomplished by input from EMS Subregional Councils and a Regional Needs Seminar. Analysis and EMSS conceptualization was a product of four technical committees. These committees provided technical input into systems development as it relates to systems designs for critical patient groups, categorization, and system financial aspects.

CONCLUSION

This socio-technical planning model allowed the staff to maximize its internal resources and supplement them with community resources making it feasible to accomplish the task of system planning. These tasks effected system change through education, support through community outreach, and EMSS conceptualization through technical committee input.

Pl., Reg.

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*EMS Emergency Medical Services
*EMSS Emergency Medical Services System

Regionalization of Emergency Medical Services in Eastern Pennsylvania

Organizational Structure

One of the problems facing EMS planners is the development of an effective mechanism which allows for the input of all those components involved in the operation of an EMS system in the planning and implementation of that system.

In July of 1975 the Eastern Pennsylvania Comprehensive Health Planning Board (CHPB) received a Section 1202 EMS planning grant. During the past seven months an EMS technical advisory committee, together with two full time EMS staff members examined the status of EMS in a six-county region. The product of that planning period has been a plan for the initial establishment and operation of a Basic Life Support System and the development of the Eastern Pennsylvania EMS Council, a nonprofit organization specifically designed to implement a regional EMS system.

The organization of the EMS Council provides a mechanism for consumer, provider and governmental involvement in the design, development and coordination of an EMS system. Membership on the EMS Council is open to any interested citizen of the six-county region. This body annually elects a governing body or Board of Directors. The Board of Directors is designed to be geographically representative of the six-county area, and representative of the various provider and consumer interest groups in the community. The 21 member Board must consist of at least three consumers (individuals with no direct training or professional affiliation with EMS), and at least two representatives from each of the following areas: ambulance services, physicians, nurses, hospital administrative personnel, MH/MR personnel, and public safety personnel.

Because of the complexity of an EMS system, the Board has established a number of committees. These committees have been developed in the areas of communications, categorization, training, financing, public education and management. The Council members lend their personal expertise to the design, development and evaluation of emergency medical services by participating on each of these committees.

The formation of the Eastern Pennsylvania EMS Council represents one of the first regional approaches to the coordination of EMS in the six-county region. The effectiveness of the EMS Council still remains to be tested, but it is felt that the organizational structure provides one of the most viable mechanisms to insure consumer, provider and governmental participation in the planning and development process.

Pl., Reg., Cou.

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EMS PLANNING IN BOSTON

EMS planning in Boston has been organized with the hospital as the main focus of the effort. Organizationally, the effort is sponsored by the Conference of Boston Teaching Hospitals, who have designated physicians, nurses and administrators to sit on the Hospital Committee. The Hospital Committee draws its membership from in-home EMS Committees set up as a result of the Conference commitment to EMS. The Department of Health and Hospitals, City of Boston, the operational entity providing Emergency Medical Transportation, sits on this Committee. The Hospital Committee has become the central EMS planning body for all aspects of the EMS system in Boston.

The Conference of Boston Teaching Hospitals, and its designated representatives, have designed the medical part of the system. In addition, they have functioned as the enforcers of the plan, and overseers of the system, in that the plans of the Department of Health and Hospitals are submitted to the committee for approval, as well as all other plans pertaining to Emergency Medical Services.

The medical providers have taken the lead and continue to do so, by supporting the EMS planning effort both financially and politically. All public safety agencies are linked into the system through the planning effort and development of the Communications Coordinating Center which is controlling both dispatch of vehicles and medical consultation. In terms of the approach for getting decisions made and enforced, it is clear that the Conference Hospitals, fourteen in all, will major teaching programs, have been the key to developing the system.

Pl., Urb., Fc./Ct.

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E.M.S. PLANNING IN GREATER ST. LOUIS

The Alliance for Regional Community Health, the areawide comprehensive health planning agency for St. Louis and its surrounding areas, was the official agent for completing DHEW feasibility and planning grants during 1975. This paper identifies and analyzes how personality conflicts, organizations competing for scarce resources, indifference on the part of key actors, and other factors interrelated to bring this regional effort to a standstill.

The article was written as a contribution to further the understanding of how technically feasible approaches to EMS systems can be furthered or hindered by human and political factors.

Pl., Urb.

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EMS SYSTEMS PLANNING - DEVELOPING AN EFFECTIVE FRAMEWORK

STATEMENT OF PROBLEM

The objective was to develop a proposal which provided a framework for planning of an EMS System in the Louisiana Capital Area. Besides serving as a practical planning tool, the proposal required mechanisms for community involvement in the process.

METHODOLOGY

Assessment of the existing System was accomplished by using personal interviews, the State EMS Plan, hospital and ambulance questionnaires. Through review of previous state and regional activities, readiness for an EMS System was determined.

The LCAHPC EMS Subcommittee of M.D.'s, hospital administrators, nurses, Red Cross, fire department and state police representatives served as advisory committee in grant preparation and generation of community support.

Based on a management by objectives approach, the proposal addressed all EMS components. To effect a logical, progressive achievement of tasks, major objectives were outlined in 4 time phases: data collection, Systems Model Development, Plan and Grant Development, and Plan Dissemination. The resulting proposal equipped the planner with a sound basis for developing the Capital EMS Systems Plan.

To ensure meaningful participation and support of area residents in the planning process, LCAHPC planning experience, geographic constraints, parish provincialism and political realities determined the mechanisms for community involvement, two sub-regional EMS Councils, with representation by providers, public safety agencies, governmental officials, and consumers.

SUMMARY AND CONCLUSION

To be effective, the planning framework must be geared to needs of the region and tasks to be accomplished. A suggested method is utilization of an MBO and time phase approach with sound mechanisms such as EMS Council(s) for involving area residents in the planning process.

P1.

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A MODEL COMPREHENSIVE EMSS FOR CENTRAL VIRGINIA

Our program involves the implementation of **comprehensive EMSS** in a rural planning district comprising one major medical center with a strongly independent and conservative population.

The Planning District includes five counties in the central region of Virginia with a total population in excess of 124 thousand people and an area of approximately 2,300 square miles. Average income per employee is approximately 7% below the average for the state of Virginia. About 16% of population is living below poverty level.

Medical emergency transportation is provided, without charge, by nine volunteer rescue squads. Rescue squad members are a highly motivated, autonomous group of individuals; their support is derived from annual contributions by local citizens and public funds.

Thirteen percent of the 14,000 executed rescue squad runs per year are related to motor vehicle accidents, 58% to non-motor vehicle related emergencies and the remainder to transfers and exercises. There are nearly 34,000 ER admissions per year. One-eighth are admitted to the hospital, one-third are treated and released, and the remainder are referred to outpatient departments or private physicians.

The overall EMS system goal is to reduce mortality, morbidity and disability due to medical emergencies. This goal is subject to severe constraints. For instance, the communities involved must be willing and able to provide the financial support for continued operation of the system once it has been implemented. Furthermore, the system must be an integral part of a comprehensive health care system and not an isolated part.

Pl., Trsp., Reg.

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EMS PLANNING AND COORDINATION

Because of the small size of the State of Rhode Island in terms of both geography and population, all emergency medical services, planning and coordination, were performed on a statewide basis with one committee advising the Division of Emergency Medical Services and the Director of Health on emergency medical needs.

The Emergency Medical Services Planning Project, after a study, concluded that integrated emergency medical services would more likely be achieved if encouraged on a regional basis. Six geographic health areas have been identified in the state on the basis of where residents of the various cities and towns seek health care, especially in-patient hospital care. The health service areas are: Northern, population 106,293; Providence-Pawtucket, population, 540,456; Kent, population, 138,090; South County, population, 33,086; Westerly, population, 41,662; and Newport, population, 76,704.

A service area study of hospital emergency visits indicated that the service areas for hospital emergency department utilization correspond to the health service area. It demonstrated a pronounced tendency for residents to utilize hospitals within their area for emergency services.

Planning for emergency medical services in each service area will be coordinated through area-based EMS policy committees. Development of the facilities, transportation and communications components of the EMS system will take place in increments on a regional basis but as part of a planned statewide approach. Each service area will have a strategically located Emergency Medical Resource Center. Its function will include centralized communications for its area, as most municipalities would strongly oppose any move to have the function of receipt of emergency medical phone calls and dispatch of rescue vehicles located centrally for the state.

Although area-based EMS policy committees for planning and coordinating services will be established, the need for the present statewide committee in the implementation of the plan will continue as an advisor to the Department of Health in statewide EMS matters and as a clearing house for information and coordination among the area-based policy committees. Its membership will be adjusted to include representation from the area-based committees.

Pl., Cou., Ste.

Robert F. McDonald, Coordinator
Emergency Medical Services
Rhode Island Department of Health

EMS SYSTEMS PLANNING
DEVELOPING AN EFFECTIVE FRAMEWORK

PROBLEM - The task to be accomplished was the development of an EMS Planning proposal which would provide an adequate framework for effective planning of a successful EMS System in the Louisiana Capital Area. In addition to serving as a practical tool for the EMS planner, the proposal needed to offer appropriate mechanisms for community involvement in the planning process.

METHODOLOGY - Assessment of the existing EMS System was conducted. Documentation of the need for an improved EMS system was provided. A determination was made regarding the readiness of the region for developing an EMS System. The proposal was based on a management by objectives (MBO) approach that addressed all fifteen EMS components. To effect a logical, progressive achievement of delineated tasks, major objectives were outlined in 4 time phases: Phase I - data collection, Phase II - EMS Systems Model Development, Phase III - Plan and Grant Development, Phase IV - Dissemination of Plan.

To ensure meaningful participation in the EMS planning process of residents throughout the region, past planning experience of the LCAHPC staff, geographic constraints, parish provincialism and political realities were considered in selecting a mechanism for community involvement.

In order to be effective, an EMS Systems planning framework must be geared to the needs of the region and the tasks to be accomplished. A suggested method is the utilization of an MBO and time phase approach with sound mechanisms such as EMS Council(s) for involving residents of the area in the planning process.

Pl., Cou.

Geraldine England, M. Ed.
Assistant Director
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Planning Council
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RECOMMENDATIONS AND ISSUES REGARDING
AN EMS SYSTEM FOR LOS ANGELES COUNTY

Planning Process - The planning process by the Los Angeles Countywide Coordinating Council on Emergency Medical Services (LACCEMS) has resulted in a series of 75 recommendations on the system. Some of these recommendations are already being implemented. They will also serve as a basis for continuing discussion as system changes occur.

The planning process was based on the interaction of technical planning concepts and participation by representatives appointed by 30 provider, government and consumer organizations concerned with EMS from the 78 cities in Los Angeles County.

Ratification - Participants in the second Los Angeles Countywide Conference on Emergency Medical Services (1975) agreed with the general recommendations of the Coordinating Council for improving emergency medical services in the county. A consensus was reached on establishing and enforcing standards to guarantee a high level of service. A majority of the conferees agreed that mobile units with paramedics and transport capability--backed up by fire engines when necessary--should be used for the first response in emergencies. The conference generally approved reducing the number of emergency departments in the countywide system to between 50 and 60 (provided they are of a higher level of service and in appropriate locations), and gave high priority to public education as a component of the EMS system.

Pl., Reg., Cou.

Leon Horovitz
Hospital Council of
Southern California
Los Angeles, California

METHODS FOR DETERMINING AND PROJECTING DEMANDS FOR EMERGENCY
MEDICAL SERVICES

This monograph contains methods to determine and project demands for emergency medical services. It develops key planning issues for these services. It also applies an analytical framework for choosing and using methods to deal with the demands for such services, and identifies additional sources of technical information to supplement the analyses and descriptions presented in this monograph.

Chapter I discusses the unique characteristics of emergency medical services planning. It explains why the issue of need determination is excluded from the monograph largely in favor of demand determination. It defines emergency medical services, and develops a set of issues that explains demand determination for the planning of a viable EMS system. It presents and explains the demand determination criteria used in Chapter II to analyze each method.

Chapter II analyzes, describes, and compares EMS demand determination methods. The format and content of the chapter are modified from the framework explained in the General Guide in order to complement the particular concerns and realities that must be realized in assessing emergency medical services.

Although it is important that users of this monograph refer carefully to the General Guide for explanations of the terms and basic structure of this monograph, it is equally important that readers appreciate the differences in this presentation of methods from the presentation in other monographs. Users should read the entire first chapter of this monograph to grasp fully the departure of this document from the General Guide and from the gist of presentations in other monographs.

Pl., Res.

Thomas F. Lantry, and
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MEDICAL MANAGEMENT AUDIT OF HOSPITAL EMERGENCY DEPARTMENTS

The California Regional Medical Program (CRMP) recognized the need to plan and develop an effective medical-management audit system and methodology that would allow an evaluation of emergency services in California's hospitals. Therefore, in January 1974 CRMP awarded a contract to the California Hospital Association's Hospital Education Foundation of California to begin the study.

During the course of the eighteen month project a survey guide was designed and revised and utilized in gathering data from 197 on-site audited hospitals, an additional 122 hospitals who responded by mail. This represents a total sample of 319 institutions out of 581 acute general hospitals in California. On-site audits were conducted by teams consisting of physician, nursing, administrative and other paramedical personnel. Hospital selected for on-site audits covered the total facility spectrum in terms of location, size, type and ownership.

Several recommendations, covering all aspects of the study, were made based on the analysis, experiences and observations gained throughout the course of this project. They address the need for updated information, coded survey for access to data processing, multi-disciplined survey teams who receive compensation and services, continuing education for hospital emergency service personnel and utilization by planners and evaluators of the information gathered from the survey process as well as utilization of the methodology developed by the project.

Pl., Cou., Reg., Trsp.

Mark Tanaka
Hospital Educational Foundation of California
Sacramento, California

INTERIOR ALASKAN REGIONAL EMERGENCY MEDICAL SERVICES COUNCIL PLAN FOR INITIAL ESTABLISHMENT OPERATIONS OF AN EMERGENCY PATIENT CARE SYSTEM

The need to share in a common concern and approach for providing patient care under emergency conditions through the integration of available health manpower and resources is the basis for the cooperative undertaking in developing a comprehensive regional plan for an Emergency Patient Care System. It is this realization that the people of the Interior share in the responsibility for planning and developing the most expedient and efficient provision of emergency care that makes such an Emergency Patient Care System feasible. What improvements are essential to the operation of a system, and, in fact, the development of a system approach to emergency patient care, can only happen when the concerned providers set medical priorities consistent with the demands for emergency medical services and with social priorities consistently supported by the people. The Emergency Patient Care System is designed to increase the efficiency and effectiveness of services delivered by the health care providers without undermining the more extensive social functions of the healing professions.

This written plan is the initial attempt to systematize emergency patient care. It is written in two parts: the first part deals with the rural and urban communities which share in the development of a communications and transportation network much similar to the national experience. The second part deals with the "bush" interior which has developed a unique health care provider, the Community Health Aide, and is linked by primarily air transportation. In the bush, the development of a satellite communications system promises to make the Emergency Patient Care System based upon the Community Health Aide as effective an EMS response as possible.

Pl., Reg.

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PLANNING FOR EMS IN AIRPORT DISASTERS

The safest mode of transportation which exists today is airline travel. The public relies on the expertise of the air crew and the smooth operation of the aircraft. Nevertheless, problems occur beyond one's control, and even though there is the unlikelihood of an airport disaster, on-the-ground technical crews must be prepared. Those involved with the Emergency Medical Services need to assure that the Systems Area during a National Emergency will function accurately and efficiently. A Mass Casualty Planning Program may be developed through the phases undertaken when the injured aircraft and passengers are on the ground. Such planning activities may include: sizing up the effects of the disaster on the ground; immediate identification with the crew onboard the aircraft; communication with the crew to learn of need for specific equipment in evacuating the aircraft; adopting an effective procedure in assistance of evacuating passengers from the aircraft; an awareness of who is in charge of the disaster proceedings on the ground in case of immediate extra reinforcement, or crowd control; and a mock timed drill team simulating realistic evacuation conditions involving speedy assistance of passengers away from the site, adequate procurement of medical equipment, immediate administering of First Aid to traumatic and injured passengers, and delivery of the injured to hospitals in the shortest amount of time.

Organization and development of the above factors will be discussed in detail at the Workshop.

Pl., Dist., Pers.

Linda Cote' Crowley
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ADMINISTRATION / MANAGEMENT

THE ROLE OF PERFORMANCE SUBCONTRACTS IN EMS SYSTEM DEVELOPMENT

In order to involve all sections of Massachusetts in the development of an EMS system, it was necessary to develop a mechanism that would provide for central direction from the State Department of Public Health (MDPH), while allowing for regional systems development based on geographic, social, political and economic factors. It was agreed that the placement of EMS staff in each of the eight health regions who would be under the direction of the Massachusetts Department of Public Health was needed to do this.

In order to provide for coordination with other health planning activities, and to use an already established fiscal mechanism, most 314 'b' agencies have been offered EMS performance contracts by MDPH annually since 1973. These contracts not only provide for full time regional EMS staff, but also spell out the specific goals for the year in each component of an EMS system (hospital/medical, transportation, training, communications, public affairs and evaluation). The contracts also define the methods which will be used to achieve those goals, to ensure that the same basic approach is being used statewide.

OEMS is responsible for developing policy in each sub-system area, and for involving all appropriate groups in formulating policy. In addition, OEMS staff travels throughout the state to ensure that overall policy and criteria are consistent, to discuss current issues and address complaints, and to add their specialized expertise to that of each region's EMS staff where necessary.

The use of performance contracts has enabled a statewide system to develop using the same minimum standards, criteria and framework, while allowing for flexibility within individual parts of the state.

Adm., Ste., Reg.

Linda Leddy
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Office of Emergency Medical Services
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EMS ORGANIZATION/ADMINISTRATION

The development of formally organized emergency medical systems is a fairly recent phenomena in the United States. The high visibility of emergency medical services has resulted in the development of emergency medical systems that comprise the organization and coordination of personnel, facilities, and equipment, plus necessary financial and administrative arrangements that include the assignment of roles and responsibilities and linkages between agencies and resources to meet effectively the EMS needs in a given area. Although direct provision of EMS takes place under both public and private auspices, organization and management of EMS systems is ultimately a public responsibility.

The role of the physician in the direction of an emergency medical system should be that of providing medical leadership, while the role of administration and management of the system must be that of the professional manager. Often a dual leadership role must be established for an emergency medical system with each person lending his expertise to the efficient operation of the emergency medical system. Because a variety of provider groups participate in the total emergency medical system, it is important that they have an opportunity to participate in the establishment of policies that effect the management of the system. The public should also have an opportunity to participate actively.

Establishing a sound funding base for the emergency medical system must be one of the primary responsibilities of the EMS administrator. Federal funding may be utilized as "seed" or starter money for an emergency medical system, but the administrator must look to his own local resources to insure the continuing viability of the emergency medical system.

Adm., Md.C.

Stan Grant, Administrator
Emergency Medical Systems
Division
Department of Health Services
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ORGANIZATION AND ADMINISTRATION OF URBAN EMS SYSTEMS

The establishment of Emergency Medical Services in urban areas will require innovative approaches to the organization and administration of urban EMS systems. The urban complexities of multiple jurisdictions, unique social and ethnic characteristics, and varying economic situations require careful and sound strategies to successfully organize and manage an EMS system. The Kansas City Region is such an example of an urban center which has wrestled with the issues and complexities of EMS organization and administration.

The Kansas City Metropolitan Region consists of 1.4 million residents and encompasses 8 counties, 2 states and 109 separate political subdivisions. In 1972, the Mayor, Charles B. Wheeler, Jr., established a special metropolitan committee to study the status of Kansas City's Emergency Medical Services. The outgrowth of this report were specific recommendations for the improvement of EMS throughout the Kansas City Region.

In order to organize and administer the EMS system, the Mid-America Regional Council Emergency Rescue, Inc., was established in 1973. The Board of Directors of MARCER 8 individuals established a regional Medical Advisory Committee consisting of 24 medical personnel. MARCER operates the regional centralized emergency medical dispatch system. The direct provision of ambulance services are operated in total by public and private organizations. The key to this system are quality performance standards and medical protocols.

The political advantage of this system is that each organization retains its operating identity but is a part of a regional federation of emergency medical services under the coordinating umbrella of MARCER. MARCER's have also established training programs at the public safety, EMT, paramedic and physician and nurse training levels. MARCER has established a unique regional communications center for the Kansas City Region including a standard seven digit emergency telephone number.

Adm., Reg., Urb.

Russell G. Jones, Jr.
Executive Director
Mid-America Regional Council
Emergency Rescue, Ind.
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Management Problems in Urban Disasters;
The Role of Communications

The experiences of the Newark Communications Network in handling a variety of disaster problems will be outlined. These include an incident involving the treatment of a school population of 358 overcome by ammonia, a three day riot, a train wreck, and a hospital fire involving 300 patients.

In a recent Airport disaster drill, involving 200 patients, the Communications System was used to coordinate over 50 services centrally.

Communications in all these incidents has acted as an effective tool in gathering vitally needed information from the scene and in establishing the availability of hospital beds and emergency rooms.

Communications has also demonstrated its effectiveness in controlling patient and ambulance movement so as to minimize delays in patient care.

This body of experience represents unique documentation of the importance of Communications to the overall picture of E.M.S. care.

Adm., Comm., Dist.

William Dwyer, M.D. et. al.
Consultant
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Martland Hospital
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65 Bergen Street
Newark, New Jersey 07107

ABSTRACT ON EMERGENCY MEDICAL SERVICES ACTIVITY

The Arkansas Health Systems Foundation is currently in receipt of a Grant (#06-H-000382-01) from the Department of Health, Education and Welfare under which the Foundation has responsibility for maintaining and further developing an Emergency Medical Services System in the State of Arkansas. This Grant was made under the provisions of P.L. 93-154. Under the provisions of this law, one of the requirements placed on the grantee in the development of an EMS system is the provision of "...periodic, comprehensive and independent review and evaluation of the extent and quality of the emergency health care services provided in the system's service area, and submission to the Secretary (of DHEW) of the reports of such review and evaluation..."

As a result, Minnesota Systems Research, Inc., a private non-profit research organization, is to provide to the Arkansas Health Systems Foundation a "...review and comment upon, plus provide consultant assistance on design evaluation methodology..." on four major program areas of evaluation:

- 1) Program objectives;
- 2) subsystems operation;
- 3) program's impact if the "tracer diagnosis" method were to be used;
- 4) top-level EMS management operations, including structure and role of Arkansas Health Department operations, staffing patterns and executive personnel requirements, role of the Governor's EMS Advisory Council, role of the Arkansas Health Systems Foundation and its Board of Directors, and all aspects of top-level EMS management, which, in the opinion of the consultants, deserves analyses, evaluation and recommendation.

By means of this contract with an independent and unrelated organization, the Arkansas Health Systems Foundation as grantee is evaluating portions of the Arkansas EMS program and meeting the requirements of the law for "independent review and evaluation".

Adm., Ste.

Submitted by: Minnesota Systems Research, Inc.
2412 University Avenue Southeast
Minneapolis, Minnesota 55414

Vernon E. Weckwerth, Ph.D.
David D. PeKarna, MHA

AN EDUCATIONAL PROGRAM IN EMS SYSTEMS ADMINISTRATION

The title EMS administrator is broadly applied to individuals with different job descriptions and concerns. The differences derive from the particular nature of one's system and organization, as well as from one's position within that system and organization. The result is a heterogeneous group for whom it is difficult to offer relevant educational support in any single program. To complicate matters, there are continual changes in EMS technology, funding environment and rationalization of services, and programs that are useful specifically because they are topical are soon outdated.

The Center for the Study of Emergency Health Services, University of Pennsylvania, under the auspices of a contract from HEW, has addressed this complex problem by developing and offering a series of one-week courses to a carefully defined subgroup of EMS administrators: those who oversee the coordination of an emergency medical services system, or those who oversee some aspect of systems operation from a centralized agency. The courses offer a coherent picture of the administrative functions these individuals have in common: planning, financing, implementation and evaluation. Within this curricular framework, EMS-specific illustrations can be updated as required.

Eight courses with a total enrollment of 122 EMS administrators have been offered to date, and courses are scheduled for the summer and fall of 1976.

Adm., Pers., Fed \$.

Martha Ledger, M.A., et. al.
Educational Programs Coordinator
Center for the Study of
Emergency Health Services
University of Pennsylvania
Philadelphia, Pa. 19104

A SCHEDULE TO SATISFY

The City of Portland, Maine, operates a 1204 funded Medical Crisis Project (MEDCU). The project, in part, provides around-the-clock emergency medical service to the City's 66,000 residents and 30,000 daily commuters and visitors.

In organizing the program, the Director developed a unique 42 hour-per-week work schedule for the ambulance personnel. This schedule not only minimizes overtime requirements, but also provides the organization's 16 EMT's an opportunity to choose between one of two work schedules: straight days, 4 days per week, or straight nights, three nights per week.

The concept of non-rotating shifts was perceived by the Director to be an attractive and desirable feature toward maintaining harmonious employee relations. The typical problem with such a shift arrangement is the difficulty in recruiting and retaining night shift personnel. To solve this problem, the night shift schedule was designed to require only a three day work week. Furthermore, the night shift is scheduled so that they follow a 3-ON, 1-OFF, 3-ON, 7-OFF pattern. The result is 26 weeks (7 consecutive days) per year "off" duty for all night shift personnel. These 26 weeks "off" added to their holiday and vacation time cumulatively equal 30 plus weeks per year "off" duty. Night shift crews, therefore, work only 22 (six day) weeks per year for a full year's pay. No night differential is required, crews are happy and, in fact, compete for a night shift opening.

Naturally night shift personnel would like to be able to plan regular evening activities of an educational or social nature. To accommodate this, the schedule was designed to guarantee all night shift personnel the same fixed night off every week.

The test of any schedule is its application. This schedule has been in use for a year without the slightest problem. Furthermore, the Director believes it has had a significant effect on maintaining unit morale.

Adm., Urb., Pers.

H. Edward Walker, Director
Medical Crisis Unit
776 Congress Street
Portland, Maine 04102

MANAGEMENT PROBLEMS IN URBAN DISASTERS
THE ROLE OF COMMUNICATIONS

The experiences of the Newark Communications Network in handling a variety of disaster problems will be outlined. These include an incident involving the treatment of a school population of 358 overcome by ammonia, a three day riot, a train wreck, and a hospital fire involving 300 patients.

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Communications has also demonstrated its effectiveness in controlling patient and ambulance movement so as to minimize delays in patient care.

This body of experience represents unique documentation of the importance of Communications to the overall picture of E.M.S. care.

Adm., Urb., Dist., Comm.

William Dwyer, M.D., William Grant, M.D.
and Judson H. Fuller
College of Medicine and Dentistry of
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65 Bergen Street
Newark, New Jersey 07107

Anyone familiar with grant proposals and projects is also aware of the guidelines for these proposals to conform to federal specifications. The trend has shifted on these federal guidelines from the old P.O.M.E. to basically M.B.O., (Management By Objectives), goals, performance objectives, milestones, etc. This is perhaps a remarkable procedure but can create nightmares.

Dear Mr. Jefferson:

July 20, 1776

We have read your "Declaration of Independence" with great interest. Certainly, it represents a considerable undertaking, and many of your statements do merit serious consideration. Unfortunately, the Declaration as a whole fails to meet recently adopted specifications for proposals to the Crown, so we must return the document to you for further refinement. The questions which follow might assist you in your process of revision.

1. In your opening paragraph you use the phrase "the Laws of Nature and Nature's God." What are these laws of Nature and God? In what way are they the criteria on which you base your central arguments? Please document with citations from the recent literature and give citation from recent court decisions. Are these English laws or common laws?
2. In the same paragraph you refer to the "opinions of mankind." Whose polling data are you using? Without specific evidence, it seems to us, the "opinions of mankind" are a matter of opinion. If you did perform an opinion survey, what was your population base?
3. You hold certain truths to be "self-evident." Could you please elaborate. If they are as evident as you claim, then it should not be difficult for you to locate the appropriate supporting statistics. Otherwise you are begging the question which is not allowed at the Colonial level. I suggest that you delete entire preamble since it appears to be such common knowledge.
4. "Life, liberty, and the pursuit of happiness" seem to be the goals of your proposal. These are not measurable goals. If you were to say that "among these is the ability to sustain an average life expectancy of six of the 13 colonies of at least 55 years, and to enable all newspapers in the colonies to print news without outside interference, and to raise the average income of the colonists by 10 percent in the next 10 years," these would be measurable goals. Please clarify and differentiate between goals and objectives.
5. Your description of the existing situation is quite extensive. Such a long list of grievances should precede the statement of goals, not follow it. See Royal guidelines issued June 5, 1772 for standard protocol.

6. You state that "whenever any Form of Government becomes destructive of these ends, it is the Right of the People to alter or abolish it, and to institute a new Government..." Have you weighed this assertion against all the alternatives? Or is it predicated solely on the baser instincts? Do you classify such actions under remodeling or redesign of existing facilities, or is it part of frontier clearance.

7. Your strategy for achieving your goal is not developed at all. You state that the colonies "ought to be Free and Independent States," and that they are "Absolved from All Allegiance to the British Crown." Who or what must change to achieve this objective? In what way must they change? What resistance must you overcome to achieve the change? What specific steps will you take to overcome the resistance? How long will it take? We have found that a little foresight in these areas helps to prevent careless errors later on. Please include a time-table.

8. Who among the list of signatories will be responsible for implementing your strategy? Who conceived it? Who provided the theoretical research? Who will constitute the advisory committee? Please submit an organizational chart.

9. You must include an evaluation design. We have been requiring this since Queen Anne's War. If forms are necessary, please send to the Lord Exchequer's Office for clearance. Follow the Freedom of Information guidelines.

10. What impact will your program have? Your failure to include any assessment of this inspires little confidence in the long-range prospects of your undertaking. What about continued funding? Have you filed an environmental impact statement?

11. Please submit a PERT diagram, an activity chart, and an itemized budget. Differentiate between hard and soft match pounds.

12. Please indicate what travel funds will be required. Tourist class passage only authorized.

We hope that these comments prove useful in revising your "Declaration of Independence." I am looking forward to meeting with you on this project.

Best Wishes,
Lord North

(The above letter to Thomas Jefferson in 1776 was originally conjured by Edward Schwartz, President of the Institute for the Study of Civic Values and a facimile appeared in the "Grantsmanship Center News".)

Adm., Fed. Ag. Fed., Spec.

Submitted from the files of
President Thomas Jefferson
Monticello
Charlottesville, Va.

FINANCING

PROBLEMS AND SOLUTIONS

Problem: In order to better utilize the implementation dollars designated for our communications system we explored all possibilities for involving the services of area businesses and political subdivisions.

Solution: One of the most expensive components of our communications system is the locating and/or building of towers structured to support microwave equipment. In one instance, an initial saving of \$20,000 and a continued savings of \$1,500 per year was realized through the cooperation of the Toledo Edison Company. By affording Regional Emergency Medical Services of Northwest Ohio, Inc., the unrestrained usage of their microwave installation at the Davis-Besse Nuclear Power Facility (location Port Clinton, Ohio), Edison officials allowed us to use monies originally intended for tower construction to increase the overall quality of our microwave system. In addition, we realized savings of \$1,500 a year by arranging to lease a tower site in the city of Fremont for a token \$1.00 per year. Because of the cooperation enlisted from the Sandusky County Commissioners these savings were made possible. The dollar value of these arrangements are obvious, but the intangible advantages should not go unnoticed. A spirit of cooperation was borne with the arrangements made between Toledo Edison and the Sandusky County Commissioners. This spirit should prove valuable in the future.

Fin., Comm.

William Schabel
Coordinator
Regional Emergency Medical Services
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METHODS AND ALTERNATIVES FOR THIRD PARTY REIMBURSEMENT TO AMBULANCE SERVICE PROVIDERS

Ambulance purveyors in the state of Oklahoma average two or three to a county with the exception of the three metropolitan centers. Many of these are one or two vehicle operations run by municipal agencies, private enterprise or funeral homes and some newly developing volunteer services. In all cases, the matter of funding is a primary concern to insure continuation of operation.

The fee for services system which has traditionally paid for American medical care has not been an effective method of reimbursement for ambulance operators in Oklahoma. Based on field visits to all areas of the state, EMS Division staff representatives estimate that the average collection rate for ambulance services falls between 60% and 75%.

Among those providing third party payment, the most prominent are Medicare and Medicaid. Payment is sometimes provided by other agencies such as the Veteran's Hospitals and Indian Health Service. Health policies issued by insurance companies are another source of possible reimbursement.

The EMS Division, Oklahoma State Department of Health designed a brochure to assist ambulance providers who are seeking information on reimbursement for services rendered. Representatives of the agencies mentioned above cooperated fully in the provision of information and examples of forms required to enable purveyors to exhaust all possible avenues before deeming an account as not collectable. It is too early to judge the effect of the brochure other than to say it was welcomed by the Oklahoma State Ambulance Operators Association and has been the subject of requests from many of the operators in Oklahoma and adjacent states.

Fin., Trsp.

H.P. Capozzi, and Leonard Anderson
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FUND RAISING CAMPAIGN

As mentioned in the abstract on the Pre-Hospital Coronary Care Program, the Central Va. EMS Council, through its Coronary Care Committee, embarked upon a fund raising campaign to obtain funds to purchase ECG mobile telemetry equipment, monitors, and defibrillators for four Richmond area volunteer rescue squads that are currently participating in the Cardiac EMT program.

Several approaches are being used to generate funds for these squads. The first and primary approach was developed by the Sub-Committee on Finance of the Coronary Care Committee. The committee decided to contact 39 of the larger business firms in the Richmond area requesting their financial assistance in this program. These companies were invited to attend a presentation on the Coronary Care Program which was held in December, 1975. The presentation included guest speakers talking about the benefits of advanced cardiac life support, the film, "Life on the Line," a slide presentation, and a demonstration of the bio-medical ECG telemetry equipment that will be used. Due to the recent economic downturn, many of the firms were not able to contribute as much as they desired to what most termed a very worthwhile and needed program.

Since this first approach did not generate enough funds to purchase all the equipment needed by the four rescue squads, the Finance Sub-Committee began to develop alternative methods of obtaining funds. Possible alternatives included the development of television and/or radio programs on coronary care, the use of civic organizations, and financial assistance through local foundations.

While these alternatives were being explored, a Richmond radio station decided to sponsor a frisbee tournament to raise funds for all of the seven rescue squads participating in the Cardiac EMT program. This tournament will be held in the near future.

While fund raising in a tight economy is a difficult task, the assistance of the media gives the fund raiser a better chance for success. Prospects for funds to purchase the telemetry equipment are brighter now and it is expected that all seven rescue squads will be providing advanced cardiac life support in 1976.

Fin.

Central Virginia Emergency Medical
Services Council, Inc.
Susan D. McHenry
Project Director
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EMERGENCY MEDICAL SERVICE SYSTEM IN ADAMS COUNTY, ILLINOIS

In the designing and implementation of a county-wide pre-hospital emergency medical system, one must realize that the ultimate success of that system will be determined by the initial cooperation and coordination of all of its various components.

Hospital administrators, Medical Society members, law enforcement representatives, physicians, nurses, communications experts, trauma coordinators, and County Board members are all necessary for initial input since all emergency medical systems operate best if they are "Custom Built" to the community to which they will be responsible.

Many small communities have the capabilities of providing their own quality Emergency Ambulance Service if they would only evaluate their existing resources.

To illustrate: The Adams County Health Department accepted the administrative role of the emergency service and coordinates five modular ambulances in a county-wide response system. The trauma coordinator and local physicians provided the training to a paid staff that services the Metro-area and 180 volunteers who service the remainder of the County.

The Sheriff's office provides for a 24 hour central dispatch. A paging service provides pagers for volunteers. The hospitals provide free living quarters, free linen exchange, inventory replenishment and billing service for the entire system.

The Adams County Ambulance Service operates on an annual budget of \$125,000.00 and 5% or less will come from taxes. A single user fee of \$45.00 supplies the revenue to operate the service in a county who's population is less than 75,000.

In summary, if a small community desires to build an emergency system, they must first come together. Sharing the responsibilities with a "Common Goal" attitude will produce the desired result.

Fin.

Michael C. Rhodes, Director, Adams County Ambulance Service
333 North Sixth Street
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PUBLIC EDUCATION SEMINAR

A small city of 23,000 people, Fairview Park, Ohio developed an EMS System through public support funds provided through an additional 1 mill levy for Cardiac Care. Through this millage the Fire Department received 6 firefighters (a 25% increase in manpower) and equipment was purchased. All members of the Department have received Cardiac Care training through the Local Hospitals. This community joined 5 other small neighboring towns with Paramedic/EMS Systems and two hospitals with direct radio communications for an areawide total EMS System covering approximately 50 square miles, and 200,000 people.

To implement the funding, all aspects of the community were required and overwhelmingly supported the additional taxation. Civic groups, City Council, church groups, including participation from utility companies, Boy and Girl Scouts, Doctors, and professional people all pulled together to educate the general public of the need for Emergency Medical Systems.

The importance and value of EMS Systems is becoming increasingly obvious. The reason that many communities are not yet covered, range from lack of thought given to the issue, to lack of funds. Yet an extensive analysis of the situation is likely to reveal that assistance is available through your citizens and agencies dealing with the needs of the community.

Fin., Comm., Cons., Urb.

Donald W. Therens, Chief
Division of Fire
City of Fairview Park
Fairview Park, Ohio 44126

Rural Wilderness Symposium

Management of an EMS system demands good financing planning. Budget projections demand it. Containment of daily operational costs demand it. Fee billings and collections demand it. And decision makers, those for internal policy and those for external funding support, demand it.

Cost experiences have been influenced by our geographic characteristics and available resources of the Ohio project area. The original cost estimate was exceeded due to inflation of the economy, increases prompted by the minimum wage law and other local determinates.

In calendar year 1974, the Ohio project made 8,135 runs.

The cost per ambulance run has been \$112.22. Two costly items that have not been in effect previously will be added in 1976. One is the maintenance of the base communications system -- previously included in the purchase price -- in the amount of \$27,142.00. The second is maintenance of the new telemetry component a cost of \$20,529.00 annually. These will increase the cost per run to \$118.08. On a set base charge of \$25.00 per run, average billing per run is currently \$36.86.

For the level of operations of Calendar year 1974, and at least the first three months of 1975, the regional per capita cost before collection of fees has been \$4.26. After the application of collected fees -- currently averaging 65.5% of billed charges -- the regional per capita cost is \$3.42.

Fin., Rur., Trsp.

J. E. Farrington
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ACADIANA EMS PROJECT: FINANCIAL SUPPORT

In 1974, the signs of an emerging EMS system were clear throughout Acadiana. Undoubtedly they influenced the selection of the South Louisiana eight parish area as a Robert Wood Johnson Foundation grant recipient.

Financed on a 70% (grant funds), 30% (area dollars) proportioned basis, hospital and ambulance installations now provide basic communications between emergency medical technicians and emergency room personnel. The willingness of area hospital and ambulance services to contribute matching funds demonstrated their concern for a fully developed EMS system in Acadiana.

When disasters occur, telephone lines are down for extended periods. With the augmented capability of hospital and mobile radio equipment, EMS dispatchers, EMT's and nursing personnel are nevertheless linked for communication vital to patient status.

Fourteen radios provided through the grant mechanism, plus the previously existing seven, comprise a network of 21 hospitals on 155.340 MHz. Five have an additional frequency providing an "in-and-out-of-region" communications capability. This "regional frequency"--155.280 MHz--is mainly used under disaster conditions.

The purchasing power of the unique 70-30 financing formula, afforded a more sophisticated and efficient EMS communication system than could otherwise have been realized. Truly, the Acadiana EMS Project achieved meeting of the minds and melding of dollars in Acadiana's best EMS interest.

Fin.
Org.
Comm.

Paul Landry, Project Director
Acadiana EMS Project
USL Drawer 3012
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MEDICAL CONTROL

PHYSICIAN INVOLVEMENT IN EMS PLANNING

Physician involvement is necessary to the development of a well defined hospital/medical EMS plan.

To develop the essential physician base of support, Office of Emergency Medical Services and regional EMS staff have worked closely with physicians' organizations and individual physicians to encourage their participation and leadership.

In 1974, OEMS formed a Statewide Physicians Advisory Committee. This committee has had specialty representation covering the five major clinical categories. To date they have drafted the Care Capability Questionnaire and the Minimum Evaluation Criteria. These tools have been used statewide, and have been accepted by local physicians more readily because their peers developed the guidelines.

Currently our Statewide Physician Advisors include additional physician EMS advocates from several EMS areas which are implementing basic EMS systems. In addition, Specialty committees (burn, spinal cord, poisoning) are also meeting regularly.

Physician lecturers who have participated in the EMT courses are especially knowledgeable and receptive to the need for physician leadership in the development and implementation of comprehensive area EMS systems.

OEMS staff and physician EMS advocates have worked closely with the Massachusetts Medical Society, its EMS Committee, and the American College of Emergency Physicians, Massachusetts Chapter. Both organizations have been very supportive of EMS activities. Representatives of those organizations sit on the State EMS Advisory Board, which advises about overall policy and direction for the Massachusetts EMS program.

Med.C., Pl, Adm., Ste.

Patricia Murchie
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Office of Emergency Medical Services
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With the implementation of a single emergency medical access telephone number for the Panhandle of Texas (24,900 sq. mi., twenty-five counties, 330,316 population), the Panhandle Emergency Medical Services System elected to establish a central medical communications dispatch center to serve the entire region.

The CMDC facility is located in Amarillo due to minimal cost of direct lines to the only available Regional Trauma hospital and Poison Control Center as well as the Suicide Prevention Center.

Five dispatchers and one supervisor were hired with CETA funds. Additional funds were secured locally to cover costs of the in-WATS line and local telephone line costs. UHF radio equipment for dispatch was purchased through the HEW grant award to Panhandle Regional Planning Commission. Facility and renovation materials were provided free of cost.

Initiated February 1, 1976, the CMDC allows citizen access to the EMS system through a single toll free number for all residents of the Panhandle. The trained dispatcher, via UHF radio, dispatches the nearest appropriate vehicle to the scene. Sheriff, police, fire and/or other agencies are contacted via VHF radio and/or telephone as the need is determined.

The ambulance in service may maintain voice contact with the CMDC through the UHF mobile unit and may also have direct voice contact with the local hospital control station as well as the Regional Trauma Emergency Receiving Center control station (AERC) if necessary.

The CMDC advises the receiving hospital of the incoming patient and reports medical information and requests as obtained. All conversations are recorded on tape.

Med.C., Comm., Trsp., Pers.

BETTY O'ROURKE
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ORGANIZATIONAL ASPECTS OF THE URBAN EMS SYSTEM

The organization of any effective Emergency Medical Service System requires the development of a firm pattern of liason between the operational and the medical aspects of the EMS program. Structured medical input and overview of EMS development must work hand in hand with the operational aspects of the EMS program if a truly effective and well organized service is to emerge.

The operational EMS agencies are generally well structured within large municipalities. It is frequently the medical health care agencies that require definition of their role in the EMS program. The establishment of a qualified full-time EMS Medical Director is a step that large municipalities must consider.

The failure of urban areas to develop appropriate EMS programs too often relates to the lack of having made provision for strong guided administrative leadership in the medical sphere. Without such leadership medical definition and control is easily lost, and thereby the EMS program fails.

The municipal agencies especially must not shirk their duties and responsibilities off on others in EMS development. The EMS system is first and foremost a public program, and requires a planned framework for development that local governmental agencies must support and help provide for.

Coordinated input between the EMS agency complex will lead to a successful program. No one agency can go at it alone, each agency has something very unique to provide and each by the nature of ordinance, and officially designated responsibilities has a very definite role to play in EMS program development.

Med. C., Urb., Adm.

Paul Mesnick, M.D.
Physician Coordinator, EMS
Chicago Department of Health

The significant upgrading of ambulance attendant training and responsibilities in the area of patient care, as a result of the development of better community Emergency Medical Service Systems, has extended the role of the acute care physician. Physician involvement and concern must now be focused beyond the confines of the hospital emergency room, operating room and intensive care unit and out into the community.

The larger urban center with its population complexity, variation in community and hospital area-wide structuring and multiplicity of emergency services, both of public and private nature, must insure that coordinated and structured medical leadership and input will be developed into their EMS System. Physician input into the planning, operating and evaluating of systems of treatment for the critically ill and injured before and during hospitalization is of major importance in structuring the urban EMS program.

The major physician elements suitable to an urban area EMS program may be considered as follows:

1. Emergency Room Physician
2. Specialty Physician (medical, surgical, pediatric, etc.)
3. City-wide EMS System Physician Administrator

The exact nature, design and involvement of the group of physician elements outlined above will vary depending on factors unique to a particular urban area. In general, however, the following concepts would hold true. The city-wide EMS Physician Administrator would most appropriately function out of the localities public health agency. This individual and his staff would coordinate the overall city-wide medical planning of the EMS program working in conjunction with the various local hospital planning agencies, medical directors, and municipal departments. Close, effective and active liaison between this physician administrator and his hospital based counterpart will help insure that practical, appropriate, professional, medical input and guidance is structured into the area's EMS program.

By providing an active medical communication link between municipal agency and hospital facility, a major factor towards forwarding the medical aspects of the EMSS component design is established. It is this design and its effective implementation that holds the key to success in the current structured development of Emergency Medical Service Systems.

Med.C., Pers., Urb.

Submitted By: Paul Mesnick, M.D.
Physician Coordinator EMS
Chicago Department of Health

USE OF TREATMENT PROTOCOLS IN PRE-HOSPITAL CARE

The treatment necessary to decrease morbidity and mortality for any acute illness or injury in the pre-hospital phase must be related to patient requirements. These are not only absolute treatment requirements but are affected by length of transport to hospital, the capabilities of rescue personnel, and the level of capability of the receiving facility. Despite the availability of physician supervision of pre-hospital care, standardization of a treatment approach to a particular problem, and therefore standardization of training of EMTs, cannot occur until treatment protocols have been established. A treatment protocol has been established for the care of the acute cardiac patient in a large urban EMS program. It is based entirely on the Standards for CPR and Emergency Cardiac Care as promulgated by the American Heart Association and National Research Council of the National Academy of Sciences. Adoption of this treatment protocol on a regional basis allows for standardization of training, promotes effective teamwork on the part of EMTs working together in the field, establishes a medical legal standard of pre-hospital care for the region, and allows meaningful evaluation of impact of the program. Treatment protocols are being developed for care of other acutely ill and injured patients. Although the protocol must take into consideration general principles in the care of any acute problem, the specific implementation of each of these principles may differ from region to region.

Md.C., Pers., Trsp., Org.

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MEDICAL CONTROL OF PRE-HOSPITAL CARE IN AN URBAN EMS SYSTEM

It is mandatory that the care rendered by emergency medical technicians (EMTs) to the acutely ill or injured patient in the pre-hospital phase be under the general supervision of a physician. In this large urban program 55,000 patients each year are transported by ambulance and received by 15 different hospitals. Patients may be transported by either fulltime police or volunteer fire emergency technicians, both of whom have advanced life support capability. Communications coordination, coordination of pre-hospital and hospital care, as well as medical supervision of pre-hospital care rendered by all responding vehicles and crews according to a standard county-wide protocol has been effected through the use of a central hospital base station for the entire region. This central hospital communications facility receives a voice and telemetered data from all vehicles, is manned 24 hours a day, seven days a week, by trained ambulance communicators, and has immediate access to medical supervision. Patient information, including the electrocardiogram, can be relayed directly to each receiving hospital.

Md.C., Trsp., Comm.

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INITIAL DISPOSITION OF THE EMERGENCY VICTIM

26-8

Problem: Even with accepted Critical Care Vertical Profiling and Patient Condition profiling to match, promulgated by a state program, the initial disposition of each victim remains undetermined.

Solution: Written plan for patient disposition must be developed by each system which considers the proper balance between individualization and system function which is acceptable to the community in which that system operates.

Washington Work Plan: In this state, the State EMS program supports and coordinates EMS systems which usually serve at least one county. These systems, guided by EMS councils will receive, in addition to Critical Care Profiles and Patient Condition Profiling Guidelines, the following instructions regarding system development:

"The initial disposition of the critical victim is often a complex medical decision which must consider the patient's problems, his doctor, his wishes and the capability of the response and transport units, the location, capability and state of readiness of E.D.s in the area, and the weather. The question, however, usually is a choice between two E.D.s. One is closest and can only stabilize, the other is more distant but can do definitive care. The Local EMS Council should adopt plans to cover this decision for most patient problems in most locations. These plans must fit local circumstances, coincide with critical care guidelines and be acceptable to the Council, however the following should be considered:

1. The EMT should have a minimum responsibility in making the medical decision regarding choice of E.D..
2. A physician experienced in emergency care or his delegate should be contacted as soon as possible to guide the choice of E.D. disposition.
3. The actual state of readiness of the potential receiving E.D. should be verified by the transporting unit.
4. There should be provisions for a "grievance committee" to hear complaints regarding individual hospital dispositions. Any circumstance in which patient care issues were thought to be subordinated to other considerations must be investigated critically and dealt with vigorously.

Md.C.

Washington EMS Program

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Jack Cvitanovic, Project Director

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MEDICAL CONTROL

In this new role ambulance personnel have accepted added responsibilities and liabilities which lead to the obvious question; who is responsible for their conduct? Two lines of responsibility exist regarding quality of performance of advanced trained MICU vehicle personnel.

The first is administrative selective hiring, housing, equipment and specifically in the realm of the ambulance service. Who but medical professionals can accept that responsibility for control of the medical aspects of ambulance personnel? Can a State do it? A County? A municipality?

Few physicians initially realize their total role in the initial phase of an MICU system but their role is rapidly brought home when problems arise and someone asks; Who is responsible? This responsibility and liability can and must be accepted by members of the medical profession.

Md.C.

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MEDICAL CONTROL

The care of the acutely ill or injured patient in the prehospital phase demands the supervision of a physician. If the system has available to it highly trained emergency medical technicians who are employed on a full time basis, then such supervision may be provided by a written treatment. In most systems, however, medical supervision is provided through the availability of voice communications between a physician and the emergency medical technician in the field. It may be quite impractical to have every hospital in an urban area providing medical supervision to ambulances bringing patients to each of these hospitals. Personnel at each of the receiving hospitals can not be expected to be familiar with the radio equipment. Where multiple users are sharing a frequency, information may become interchanged. For urban areas it is imperative that medical supervision be regionalized.

Telemetry of biological signals, primarily of the electrocardiogram has been found useful. Treatment protocols for each major emergency are an important aspect of medical supervision. Divergent approaches to common problems can not be taught in E.M.T. training programs.

The supervising medical resource must also be responsible for notification of the receiving hospital so that it might be aware of the problem.

Md.C., Adm., CC., Comm.

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Professor of Medicine
Suny at Stony Brook
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PHYSICIAN COORDINATION IN THE URBAN EMSS DEVELOPMENT

The significant upgrading of ambulance attendant training and responsibilities in the area of patient care, as a result of the development of better community Emergency Medical Service Systems, has extended the role of the acute care physician. Physician involvement and concern must now be focused beyond the confines of the hospital emergency room, operating room and intensive care unit and out into the community.

The larger urban center must insure that coordinated and structured medical leadership and input will be developed into their EMS System. Physician input into the planning, operating and evaluating of systems of treatment for the critically ill and injured before and during hospitalization is of major importance in structuring the urban EMS program.

The major physician elements suitable to an urban area EMS program may be considered as follows: 1. Emergency Room Physician, 2. Specialty Physician (medical, surgical, pediatric, etc.), 3. City-wide EMS System Physician Administrator. The exact nature, design and involvement of the group of physician elements outlined above will vary depending on factors unique to a particular urban area.

By providing an active medical communication link between municipal agency and hospital facility, a major factor towards forwarding the medical aspects of the EMSS component design is established. It is this design and its effective implementation that holds the key to success in the current structured development of Emergency Medical Service Systems.

Md.C., Urb., Pers.

Paul Mesnick, M. D.
Board of Health
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BLS/ALS

MYOCARDIAL INFARCTION PREDICTION IN EMERGENCY ROOMS:

Michael W. Pozen, M.D., Joyce Guglielmino, A.B., Lesley Rovner, B.A., Jerremy Ramp, M.D., William Hood, M.D., The Thorndike Memorial Laboratories, Boston City Hospital, Boston University School of Medicine, Boston, Massachusetts.

A logistic regression model for predicting the probability of a myocardial infarction (MI) among patients presenting to an emergency room (ER) is being developed. The model is intended to maximize appropriate utilization of CCU beds and to minimize inappropriate discharges. The model is based on empirical observations of present CCU admission criteria including risk factors, presenting historical/clinical parameters, initial ECG's and social/organizational factors.

During a 17 day pretest, 101 "eligible" patients were selected by chart review on the basis of 12 IMIR (Imminent Myocardial Infarction-Rotterdam) symptoms. 43 of the 53 (81%) eligible patients, discharged from the ER on the basis of conventional medical criteria, were seen in 36 hours follow-up. ECG's/cardiac enzymes were obtained. None had an MI. 34 of the 48 eligible patients were admitted for suspected MI's. 12 (35%) had MI's, 8 (24%) had acute myocardial ischemia, 4 (12%) had non-ischemic heart disease, and 10 (29%) had non-cardiac diagnoses. Among the remaining 14 eligible patients admitted for non-cardiac causes, 2 (29%) had MI's. A negative past history for MI and a weekend admission were more frequent ($p \ll .03$) among the false positive admissions than among the patients with MI/ischemia despite a similar distribution of presenting complaints and clinical findings in both groups.

These data suggest that although false negative discharges from the ER are rare, false positive admission are frequent. This model may be useful for prospectively identifying predictive parameters for diagnosing acute MI's.

LS., CC.

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COST-BENEFIT OF PREHOSPITAL MOBILE CARDIAC CARE TO THE COMMUNITY

Since theoretic Massachusetts models of mobile coronary care predicted an exorbitant annual cost per 100,000 people to the community, we examined our cost-benefit for a physician staffed MI/CCU added to the extant volunteer Charlottesville-Albemarle emergency medical service (EMS) for 80,000 people dwelling in 2068 km². In 3 years 460 calls were made for chest pain or collapse. Of 113 patients with proved acute myocardial infarction, 22 had promptly corrected prehospital cardiac arrest with 14 (64%) resuming an active life. Yearly there were 5.8 longterm lifesaves per 100,000 general population with 13.4 such lifesaves per 100,000 people aged 30-69 years. The observed annual cost in dollars above our status quo EMS per 100,000 people for physician and paramedic staffed MI/CCU service is compared to the theoretic predictions below.

item assessed yearly	Massachusetts predicted cost	Virginia	
		physician staff observed	cost %predicted
system	\$47,200	\$9,800	21
lifesave general	2,700	1,600	59
lifesave 30-69 yrs	unavailable	700	—
MI/CCU call	79	50	63

	Virginia paramedic staff cost		
	observed	%predicted	%physician
system	\$5,500	21	55
lifesave general	950	35	59
lifesave 30-69 yrs	410	—	59
MI/CCU call	30	38	60

Assuming the Massachusetts \$21,000 per livelihood saved, our community yearly saved \$121,800 per 100,000 people (\$281,400 per 100,000 aged 30-69 yrs) less annual physician staff system cost (table). With a paramedic staff, the system cost would have been 40-45% lower than physician staff and only 12-38% of predicted cost. During the study period, yearly average coronary death rose by 6% for all Virginia while falling 25% ($p < 10^{-5}$) from 280 (1963-70) to 210 (1971-73) per 100,000 population in our community. Prehospital lifesaves accounted for 8% of this decline. For those aged 30-69 years, coronary death fell 16% ($p = 0.05$) from 373 (1963-70) to 315 (1971-73) per 100,000 with prehospital lifesaves contributing significantly at 23% of this decline. The physician staffed MI/CCU proved practicable and cheaper than predicted. Paramedic staff cost, far less expensive than physician staff cost, should be used wherever frequency of and need for prehospital emergency cardiac care justify the initial and continuing education costs for paramedic personnel.

LS., CC., Fin., Eval.

Richard S. Crampton, MD
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 University of Virginia Medical Center
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ADVANCED LIFE SUPPORT BY THE RURAL PRIMARY PHYSICIAN

PROBLEM: An apathetic rural community of two thousand people situated between twenty to thirty minutes away from adequate ambulance service.

ATTEMPTED SOLUTION: Besides urging the community to obtain good home-based ambulance service, this rural physician has equipped his car with the following equipment: Battery powered cardiac monitor/defibrillator with write-out, Scoop/Extraction Stretcher adaptable as short spine board, Cervical collars, Hare traction splints, adult, child, Obstetrical kit with forceps, Blankets, K-Bar-T Automatic entry tool, Dry chemical fire extinguisher, Tow chain, Minimal lighting equipment, Extraction come-a-long, Suitcase "Jump"Kit containing: Routine diagnostic equipment, Electronic blood pressure apparatus, Surgical set with tracheostomy tubes, Laryngoscopes and endotracheal tubes, Oxygen, mask, and oxygen powered suction, Hand operated respirator "bag" and oropharyngeal airways, Rubber tubing for rotating tourniquets, IV tubing, solutions, low molecular wright dextran, Needles, syringes, percutaneous C.V.P. catheter, etc., Vacutainer tubes for initial blood samples, Miscellaneous dressings, Routine emergency medications, Dextrostix (R) for blood sugar approximation.

The physician responds to the scene of medical and traumatic emergencies, attempting to evaluate, stabilize, and initiate treatment for the seriously ill patient. IV's and cardiac monitoring are initiated in all suspected critical situations.

SPECIAL PROBLEMS: Physician cannot be present in the community 24 hours a day every day. Physician is frequently not called in the most appropriate situations. Equipment cost is about \$8,000.00.

RESULTS: Forty-five emergencies with three patients saved in the first year that would otherwise have died because of inadequate or delayed on-the-scene treatment.

LS., Rur., MD.C.

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EQUIPMENT

Artificial Ventilation Equipment

Prior to the advent of advanced emergency care (paramedic - around 1969), there was no aspect of emergency care more important than emergency ventilation. It was accomplished in a variety of ways. Emergency care providers most commonly utilized oxygen-powered equipment. Oxygen administration was commonly the only emergency care modality for which a charge was made by commercial ambulance providers. Its use was quite common, therefore, in a large percentage of emergency transports. Interestingly enough the early equipment provided insufflation oxygen for the spontaneously breathing patient; but, in many cases, could not be used for the apneic patient.

Rescue squads, on the other hand, were widely equipped with oxygen-powered equipment of which one type was called "inhalator." These equipments were commonly of the pressure-cycled, oxygen-powered, automatic-positive-negative phase. This meant that they provided oxygen flow until a preset pressure was reached, at which point a negative pressure was applied to the airway. Later more "sophisticated" units provided a manual override by which higher than preset pressure limits could be reached.

Negative pressure phase ventilators disappeared from modern hospitals in the early 1960's and, in fact, were replaced with the opposite increasingly, namely, positive-to-positive phase ventilators which kept small airways open by never letting exhalation pressures to return even to atmospheric level.

By the early 1960's another innovation in emergency care, CPR, revealed the effect of external chest compression on the premature termination of the ventilation cycle of these conventional, automatically cycling resuscitators.

Finally, the rapidly developing intensive and critical care disciplines were discovering new facts concerning recommended pressure limits, flow rates, sterility practices, failure modes, etc., of ventilators. As a result, a new generation of oxygen-powered, manually-triggered equipments were developed for hospital and emergency use.

These newer manual, oxygen-powered resuscitators, have a positive pressure limit in the range of 50-60 cmH₂O. They in no cases provide negative pressure. They have maximum free air flows of from 200-250 L/min.

Equip., Spec., CC., Pers.

2.

Medical authorities, emergency medical system planners and administrators, health planning authorities, rescue and emergency care providers, and health device testers should know the foregoing facts which have been known now for nearly ten years. In spite of the general medical acceptance of these facts, there are still a number of devices on the market which offer automatic cycling, inadequate pressure limit, inadequate disassembly - cleaning - reassembly safety, and other features that have been mention.

Any emergency resuscitator being offered for use by EMT's, paramedics, or properly qualified rescue personnel should be:

- a. manually operating,
- b. have no negative pressure phase,
- c. be easily sterilizable,
- d. have proper pressure limits for adult (if appropriate to adult) and infant (if appropriate to infant),
- e. be so constructed as to not be reassembled in unsafe mode.

Equip., Spec., CC., Pers.

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SPECIAL PROBLEMS

TECHNICAL ASSISTANCE ON TRANSPORTATION ISSUES

OEMS has undertaken an ongoing effort to inform and guide communities and ambulance services in making the necessary political and economic decisions to assure conformance with state Ambulance Law regulations, and to encourage and support their participation in a coordinated area EMS transportation network. Staff activities have included background briefings, rough statistical and financial analyses, and review of proposals for the improvement of ambulance services. Detailed financial and statistical analyses have been done for one five-town area and one three-town area of the possible alternatives for ambulance service provision on a cooperative basis.

Technical assistance meetings and briefings have centered around general informational programs on the statewide EMS effort; development of support for political and fiscal commitments to upgrading service; interpretation of the State Ambulance Distribution Program requirements and assistance in completing application forms; assessment of the amount of service and equipment upgrading necessary to conform to requirements of the Ambulance Law; defining and solidifying back-up arrangements; organizing equipment exchanges with hospitals; and examining options for area approaches to the provision of emergency medical care.

Spec., Trsp.

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A STRATEGY FOR MORE RESPONSIVE FEDERAL COORDINATION IN EMS

Our intent is to put into properly balanced perspective all the diverse elements of the present complex and historically based public emergency system with numerous ramifications beyond the obvious hysterical and economic injustices now occurring. The presentation will attempt to present a complete picture of an EMS system.

PRIMARY OBJECTIVE: To recommend a central coordination point for federal-state-local programs, funds, and guidance; thereby providing for economy in EMS system development as well as obtain the advantage of the broad knowledge of many agencies.

All have a responsibility - the EMS System - means immediate care for the human being when a crippling or life threatening emergency occurs.

All agencies, all resources are involved. The action and/or reaction of those present or near means the difference between life and death.

Spec., Fed. \$., Fed. Ag.

D.G. Penterman
Special Assistant to the Chancellor
University of Nebraska
Medical Center

SOME UNIQUE ASPECTS OF UNDERSEA RESCUE AND RESUSCITATION

Exploration and exploitation of offshore continental shelves will continue to increase. Undersea operations requiring sophisticated diving systems and small submarines are necessary during all phases of this activity. Despite improved safety precautions accidents will continue to occur. Paramedics and physicians providing medical support for offshore operations should be aware of some special considerations which apply in the rescue, resuscitation, and transportation of undersea accident victims.

Among the particular hazards associated with undersea operations are thermal imbalance, drowning/near-drowning, and trauma, plus the pressure-related problems unique to diving. Except for this latter group, there are many similarities with other special rescue situations, and, in general, the same precepts apply: The ABC's of resuscitation-airway, breathing and circulation. remain paramount, but many require some modification and special emphasis, particularly during rescue under hyperbaric conditions. The letter "D" might be added to the mnemonic ABC's of resuscitation to alert the paramedic or physician to possible decompression debts, not only in diving casualties, but any accident involving underwater entrapment in gas-filled space.

Rescue responsibility during offshore operations ends in the definitive health care facility. This implies that one person must accept responsibility of all phases of transportation to ensure that care is continuous.

Spec, CC., Pers.

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THE NATIONAL SKI PATROL SYSTEM, INC.

Annually, over three million Americans brave cold, wind, and bad driving to spend their recreational time downhill skiing. Additionally, uncountable millions don cross country equipment to tour golf courses, open fields, woods and mountain ranges.

Downhill skiing produces an approximate injury rate of 0.6% (this includes all reported injuries, even cuts and bruises). Cross country injury rates seem to be much lower, although reliable statistics are not available. Altogether perhaps 18 to 20,000 people are injured during winter activities in areas inaccessible to normal emergency medical services.

Entrance requirements for National Ski Patrol candidacy consist of either the 81 hr. EMT course accepted on a patrol, a candidate must complete the NSPS Winter First Aid course on specialized equipment and procedures necessitated by the environmental and terrain conditions in which patrollers work. This course also concentrates instruction on frostbite, hypothermia and problems created by altitude (some ski areas operate at over 12,000 ft.). CPR training is also required.

Once a patroller, a man or woman must go through a refresher course of a minimum of 12 hours (most average 18-20 hours) in first aid and other patrol skills every year. The NSPS is also concerned about prevention. Patrollers promote ski safety through free binding check programs, public speaking engagements, and area safety programs. For almost 40 years the NSPS has served as skiing's good Samaritans.

Spec., Pers.

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THE USE OF HEPARIN AND EXERCISE TO RELIEVE PAIN IN 246 HUMAN BURNS

No pain medication was given to 246 patients with 2nd and 3rd degree burns 1-60% size, though 1/5 were 16-60%. Heparin administered topically into blisters and sprayed onto burn surfaces relieved pain in blisters and denuded areas. Heparin infusions, which blanched burn erythema, relieved burn pain and general discomfort. Heparin properties, known to neutralize histamine, serotonin and proteolytic enzyme, and known to prevent platelet-lysis microthrombosis, microinfarction and complement cascade, are possible mechanisms. Because no narcotics were used, patients were alert and cooperative instead of depressed and lethargic. Sodium aqueous heparin from intestinal mucosa was used in 5,000 unit per milliliter concentration. When not contraindicated, heparin was started on initial patient contact. Topical dose averaged 100,000 units per 15% burn area size daily. Parenteral dose averaged 400 units per kgm per 15% size daily. After the needle, on the syringe containing heparin-solution, had ruptured a blister enabling blister fluid to drain, heparin was injected into the blister space rinsing and depositing heparin-solution. Blister pain subsided spontaneously, and rarely reappeared, although daily treatment was continued three days. Blisters were not debrided and did not become infected. Heparin was sprayed three times daily onto denuded area until they healed or superficial bleeding appeared. Topical heparin did not alter systemic coagulation. Heparin infusions given every four hours relieved recurrent pain. No infusions were used after day two. Thereafter patients remained comfortable with subcutaneous heparin injections twice daily which were continued until Lee White Clotting increased to over one hour.

Spec., CC, Res.

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DIFFICULTIES IN PATIENT MOVEMENT

When dealing with Rescue and Recovery from the standpoint of the Aerospace Rescue and Recovery Service, U.S.A.F., there are two primary problems incurred when considering patient movement.

The movement of rescued individuals in an overland environment when penetration of the incident site has been by parachute create problems from the standpoint of (1) providing enough personnel on scene to accomplish care and movement in a safe and timely manner. Then (2) providing enough medical equipment and medication on scene to support treatment. It must be remembered that all of this must be either carried in by the rescue personnel when they arrive or subsequently supplied by parachute as needed. All equipment, etc., then must be carried out by the pararescuemen along with the patients to an extraction site.

Since Rescue and Recovery operations involving or necessitating the use of ARRS pararescuemen are normally in inaccessible areas; i.e. Back country, swamps, jungle, open sea, etc. The distances to be traveled for extraction can be great especially in some countries. The amount and weight of equipment must be minimal.

Air transport of rescued personnel is the second problem area. If removal from the incident site is by helicopter, it will be accomplished in one of two methods: Landing the helicopter at the site or utilizing the hoist system in the aircraft.

Specific types of patients can be problem areas such as heart victims, diving victims, epileptics, children. Each ensuing concern when air transport is utilized.

More important, however, is providing treatment in the aircraft. Some helicopters make it almost impossible to start an I.V. or at times have the I.V. high enough for flow, difficulty in maintaining I.V. flow with varying altitudes. Possibly the biggest problem in this area however is monitoring vital signs.

Spec, Trfr.

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CONSIDERATIONS AND GUIDANCE IN USE OF CONSULTANTS

EMS is a new endeavor for many health planners. A lot of us, do not know as much as is required to plan or implement the program, we sometimes need help and often believe aid can be provided by a paid professional consultant. This approach may, be justifiable, but problems can arise, long after the consultant is gone, and you are left holding the bag. Should you find it essential to employ a consultant, make use of his talents and expertise wisely.

There should be an agreement between your agency and the consultant as to his role and his specific duties. Never allow a consultant a blank check on writing your application. The consultant should provide you with ideas, not policy. You should do the writing, not him. He may tell you that his reputation is at stake, and may therefore try to use this leverage against you by demanding more freedom than is necessary. An absolute rule that should never be broken is to never allow a consultant to speak for you in public. Good consultants can address the fifteen components and their implementation with relative ease, especially in the general sense. However, life, and EMS, and other things do not deal in generalities, but in specifics. When writing a grant you are essentially justifying a budget request. Make certain what you are justifying is realistic for your area. The budget should be worked on from the beginning and not saved until last.

Spec., Pers., Ste.

Source withheld at the request
of the submitting agency

PROBLEM SOLVING EMERGENCY HEALTH SYSTEMS OPERATIONS

Several concepts underly the development of a problem solving systems approach to emergency patient care. First is that there are groups of people who share a common capability for service delivery, and that it is this commonality that identifies them as a specific EMS target population. Second, is that these target EMS populations can be most effectively served through the development of coordinated team work of emergency health providers and prearranged channels of communication and patient triage. Third, is the regionalization and decentralization of the health resources in making a network of patient referral respond to the needs of the patient. Fourth, is the concept that medical self-help and prevention will reduce the need for the demand of specialized resources. Widespread education and motivation to prevent emergency situations is the basis for an effective and adequate EMS response.

A strategy for designing the implementation of an emergency patient care system can be conceived of as the process of determining the kinds of decisions that have to be made; selecting, collecting and analyzing information needed in making these decisions, and then reporting this information to the appropriate decision makers. System programming ultimately clarifies alternative courses of action and leads to prioritization of resource allocation. The steps involved in the problem solving process begin with determining the relative prevalence and incidence of disease conditions among a target population, identify those at greatest risk, and allocate available resources differentially among risk groups, and progress through evaluating the outcome relative to compliance with the standards and tasks.

Spec., Adm., P1.

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TRAUMA: IT'S AN EMERGENCY

There is probably no medical specialty that receives more television attention, less critical analysis from the public, or such a mediocre response from legislators than emergency medical services.

The distance between "Emergency" and the response from 49 state governments on the realities of EMS in the United States would be laughable if it wasn't for the more than twelve million Americans injured every year, the 400,000 permanently disabled and the 117,000 killed.

The statistics alone are enough to identify EMS as a major health problem. But the fact that the knowledge and equipment exist today to prevent an estimated 25% of the deaths and disabilities, but is not being utilized either at the point of need or at the nearest existing medical facility makes it a national tragedy.

For the average television viewer, there is no time differential between accidental injury and the arrival of a fully-trained and superbly equipped emergency team. For the average victim, the story, of course, is much different.

The need for more trained professional physicians and nurses and paraprofessionals is acute and needs to be translated to an audience that is still largely unaware that such a problem exists.

How to accomplish this; how to impact on state and federal legislators to implement already existing legal, legislative and moral mandates; how to inform a public as to the changing abilities and needs of twentieth century emergency medicine is a problem faced by every print and electronic communicator. In this presentation, we'll explore some of the ways this is being done today in television and some of the ways it could be improved, by the communicator, the health professional, and the concerned lay public.

Spec.

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BEHAVIORAL CRISIS INTERVENTION AND DRUG ABUSE

Although many Emergency Medical Systems do provide treatment for drug abuse emergencies, that treatment is most likely to be primarily medical treatment for overdoses or acute drug reactions. The purpose of this presentation is to suggest that Emergency Medical Service personnel should be knowledgeable about Crisis Intervention and develop referral mechanisms with community agencies for drug abuse treatment.

Crisis Intervention is a straight forward approach for dealing with behavioral emergencies. There is a substantial amount of written information about psychological crisis and its effects upon individuals and families which identifies specific situations (i.e., drug related, suicide, divorce, etc.) and a specific process (Crisis Intervention) which can be utilized to deal with crisis (i.e., focus on the here and now, limited goals, anxiety reduction, problem solving, therapeutic use of authority). Recent theorists suggest that crisis is not pathological and that individuals in crisis are particularly receptive to assistance.

A mutual focus of both drug abuse treatment programs and Emergency Medical Systems should be on developing system linkages in order to assure continuity of patient care. The provision of comprehensive treatment and rehabilitation services for drug abusers must include linkages with emergency facilities. Many communities and service areas have facilities available which can be linked. Specific linkages range from telephone referrals and informal staff working agreements to formalized written agreements.

In addition, EMS providers should be aware of Federal Legislation and Regulations which: 1) prohibit hospitals which receive federal funds from refusing medical care to drug addicts or abusers only because of their drug abuse; 2) prohibit providers from disclosing the identity of drug abuse patients to law enforcement officials except in limited circumstances.

Spec., CC.

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WINTER EMERGENCY CARE

Over 35 years ago Charles "Minni" Dole realized that skiers injured on the nation's ski slopes needed a specialized rescue service. He founded the National Ski Patrol System.

Today, over 25,000 volunteer patrollers highly trained in emergency care in the winter environment, as well as skiing and toboggan handling, protect the over 3 million skiers. Specialized training in avalanche hazard recognition, control and rescue, search and rescue in the winter wilderness, and evacuation from chairlifts, gondolas and aerial tramways, are part of the NSPS training program. Injury prevention, through a nationwide ski binding release check program and ski safety education efforts, expands the role of the NSPS.

The training and yearly refreshing of volunteer patrollers who serve ski areas many miles, sometimes two or three states, away from their homes, presents unusual difficulties. The cold, wind, snow and ice put a strain on both equipment and procedures.

The current increase in the number of cross country skiers, both touring organized areas and just striking out on their own, has created a whole new problem. The NSPS has created the solution --a Nordic Ski Patrol program. Patrollers especially trained in cross country skiing, use of map and compass and the techniques of improvisation in emergency care and transportation, are available.

Spec.

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V I P MEDICAL COVERAGE

The interphasing of the security systems essential to the protection of the U.S. with various components of the State of Illinois EMS System provided us with an interesting challenge.

Three components were selected by the Presidential staff:

1. Communications System
2. State of Illinois DOT Helicopters
3. Overland Critical Care Van

Our communications system is a part of a statewide system and serves as the center for 17 counties in central Illinois.

The EMS System of Illinois has access, on a top priority basis to 3 DOT Bell Jet Ranger Helicopters. Since these crafts function daily in the EMS System, the pilots are completely familiar with the function of the system. Two of these helicopters and three pilots were utilized in this merging of two complicated systems. The Overland Critical Care Van is the most recent and sophisticated addition to the State of Illinois' EMS System. Normally, it functions as an intensive care unit on wheels to transfer a patient from local to regional trauma centers. For this particular mission, it was refitted to function as an emergency room for one person.

The methods by which these components of the EMS were utilized by the Presidential staff demonstrated the flexibility and adaptability of the State of Illinois Emergency Medical Service System.

Spec., Comm., Trsp.

John W. Otten, M.D., F.A.C.S.
S. Duane Moore, Chief Helicopter Pilot
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THE RESPONSE OF THE MEDICAL FACILITIES
TO RAPE VICTIMS

Rape or sexual assault is a crime of violence that usually results in some physical injury. Since the proof of the crime requires evidence obtained by a medical examination of the victim, the increase in the number of rapes necessitates increased public health concerns.

Medical treatment should include attention to the victim's physical injuries, collection of evidence for future prosecution, treatment and preclusion of infection, and prevention of psychological trauma.

The most technical aspect of a sexual investigation is the hospital or medical evidentiary examination. It is this phase of an investigation that victims are most apprehensive. Many sexual assault victims do not report for fear of what many believe to be a humiliating examination. It is necessary that the feeling be dispelled and replaced with the understanding that a sexual assault medical examination is nothing more than a factual medically proper physical checkup designed first to treat the victim and second to obtain evidence.

Medical reforms are necessary in the pre-examination process medical examination and follow-up procedures. Many hospitals have instituted some innovations but there is room to grow. There is also a need to direct programs towards a multi-disciplinary approach.

Reforms in all institutions dealing with the sexual assault victim and cooperation among these agencies will ensure for the future the best possible handling of a sexual assault victim.

Spec., Fc./Ct,

Sandra A. O'Connor
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EMERGENCY MEDICAL SERVICES AND THE MENTALLY RETARDED, DEVELOPMENTALLY DISABLED

Emergency Medical Services, a newly developing generic resource in our communities, may be denied to a significant in-need population in our country. This will tend to be true even more dramatically in our rural communities. The denial of emergency medical services will not be done with malice, nor intent, but rather out of ignorance and rejection.

In every State of the union, there are publicly operated institutions housing a total of 250,000 mentally retarded, developmentally disabled persons. They are incarcerated in generally outmoded, understaffed facilities, located away from urban centers. They tend to house at least 500 persons, and will generally run from 1,000 to 2,000 disabled people.

There is a major effort underway today to return these persons to community residential settings. The populations will tend to be moderately, severely and profoundly handicapped. Not only will they be mentally retarded, but they will tend also to be physically or neurologically impaired. As a result of their institutionalization, their functional levels will be depressed, their medical needs neglected, and their dental needs ignored.

What responsibility do the leaders in emergency medical services have in planning to meet the needs of the handicapped? How can the newly evolving emergency medical services play a significant role in assisting those agents in our communities planning for the handicapped? When can we bring systems planning together for the benefit of the patient? The time is now!

Spec., Acss.

Department of Public Welfare,
State of Pennsylvania
Stanley Meyers, Deputy Secretary
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INSTITUTIONS / FOUNDATIONS / ASSOCIATIONS

EMERGENCY MEDICAL COMMUNICATION SYSTEM FOR
REGION H, NORTH CAROLINA

30-2

The PEE DEE COUNCIL OF GOVERNMENTS (PDCOG) received a grant from the Robert Wood Johnson Foundation for the establishment of a voice radio system for emergency medical services in a rural four county area of North Carolina.

The prehospital care units in the Region are 90% volunteer units. Gradually, local government funds began to trickle into the units' treasuries, but not to the extent necessary to their needs for equipment. Therefore, the Robert Wood Johnson Foundation Grant greatly excited these EMS providers.

PDCOG began to plan the means to supplant as many costs provided for in the Robert Wood Johnson Foundation Grant as possible, in order to continue to stimulate improvement in prehospital and emergency room care for victims of accident and trauma. From the original \$93,140 the equipment fund has grown to \$176,126, or 72% of the total grant!

Items supplanted included reducing the original training fund from \$42,092 to \$12,051. The elimination of the entire \$29,000 for consultants by use of the State Office of EMS and a North Carolina Regional Medical Program Grant of \$15,000; a reduction in administrative expense and contingency of about \$18,000 with about \$10,000 of interest earned, provides the balance. Extra hours of work by volunteers, hospital administrators, PDCOG staff and the Region H EMS Advisory Committee have contributed the supplanting activity to reduce administrative costs and contingency.

Org., Fin., Reg.

N. Worth Chesson
PEE DEE COUNCIL OF GOVERNMENTS
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The American Trauma Society was organized in 1968 by physicians and laymen concerned with the prevention of trauma and the improvement of treatment of persons suffering from trauma.

Divisions are now organized in 32 states and Society membership exceeds 5,000.

Programs currently under development by the American Trauma Society include:

- An emergency medical corps operating as a radio taxi project and designed to instruct radio taxi-cab operators in reporting trauma and providing rudimentary care of victims until more sophisticated help arrives.

- Primary school education programs developed in conjunction with the local school authorities whereby trauma education is disseminated throughout the primary school systems.

- Orientation and information teams based on the concept that members of the American Trauma Society, both professional and lay, go by invitation into various geographical areas and help evaluate local needs and provide professional update.

- Medical history updates attached to driver's licenses of intended organ donors. The Society has developed a 35mm slide giving medical history of the organ donor. This is designed to be attached to the driver's license and gives the emergency room personnel medical and legal documentation they need when a prospective organ donor situation arises.

- Hospital transfer tags provided by ATS so that hospitals which first treat a victim can give basic information to the ultimate trauma facility.

- Evaluation of trauma-related public information programs with the intent of developing programs that are uniquely useful to a specific locale.

The emphasis of the Society is being focused on national multi-media programming designed to inform the general public of the immediate need for trauma prevention and create an awareness of the professional and technical progress currently being made.

Org., Pers., PE&I,
Trsp., Eval.

American Trauma Society
L. Nicholas Lotz
Executive Director
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DEPARTMENT OF EMERGENCY MEDICAL SERVICES

The American Medical Association encourages medical leadership in the initiation and development of emergency medical services systems. Through the Department of Emergency Medical Services it compiles and disseminates information on programs for emergency and disaster medical care, and maintains liaison with medical, governmental and civic organizations to help them improve the delivery of emergency medical care in both urban and rural communities. Federal legislation to assist communities with emergency medical service systems planning, implementation and improvement will be supported and state and local legislation will be encouraged.

The Department staffs the Commission on Emergency Medical Services which advises the Association on policy matters pertaining to emergency medical services. The Commission consists of representatives of the American Academy of Family Physicians; American Academy of Orthopaedic Surgeons; American Academy of Pediatrics; American College of Emergency Physicians; American College of Physicians; American College of Surgeons; American Hospital Association; American Public Health Association; American Society of Anesthesiologists; University Association/Emergency Medical Services; U.S. Department of Health, Education and Welfare; U.S. Department of Transportation and the American Medical Association.

Other activities of the Department of Emergency Medical Services include the publication of materials for use by medical and allied medical personnel and the public to promote and improve emergency medical services systems in their communities. Recommendations have been published for the Categorization of Hospital Emergency Capabilities, the Development of Emergency Medical Services - Guidelines for Community Councils and the Role of the Physician in Disaster Medicine.

Special activities include the development of guidelines for airport emergency planning; providing information for emergency communications systems, including telemetry and emergency medical identification. Training and educational programs for the physician, emergency medical technician and the public are reviewed and promoted by the Department.

Future plans call for an Accreditation program for institutions providing education for the emergency medical technician and assistance in the improvement of the scientific programs for physicians in emergency medical care.

Org.

American Medical Association
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Chicago, Illinois 60610

AMERICAN HOSPITAL ASSOCIATION/HOSPITAL EMS ACTIVITIES

What has been done:

AHA, working through government and provider organization liaisons, has helped define major EMS problems--planned resource development, financing, transportation, communication, public education. AHA has supplemented its EMS-related publications and guidelines with institutes on management improvement and cost effectiveness in providing emergency care. An Advisory Panel on EM Radio Communications and an Advisory Panel on Signposting develop model systems and coordinate Federal Highway Administration emergency efforts.

What is being done:

AHA staff is working with State Hospital Associations as they develop and implement their plans for EMSS. With member hospitals, AHA is developing data on emergency department quality assurance standards and on outpatient surgery, hospital evacuation plans, and hospital disaster plans. AHA, working on a Kellogg Foundation grant, is developing group management data for ambulatory care settings. Information has been gathered from five other national organizations. This is in addition to tracking, commenting on, and helping to implement legislation and regulations relating to EMS.

What individual hospitals are doing:

Hospitals are devising methods for more effectively managing trauma care. Many participate in classification systems, encourage adoption of central emergency communication systems, train ambulance drivers as EM technicians, use sophisticated telemetry and telecommunication techniques linked to support services. The effect is better use of scarce resources and improved patient care.

What's ahead:

EMS activities have suffered from lack of disciplined coordination. Improvement depends on our willingness to join forces and apply the knowledge we've obtained from our past and present.

Org., Fc./Ct.

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THE AMERICAN RED CROSS AND MARINE DISASTERS

Marine disasters involving ships in the harbor, dock or dockside facilities, and the landing of survivors from ship disasters at sea create a variety of needs for services provided by the American Red Cross. Many of those services go far beyond medical needs on the basis of experience with such disasters as the Texas City Ship and Brooklyn Pier Explosions, and the landing of survivors of the collision of the Stockholm and the Andrea, Doria, the following types of services may be needed.

First aid and canteen service at the scene; assistance with triage and transportation of casualties; provision of blood and blood products; supplementing the nursing staffs and supplies of hospitals and emergency health units handling the wounded; assisting families identifying bodies at temporary morgues; help with clothing, burial costs and other financial assistance, communications to relatives, and transportation for survivors, and comparable assistance for the hospitalized and their families.

Also, if insurance, company liability, workmens compensation, or union benefits do not provide such help, there may be a need for long-term financial assistance with repair of homes damaged by a dockside explosion, replacement of uninsured contents, family maintenance while a casualty is undergoing vocational retraining or while survivors of the dead are rearranging their lives to become self-supporting without the income from a dead wage-earner, and medical costs.

These are the kinds of services provided by the American Red Cross Disaster Services, working in close cooperation with Federal, State and Local agencies, shipping companies or other firms involved, and the affected families. They are provided by trained local chapter volunteers and staff, augmented by additional help brought in from other Red Cross resources and cooperating groups. Being ready to provide such assistance involves extensive preparedness planning and training.

Org.,Dist.

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The American National Red Cross
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FEDERATION FOR EMERGENCY AND CRITICAL CARE MEDICINE

In recognition of a common objective, improved initial care for the critically ill and injured patient, the American College of Emergency Physicians, the University Association for Emergency Medical Services and the Society for Critical Care Medicine began meeting in late 1972 to formulate those areas and activities in which the three associations could cooperate. At the annual meeting of UA/EMS in Hamilton, Ontario, Canada in May 1973, representatives of the three associations met and formalized the Federation for Emergency and Critical Care Medicine. Current officers are Charles Frey, M.D., President; Max Harry Weil, M.D., President-Elect; and John Wiegenstein, M.D., Secretary-Treasurer.

The program for the Section on Emergency Medicine of the American Medical Association is a cooperative undertaking of the Federation. Ronald L. Krome, M.D., is Representative for Program for the AMA Section. Carl Jelenko III, M.D. serves as Assistant Representative for Program.

The formation of the Federation unifies the efforts of the three associations to provide a common voice which is representative of the physicians who are actually providing the initial and stabilizing care to the critically ill and injured.

Org.

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PUBLIC SAFETY OFFICERS FOUNDATION (PSOF)

EMS activities include: the provision of field consultants to assist communities in developing EMS systems; heavy emphasis placed on providing CPR clinics at both Basic Life Support and Instructor levels; also presenting customized first aid training courses for safety agencies; compiling a study of the regional impact of mobile intensive care units on fire, police, private ambulance and hospitals; sponsorship of First Forum, an annual debate dealing with critical issues in the health care field; data collection.

The Foundation is not a membership organization.

PSOF was established in 1974 as a not-for-profit corporation "dedicated to the improvement of life through publication education." Initial Foundation emphasis is being placed upon prehospital health care delivery. The Foundation is offering field personnel as consultants to selected communities who wish to improve their prehospital and emergency department health care delivery systems. This technical assistance will be provided at no cost to the community other than travel expenses for the consultant. Applications for field consultant services will be sent on request to any community. PSOF is involved in the computerized collection of data relating to the prehospital (MIC) phase of EMS. Other PSOF activities include the setting up of CPR clinics in industrial, commercial, educational and residential facilities with emergency response protocol established. Instructors and equipment are provided at a minimal charge. PSOF staff personnel available for prehospital care educational presentations.

Org., PSA., Pers.

Ralph E. Flannery
President
Janet Schwettman
Executive Coordinator
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Chicago, Illinois 60601

THE NATIONAL REGISTRY OF EMERGENCY MEDICAL TECHNICIANS

The National Registry of Emergency Medical Technicians was conceived in 1966 as a direct result of the recommendations of the President's Committee on Traffic Safety as it related to the care and transportation of the sick and injured.

Accepting the recommendation that there be a national accreditation agency to establish uniform standards for training and personnel, and realizing that a national registry is essential for improved ambulance services, the Commission on Emergency Medical Services of the American Medical Association on January 21, 1970 called together a task force consisting of representatives of all National organizations involved in the delivery of emergency care, including representatives of the many concerned and involved medical societies and associations.

On June 4, 1970 at the A.M.A. headquarters in Chicago, the National Registry was born. Organizational funds were provided by the American Medical Association and Employer's Insurance of Wausau, Wisconsin. The first examinations were administered on October 29-30, 1971 to 1,520 Emergency Medical Technicians simultaneously at 51 sites throughout the U. S. To date, the National Registry has accepted and processed 75,000 applications from EMTs representing all 50 states and the military. The Registry examinations are in two parts, a written and a practical. The reliability of the written examination is continuously monitored by way of a computerized item analysis.

The National Registry of Emergency Medical Technicians headquartered in Columbus, Ohio continues to grow in numbers and stature. Working in concert with the Department of Health, Education, and Welfare - Department of Transportation and the medical community the Registry is fulfilling its purposes relative to the Emergency Medical Technicians.

Org.

Rocco V. Morando
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Columbus, Ohio 43229

AMERICAN HEART ASSOCIATION

The American Heart Association has a long-standing, strong interest in emergency medical services. Heart disease is the number one killer in the United States. About 660,000 people die from heart attacks each year in the United States and somewhat more than half of these, about 360,000, die within the first two hours after the heart attack, and before arriving at a hospital.

The Heart Association's interest in emergency medical services is an extension of its experience with coronary care units in the hospital. Now, with basic and advanced cardiac life support techniques available outside the hospital, it is estimated that at least 25% of those currently dying outside of the hospital could be potentially saved with well-integrated, effective EMS systems.

Standards and training programs in basic and advanced cardiac life support have been a priority of the Heart Association. Since it spearheaded the 1973 National Conference on Standards for CPR and ECC, the Association has developed a national training network in basic and advanced cardiac life support and supportive training materials. The Association works cooperatively with all organizations that share similar goals and maintains its leadership as an authoritative source of information because of its medical base.

Org., Pers.

John Gould
Associate Director
Division of Education
and Community Programs
American Heart Association
National Center
7320 Greenville Avenue
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MEDIC ALERT FOUNDATION INTERNATIONAL

Medic Alert Foundation is a unique emergency medical identification system currently observing its 20th year. The nonprofit, charitable and tax-exempt organization has approximately 635,000 members in the U.S. with nearly one million members worldwide belonging to 14 affiliate organizations on four continents.

The Foundation is designed to protect individuals with hidden medical problems with allergy to penicillin, diabetes, heart conditions, taking anticoagulants, and wearing contact lenses being the most prominent of the more than 200 common reasons for membership.

Medic Alert's system of protection is keyed to each member wearing a metal alerting device on which is engraved his medical problem and the telephone number of the Emergency Answering Service. It can be called by emergency personnel at any time, collect, to receive all the information in the member's emergency record. Each member also receives a wallet card annually.

Proof that the system works is reflected by the more than 2,000 letters received in a 12-month period from persons reporting Medic Alert had contributed to the saving of their lives.

Lifetime membership can be acquired for a one-time basic fee of \$7.00 which is used to install and maintain each membership. The Foundation relies on gifts and donations to support its vigorous educational programs conducted by thousands of volunteers. Endorsed by the medical, hospital and pharmaceutical professions, as well as the paramedic, law enforcement and fire fighting services, Medic Alert's commitment is to deliver its system of protection to every individual who needs it.

Org.

Luther L. Terry, M. D.
Medic Alert Foundation International
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NATIONAL ACADEMY OF SCIENCES

The National Academy of Sciences is involved in EMS through the Committee on Emergency Medical Services and the Committee on Regional Emergency Medical Communications Systems.

The EMS Committee, since its inception in the late 1960's, has provided guidelines for standards in various EMS-related areas, such as ambulance specifications, training for EMTs and paramedics, pre-hospital cardiac care, hospital categorization, and cardiopulmonary resuscitation and emergency cardiac care. This committee brings together leaders in medicine, hospital administration, ambulance services, communications, health education and other areas relevant to emergency medical care, as well as representatives of concerned governmental agencies.

The Committee on Regional Emergency Medical Communications Systems was established in August, 1973, to conduct the Robert Wood Johnson Foundation national competitive program for emergency medical communications systems. The committee reviewed some 260 applications, site visited about 60 applicants, and, in the spring of 1974, recommended for funding 44 EMS projects in 32 states and Puerto Rico. The committee has subsequently monitored the program through further site visits and review of project reports. Anticipated program results include the upgrading of emergency care in the funded areas, the collection of data on the impact of EMS systems on health care, the development of model systems to stimulate the further development of EMS in the United States.

Org.

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ACTIVITIES OF THE NORTH DAKOTA COMMITTEE ON TRAUMA
OF THE AMERICAN COLLEGE OF SURGEONS

In the past year, the Committee on Trauma in North Dakota has continued in the training of Emergency Medical Technicians, improving the quality of ambulance services and their personnel in the state of North Dakota, as well as improving the care in Emergency Room facilities within the state. There have been continuing evaluations of Emergency Rooms in hospitals within the state of North Dakota in an effort to upgrade emergency care both in the hospital Emergency Room and in the hospital in general. The general public is being continually informed through local news media of these activities.

Our Committee on Trauma has also worked together with the North Dakota Chapter of the American Red Cross in an effort to update and improve multi-media educational techniques for first aid for all ages. The Committee has also continued to work actively and in conjunction with the North Dakota State Highway Department in promoting highway safety.

Physicians and nurses involved in emergency care have been encouraged to attend and participate in conferences on emergency health care both locally and on a regional level.

Org., CE&I.

Richard A. Olafson, M. D.
North Dakota Committee on Trauma
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NATIONAL SAFETY COUNCIL

The National Safety Council is a non-governmental, non-profit, public service organization dedicated to safety education and the development and implementation of accident countermeasure programs which reach every segment of American life. Organized in 1913 and chartered by Congress in 1953, the Council has for more than 60 years served as a center of the voluntary safety movement.

Council concern with Emergency Medical Services began in the 1950's when this emerging service was defined as transportation of the injured. Acting jointly with the American College of Surgeons and the American Association for the Surgery of Trauma, A Model Ordinance or State Statute Regulating Ambulance Service was developed and its use is recommended by the Council of State Governments. NSC assistance to the states has included the development and improvement of state EMS plans, the establishment of rules and regulations for EMS operations and EMS publications.

The Council strives to build public support for emergency medical services through its national membership. The Council membership includes 16,500 members representing industrial corporations, labor unions, and civic service and religious groups. Seventy-nine state and local chapters, 28 affiliate safety organizations and 163 local safety organizations provide a nation-wide network to disseminate programs and provide support for implementing the goals of the world's largest safety organization.

Org.

Vincent L. Tofany, President
National Safety Council
425 North Michigan Avenue
Chicago, Illinois 60611

THE NATIONAL ASSOCIATION OF
EMERGENCY MEDICAL TECHNICIANS, INC.

The National Association of Emergency Medical Technicians, Inc. is a professional organization.

Among its most important goals and objectives are to promote and encourage the national acceptance of a uniform standard of recognition for the skills and abilities of the Emergency Medical Technician; to foster encourage and promote the constant upgrading of the skills, abilities, qualifications, and educational requirements of the EMT; and to offer information and guidance on current emergency medical care and governmental policies related to the control certification and licensure of EMT's.

NAEMT is currently in an organizational period, working with and encouraging the formation and establishment of state EMT associations.

NAEMT will act as a forum, coordinator and clearinghouse of all EMT's and EMT associations in the country. Among services already started or planned is an EMT Information Clearinghouse; Educational, Business, and Scientific Journals and Newsletter; a national liability, health and accident membership insurance plan; seminars, workshops, and courses in EMT/EMT-Paramedic continuing education; and EMT representation on national and state EMS organizations and committees.

Through July 4, 1976, membership is by way of Founding membership only. After July 4, 1976, Active, Associate or Affiliate membership will be through the appropriate affiliating state EMT Association and their chapters.

Individuals interested in more information about NAEMT can write:

Org., Pers.

NAEMT
P.O. Box 334
Newton Highlands, MA 02161

COMMERCIAL / PRIVATE

INSURANCE PLANS TRANSPORTATION COVERAGE

Due to its geographical isolation, the North Slope Borough has a large problem in the area of patient transport. This problem is mostly centered around its non-native population. The city of Barrow has a 14 bed general hospital which is the only hospital servicing the 88,000 square miles containing the seven villages of the North Slope. Any serious medical problem must be evacuated by air to Fairbanks or Anchorage.

For the native population, IHS pays transportation costs. The non-native must pay himself. In addressing itself to this problem, the EMS office felt the best solution would be a widespread information program on various insurance plans so that non-natives would be aware of the need for transportation coverage in their plans. Since transfer by stretcher to the nearest critical care unit of any type involved paying for six seats plus escort fare (approximately \$600 or \$2,000 to charter), this problem was of top priority.

Each employer of a large group of non-natives was contacted and their plans checked for transportation coverage. A radio tape was made explaining the need for coverage, which plans had it and which were lacking. The EMS office offered its help to anyone with questions.

Because of this campaign, two companies changed their plans to offer this coverage and many independent insurance carriers changed their plans also. The radio tape will be updated and played periodically so as to reach all newcomers to the area.

Cm./Pr., Spec., Trsp.

Ms. Elise Patkotak
EMS Coordinator
North Slope Borough
Health Program
Barrow, Alaska

WHAT DO YOU READ TO KEEP UP
ON THE EXPANDING EMERGENCY MEDICAL FIELD?

EMERGENCY PRODUCT NEWS is the number-one NATIONAL journal edited for those who use or make buying decisions related to emergency rescue equipment and supplies. This includes emergency medical professionals or para-professionals, trained or in-training, who will take medical command of life-threatening situations in emergency rooms or wherever such occurs. Also included are those engaged in the manufacture and marketing of sophisticated medical and rescue equipment for the so-called emergency industry.

Feature and news articles address pre-determined timely editorial themes selected for each issue. Emphasis is on emergency medical and clinical techniques including newly developed procedures. Also we report on equipping and coordinating of emergency departments and vehicles used in administering emergency medical care under all kinds of conditions. Human interest articles relating to emergency care present material that deals with pertinent every day as well as inordinant emergency and rescue situations.

Regular Departments of each issue include: Publisher's Column, New Briefs, Legal Column, Emergency Equipment and Industry Surveys together with the documented results of same, Legislative Update, New Product Alert, EMT's MERITORIOUS AWARD (given by Emergency Product News), EMT Action, Industry Calendar, Poison Center and Index to Advertisers. Editorial Advisory Board is composed of leaders in all aspects of Emergency Medical Services, and their editorial contributions are regularly in evidence throughout our publication.

Readership surveys are regularly made in order to maintain the strongest possible tie between our publication and what readers want to see and learn from it. Response to all surveys continues to grow in number as well as articulation of readers opinions about the ever-widening Emergency issues on a nationwide, and on a local basis. All reader response is carefully reviewed and re-reviewed. Everywhere possible their suggestions are utilized.

Cm.Pr., Pers.

The Journal of Emergency Services
Emergency Product News
Post Office Box 159
Carlsbad, California 92008

RESEARCH

Continued research and development in the field of quantitation of acute trauma can best be served by scoring systems that adapt to a wide variety of injuries, therapeutic innovations, and the dynamic aspects of the pathophysiological sequelae of critical injury and illness.

The methodology, based on four years of actual patient research, was designed for a concept which is the definitive state-of-the-art approach to a comprehensive categorization of trauma. Statistical and mathematical methods have been molded to the pathophysiology of injury and critical illness, using commonly acquired variables to ensure widespread applicability. Objective methodologies are described for the characterization of Acute Anatomical disruption, the acute metabolic response to injury, a triage index, and the post-resuscitation organ failure syndromes, including renal and respiratory dysfunction.

Objective statistical descriptors of these "indices" enable prospective evaluation in a variety of circumstances, in addition to objective comparison with existing methods of quantification. Development of the methodology will enable impartial application to many aspects of emergency health care delivery, including hospital categorization, evaluation of emergency care delivery systems and therapeutic regimens, and the development of treatment protocols.

The methodology has been developed and tested on a limited sample (2,000 - 3,000) of severe trauma victims. Prospective validation has shown high predictive accuracy with low expected misclassification rates. Further validation on a wider spectrum of trauma victims is needed.

Res., CC., Eval.

Howard Champion, M.D. &
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PROBLEMS AND SOLUTIONS

Problem: The sparsely populated rural areas of northwest Ohio have been a stumbling block to our Public Education Efforts. The problem of disseminating the EMS message to this scattered populus has proved bewildering.

Solution: The 1975 northwest Ohio county fairs offered the perfect vehicle for delivering our message to the rural population. We utilized our training ambulance as the foundation of a "working" display area. With the help of some volunteers (paramedics, EMT-A's and nurses) the display was manned by the EMS staff, working on six-hour shifts. At times, as many as seven people were kept busy attending the display area, as evening crowds were overwhelming. A 16mm color movie entitled "Cry for Help" was a boom for attracting a crowd of curious spectators. Once gathered, the crowd was given a CPR demonstration while EMS literature was distributed. The fruits of our labors were borne in the many speaking engagements made in areas previously showing little or no interest in EMS. During and following our stay at the fairs we received numerous calls and letters requesting further information on EMS, and many new friends were made.

Res., C.E. & I

William Schabel
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More often than not, the Illinois Trauma System patient was a Caucasian male resident of Illinois in his teens or twenties. Spontaneous, unintentional events ("accidents") accounted for 87-95% of the trauma hospitalizations in downstate Illinois, while in the metropolitan Chicago region, 60% of the victims were hospitalized due to accidents and 20% due to intentional assault.

Home and recreational accidents accounted for 44% of the Trauma System admissions; vehicular trauma followed with 30%, then violent 16% and industrial and from accidents with 8% of admissions. Males were particularly prominent as trauma victims due to industrial/farm and violent accidents. Males and females were involved in home/recreational accidents in proportion to their population. There exists considerable difference in age distribution of trauma system patients by mechanism of injury. 49% of those involved in vehicular accidents were between 10 and 29 years of age. Industrial/farm accidents were a more important factor in the age groups 20-59 years. Home/recreational accidents involved a larger proportion of persons under 4 and over 70 years than would be expected by chance. Injuries due to violence were more often seen in persons in their twenties and thirties.

Mortality rates for males and females were equal, at 3%. Patients under sixty years had an average mortality rate of 2% while those over 70 years had an 8% mortality rate. Vehicular trauma exhibited a mortality of 4%, the highest among the four mechanisms studied.

Two percent of all trauma system patients developed complications within the first twenty-four hours of hospital admission. Only 36% of these patients survived.

Res., CC

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THE SEVERITY INDEX: ESSENTIAL INSTRUMENT FOR EMS EVALUATION

The goal of an EMS system is to diminish death and disability. In an effort to assess progress towards meeting this goal, some researchers have attempted outcome assessment, focusing on death, morbidity disability. However, in EMS there is no control on health status prior to the emergency incident. Furthermore, it is difficult to isolate the effects of pre-hospital or in-hospital intervention.

One promising solution to this problem is the development of an index (or indices) by which emergency case types can be standardized with respect to severity. Under support of D.H.E.W. grant #HS 01932-01, the Center for the Study of Emergency Health Services is working on a Severity Index.

The Index (or indices) is being restricted to emergent and urgent cases. Data elements identified: 1) have predictive value for patient outcome; 2) are easily collectable by EMT's on scene or within the first 30 minutes in the E.D. Outcomes will focus not only on death but also some measure of disability. Data analysis will be directed towards configuring and weighing the data to correlate with outcome.

The Severity Index, once developed, would serve several functions:
1) triage of patients; 2) categorization of hospital facilities;
3) assessment of the quality of pre-hospital and in-hospital care.

Res., Eval.

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Center for the Study of Emergency
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ABBREVIATED INJURY SCALE AND INJURY SEVERITY SCORE - RECENT DEVELOPMENTS

Evaluation of progress in EMS requires the ability to describe and categorize patients on the basis of the severity of their injuries.

The Abbreviated Injury Scale (AIS), first published five years ago, was developed to provide a method for rating the severity of individual injuries - primarily injuries sustained in vehicular crashes. Used by accident investigation teams throughout the world, the AIS has recently been revised. The most important change has been elimination of the previous "fatal" codes, thus permitting separate coding of injury severity and survival status. In addition, a new severity category has been created, consisting of specified injuries that are not considered survivable.

The Injury Severity Score, based on the AIS, offers a method of calculating the overall severity of injury in patients with multiple injuries. Easily derived, the Injury Severity Score facilitates the classification of patients on the basis of injury severity. The Score was developed using data from eight Baltimore hospitals, and recently has been tested by other investigators. In Birmingham, England, its retrospective application to hospitalized highway injury cases yielded results that were similar in many respects to those for the Baltimore patients. The Score was also found to correlate closely with degree of disability in the Birmingham patients, and to offer a basis for calculation of "LD 50's" of injury "doses."

Res., Eval.

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PROJECT RESEARCH

EMS: Emergency Service Screening

There is a great deal of interest at this time among all emergency services, but particularly among providers of emergency ambulance services, in the possibility of screening calls requesting assistance. The number of calls has been increasing steadily; there are complaints that some people abuse the service; sophisticated, expensive units like mobile intensive care units have been added to some emergency ambulance fleets and need to be reserved for particular kinds of calls; patient confusion about contacting the ambulance service has been demonstrated and could be overcome if the public was encouraged to call for service, and, at the same time, the less serious calls were referred to other sources of help. Furthermore, we can expect an increase in the amount of emergency ambulance screening being carried on.

However, there has not been any way of evaluating either a proposal to screen calls in a particular community, or the performance of a screener in an ongoing screening program. New work by Keith Stevenson and Tom Willemain, provides a way of structuring the screening process, determining under what conditions screening is beneficial, evaluating the performance of a screener, and establishing a vocabulary with which to discuss screening and conduct further research.

The screening process is structured in terms of the probability that a call is truly emergent, the probability that an ambulance is available to a call assigned by the screener, and the probabilities of the two kinds of errors of which the screener is capable.

Res., Comm.

Massachusetts Institute of Technology
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JACKSONVILLE EHSDS EMSS OUTCOME MEASUREMENT RESEARCH PROJECT

Project participants were Jacksonville Experimental Health Delivery System, Inc., the contractor, the Northeast Florida Eight County Emergency Medical Care System, the Foundation for Medical Care in Duval County, Inc., sixteen (16) local hospitals and a group of national advisors. Data was collected in the 8-county area for the period 1 July 1973 to 31 December 1974 for Acute Myocardial Infarction (AMI), HICDA codes 410.0 to 410.9, drug overdose in the HICDA code range 960.0 to 979.9 and accident/injuries in the HICDA code range 860 to 869. The data for each patient were linked through ambulance, emergency room and hospital, depending on point of patient entry.

Based on criteria established by the Foundation, investigations were conducted into: (1) the effect of EMS on survival/mortality outcomes for AMI, overdose and accident/injuries; (2) the effect of EMS on cost as a possible severity measure; and (3) the effect of various ambulance response and service times on AMI mortality. A probit analysis was performed on the AMI data and hospital feedback report tabulations of collected data were provided to participating hospitals in a form permitting individual hospitals to compare themselves with urban and rural aggregates. A Health Status Study and Follow-up Survey, which were cancelled, are also reported on up to their termination points. Reports are provided on the criteria setting process, data collection, data error assessment and data processing.

The final report: Final Report on the Jacksonville Experimental Health Delivery System Emergency Medical Services Systems Outcome Measurement Research Project (HSM 110-72-314) is available in limited quantities from 1045 Riverside Avenue, Jacksonville, Florida 32204.

Res.

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PATIENT OUTCOME ORIENTED
EMERGENCY MEDICAL SERVICES EVALUATION

An approach that is based upon patient outcomes, called patient trajectory analysis, has been developed and tested for evaluating and analyzing community EMS delivery systems. In the past, many techniques have been proposed for conducting an EMS system evaluation utilizing input measures, inventories, and comparisons of system process measures. Most clinical studies have been outcome-oriented, but only for single specific emergency conditions.

Patient trajectory analysis is a technique for evaluating EMS system performance by relating patient outcomes to the process of delivering emergency medical services. The term "trajectory" refers to the alternate routes or pathways that a patient may take through the EMS system. The aggregate performance of the system is determined by evaluating the individual types of trajectories and measuring their frequency of use.

A patient outcome-oriented analysis, using the trajectory method, requires three basic sets of data: Probability of occurrence or incidence rates of the various emergency conditions, The identification of and percentage of patients utilizing the various trajectories or pathways through the system for each condition, and The outcome measure for each condition/trajectory combination.

Given sufficient validation, this technique will be useful in generating quantitative outcome measures of system performance and in performing cost-benefit analyses of proposed system changes.

Res., Eval.

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Use of the Abbreviated Injury Scale in Emergency Medical Services

The AIS was originally devised by the Committee on Medical Aspects of Automobile Safety of the American Medical Association in 1967-1969. The Actual ranking of injuries was done by a group of physicians, engineers and researchers concerned in automobile accident research and vehicle design for occupant protection. The original scale was published in 1969 and was most recently revised, updated and augmented in 1975 by a combined committee under the auspices of the American Association for Automotive Medicine, The American Medical Association and the Society for Automotive Engineers..

The AIS has had limited usage in Emergency Medical Services data analysis and research. Application appears to be much broader because rationality, established validity and ready application to computerized data analysis systems.

Reference - 1975 Revision of the Abbreviated Injury Scale - available from the American Association for Automotive Medicine, P. O. Box 222, Morton Grove, Illinois 60053. Also available in the 1975 Proceedings of the American Association for Automotive Medicine, University of Michigan, Ann Arbor, Michigan 48104.

Res., SMRK

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One of the major obstacles in developing a "systems approach" to the multiply injured trauma victim is that most critical and complex patients who enter the EMS System may not initially present the total spectrum of anatomic and physiological derangements. Because of this subsequent under-treatment at the scene of initial care and the subsequent mis-direction of this patient to the "nearest hospital", too late in many cases does the entire problem become understood while valuable treatment time has been irrevocably lost. Only by a better appreciation by all of the providers in a trauma system of the variable complexity and time dependent diagnostic indicators can early and more effective care and patient distribution be improved and assured.

The Illinois Trauma Registry, developed in 1970 has been used as a tool for determining the extent of trauma in a civilian population. This data collection instrument was used by the Illinois Statewide Trauma Program. A publication, The Illinois Trauma Patient: A Statistical Profile, Vols. 1 and 2, have been published and provides some basic state-wide data and some insight into the magnitude and complexity of the trauma problem in Illinois. It is the primary goal of this publication to present a summary of the 26,187 cases in the Trauma Registry. Interpretation of the data is left to the reader, as is further investigation of the correlations. A secondary goal is to stimulate interest in trauma research, to further delineate risk factors and program effectiveness. Volume I presents an overview of the typical Illinois trauma system patient, the characteristics of the system itself, and the patient's outcome. Volume II is the series of detailed tables from which Volume I was abstracted. Volume I is intended to serve the needs of persons desiring a brief summary of the Trauma Registry highlights, where Volume II is intended for use by trauma researchers.

In addition, statistical data, injury and magnitude incidences, anatomic and pathophysiologic combinations and cluster patterns as well as the trauma patients' needs and subsequent resource demands are pertinent areas of study for the EMS Administrator.

Res., SMRK., Ste., Eval.

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EMS COUNCILS / TASK FORCES

MICHIGAN EMERGENCY SERVICES HEALTH COUNCIL (M E S H)

The Council was created in 1970 by representatives of 45 organizations involved in emergency medical health services in the State of Michigan. This independent volunteer organization's prime objective is to focus subjective, professional, technical, and practical expertise on the planning and implementation of an emergency medical services program within Michigan. Currently MESH is composed of, but not limited to, representatives of more than 55 organizations and has a general membership of 400.

The MESH Council serves as the official advisory body to the Michigan Department of Health on all matters pertaining to emergency medical health services. The MESH Council, in cooperation with the Governor's Office of Health and Medical Affairs and the Michigan Department of Health, developed the guide lines for the state emergency health services plan. The MESH Council has also developed legislation for the basic and advanced emergency medical technician and hospital categorization in the State of Michigan.

The MESH Council's primary role is one of fact finding, planning, coordination and advisement and is charged with the responsibility of developing a systematic emergency medical service program. Public education, communications, standardization and the collection of emergency care data and records, are only a few of the continuing projects of the MESH Council.

Fragmented efforts, lack of coordination and public or private apathy have obstructed the development of good emergency medical services systems in many areas. It is apparent that the job of coordinating the growth and progress of EMS in Michigan and in other states needs to rest with a group that has resources and wide representation. The MESH Council has a record of accomplishment in the past, a diverse and active program in the present, as well as a great potential to proceed onward in the future with the task of further upgrading EMS. It is our recommendation that an emergency medical services health council be established in each and every State in the United States.

Cou.

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SOUTHEAST MICHIGAN

The Regional Task Force on EMS, a 150 member organization created in 1974 under the auspices of the Comprehensive Health Planning Council of Southeastern Michigan and chaired by Ron Krome, M. D., substantially completed the regional planning program during 1975. Public hearings were held throughout the region prior to adoption.

The 4.8 million persons in southeast Michigan now reside in an area operating under a regional plan for the implementation of coordinated EMS services. Of 103, (86 general acute plus 2 alcoholism and 15 psychiatric) hospitals, the 73 providing emergency services have been categorized as to their current and planned status for 1977. Upon receiving support and participation from the seven counties and the City of Detroit, the Regional Task Force has prepared its action-year implementation of the region's plan.

Two critical patient categories have been selected for emphasis:
1. expansion of the Michigan Information System Telephone (MIST) program to 24-hour coverage with an inter-connection to the Children's Hospital Poison Control Center and 2. the National Institute for Burn Medicine is prepared to implement a model burn information, training, and triage system for southeast Michigan.

Two phases of the implementation of hospital categorization are planned:
1. a public education program for consumers and providers on the impact of categorization and 2. the completion of selected transfer arrangements.

A priority has been given to the substantial completion of the ambulance-hospital (VHF) communication system and expansion of the region's bio-medical telemetry capabilities. Finally, standardization of advanced EMT (paramedic) programs will result from the Wayne State University training proposal.

Cou., Pl., Reg.

Ronald L. Krome, M. D., Chairman
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Comprehensive Health Planning Council
of Southeastern Michigan
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Detroit, Michigan 48226

Denver EMS

From the EMS viewpoint, Denver Colorado is simultaneously resource rich and systems poor. At the geographical center the city run hospital, Denver General, maintains an active emergency network. Collateral and concurrent with this public system are other hospitals, private ambulance companies and public service agencies that provide for the remaining urban and suburban EMS activity. It is to a part of this "non-system" activity that the Joint Hospital Committee has addressed its planning effort.

The early work of the Committee began on an ad hoc basis in the fall of 1974. By the summer of 1975 a Project Coordinator was retained to assist in the development of sharing alternatives. Task Forces have been deployed to develop and evaluate system proposals. To assist in the development of meaningful task force dialogue, a Patient Management Matrix (PMM) has been developed which divides the EMS patient population into manageable medical and financial categories. From this matrix it is hoped that staffing patterns, utilization rates, demographic data, transfer protocols and financial impact statistics can be expressed and monitored.

The work of the East Denver Joint Hospital Committee is to be commended for its recognition and internal funding of a systems approach which places the needs of the patient above those of the institution. Admittedly, the difficult transition from planning to implementation has yet to be made, but with encouragement and dedication significant steps in this direction can be anticipated.

Cou., Fc./Ct./Pl.

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Role of the Greater Detroit Area Hospital Council in
Emergency Medical Services Planning

GDAHC is a community service organization which also serves as a metropolitan hospital council, a voluntary non-profit organization broadly representative of the seven county southeastern Michigan community that it serves. Its role in EMS planning dates back to 1970, when it organized an Emergency Care Commission whose study and recommendations set the pattern for the coordinated and effective EMS planning and systems development program that currently exists in the region, that draws upon the strengths and uniqueness of this community, and that is still evolving today.

The GDAHC Emergency Care Commission report recommended among other things, that CHPC-SEM assume overall responsibility for EMS planning in the region and form city-wide and regional EMS Task Forces (as advisory bodies to CHPC-SEM) for the purpose of organizing interested individuals and groups into a meaningful community-wide EMS planning process (including specific attention to emergency department coordination, communication, transportation, financing, public education and personnel training). These recommendations were subsequently implemented.

GDAHC has assisted with the development of all aspects of the EMS planning effort in southeastern Michigan, with special emphasis upon the development of hospital emergency care services and inter-hospital organization. GDAHC has staffed the Emergency Department Coordination Committee of the EMS Task Forces, has developed specialized planning tools, criteria, and guidelines to assist hospitals with their EMS planning efforts, and has organized and coordinated a process through which 73 hospitals have voluntarily self-categorized their emergency departments in cooperation with neighboring institutions.

Cou., Urb,

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THE REGIONAL EMERGENCY MEDICAL SERVICES COUNCIL OF NEW YORK CITY

The Regional Emergency Medical Services Council of New York City was formed three years ago as a privately incorporated, independent, non-profit, voluntary organization of health providers and consumers to coordinate the city's fragmented, politicized emergency medical services into a unified, effective health care delivery system.

As catalyst and coordinator in a metropolitan mix, the Regional Council's main task was to examine each step in the continuum of care and take corrective measures on a short and long-range basis. The Council established a first-in-the-nation skyscraper survival program based on providing maximum coverage through the training of life-support corporate community. The Council's effort to organize complete building-wide-emergency medical systems on the model of a successful fire-warden system was supported enthusiastically by contributions from private foundations and the corporation's themselves. Because of the need for advanced ambulance units in the city, the Council has designed a privately funded training program to provide levels of service not previously attained by the 911 response system.

The Council's efforts to improve emergency department procedures was based initially on a training program for emergency department nurses based on the accepted EDNA Core Curriculum designs. Concerned by the serious cuts in Police Department manpower and training sites and attendant diminution of Police EMS Squad, the Council began a series of negotiations to re-emphasize the EMS needs of these front-line rescue personnel.

Public education and involvement training and the need to bring all ambulance services into a one-tier system remain primary target goals for the Council's efforts.

Cou., Reg., Pers.

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SOUTHERN WEST VIRGINIA REGIONAL HEALTH COUNCIL, INC.

With the aid of several government agencies, regional EMS technical committees, and others, an application for federal financial assistance was made for the development of an adequate regional emergency ambulance service.

On September 1, 1971, the Council was awarded a grant by the Appalachian Regional Commission for Mercer, Wyoming and Logan Counties. On September 2, 1972, a second ARC grant was received for the three counties including funds for the expansion of the original program into Monroe and Summers Counties. The project was funded for a five year period. Income generated by the program is used to satisfy the matching fund requirements and also to finance the program beyond the five years.

The project is equipped with a regional radio base station. The station is capable of monitoring the entire operations on a multi-county basis. County dispatching operations are delegated to centers located in key hospitals throughout the demonstration area. All ambulance unit personnel are certified EMTs or licensed paramedics. Two-way radio communications is available between central dispatch and the EMT's while enroute to the scene, at the scene, and transporting patient(s) to the appropriate medical facility. The central dispatcher, can establish communications with other EMS units and other public safety agencies.

On May 23, 1974, an official Notice of Grant Award in the amount of \$399,790 was received from the Robert Wood Johnson Foundation and those funds are currently being used to upgrade the communications system.

Cou., Reg., Comm.

William E. Powers
Acting Project Director
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THE EMERGENCY MEDICAL SERVICES COMMISSION
OF METROPOLITAN CHICAGO:

ONE AREA'S ANSWER TO COORDINATING A TOTAL EMS SYSTEM

In 1970 the University of Chicago Center for Health Administrative Services published a study titled Emergency Medical Services in the Chicago Area. The first of these which recommended the establishment of an Emergency Medical Services Commission of Metropolitan Chicago (EMSC). This Commission was created in 1970 as a cooperative effort of the Chicago Hospital Council, the Chicago Board of Health and the Cook County Department of Public Health. The Commission and its committees, which are broadly representative of the metropolitan Chicago community, were charged to oversee the implementation of the remaining recommendations.

The Commission functions through an Executive Committee and committees on Transportation, Communication and Coordination, Hospitals, Disaster Planning, Public Education and an Ad Hoc Mobile Intensive Care Committee. The Executive Committee consists of the chairman and vice chairman of the other committees. The Chicago Hospital Council, provides the staff for the Commission.

On July 1, 1973, Illinois became the first state in the nation to require participation of all hospitals in areawide emergency medical service plans. In compliance with this mandate, eleven (11) Areawide Hospital Emergency Services Committees (AHEA) were organized within a geographic boundary that covers most of metropolitan Chicago. From their inception, members of these committees have been represented on appropriate committees of the Commission.

In 1975, in order to formalize and strengthen its relationship with the Areawide Hospital Emergency Services Committees, the Commission voted to extend ex-officio membership privileges to the chairman of the eleven (11) AHES committees.

Currently the Emergency Medical Services Commission acts as a central representative body and monitors the coordinated development of an integrated emergency medical services system in metropolitan Chicago.

Cou., Urb.

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Emergency Medical Services
Chicago Hospital Council
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Chicago, Illinois 60611

PIONEER SPIRIT EXPRESSED THROUGH EMS IN WEST CENTRAL NEBRASKA

Voluntary cooperation has been the keystone of the Emergency Medical Services System developing in West Central Nebraska. Without it, EMS Council meetings would have floundered during the two years preparatory to federal funding. And without it, smooth allocation of funds for an area-wide System would be impossible.

The unwritten agreements among rescue squads, health professionals and institutions no doubt sprang from a realization of interdependence dating from pioneer times in these wide-open spaces. To deny aid to someone else was to forfeit it for yourself. With such an informal system already in operation, it is but a further expression of the pioneer spirit to extend a practical EMS network to cover existing gaps.

During this process, the philosophy has been to tailor the answer to the problem rather than to impose a solution which does not fit. Preliminary base-line studies were done early in the preparatory phase, and strengths and gaps were identified. Constant touching of bases has kept these studies updated, and has served to stir localities to upgrade their EMS capability.

As a result of area-wide exposure to Council goals, EMT-A courses have nearly blanketed the 15,000 square mile region, new ambulances serve most communities, and an area-wide communications network is being initiated in fiscal '76. Health professionals are increasingly cooperative with the area-wide effort, since the emphasis remains to voluntarily improve the existing system.

The Pioneer Spirit is still alive, and can be summoned for EMS.

Cou., Cons.

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EMERGENCY MEDICAL CARE ADVISORY BOARD

The Emergency Medical Care Advisory Board has been actively participating for the past three years in advising OEMS on all aspects of EMS systems development. The Advisory Board, which was officially established by the 1973 Ambulance Law, has broad representation from all parts of the state and from most major organizations involved in EMS, plus consumers, and meets five times a year; these meetings are open to the public.

An Executive Committee of the Board is established on a yearly basis which consists of the Advisory Board Chairman, who is by law the Commissioner of the Department of Public Health, the Vice-Chairman and seven Board members. This Committee advises OEMS during the interim between meetings of the full Advisory Board. In addition, the Board has committees which meet approximately monthly, in conjunction with OEMS staff, in order to address specific EMS systems component issues. These committees include EMT Training; EMS Communications; Massachusetts Ambulance Run Reporting System; Nurses Continuing Education; Public Education; and Advanced EMT Training.

Some of the major activities that the Board has participated in through its committees are development of the 1973 Ambulance Law Rules and Regulations; Massachusetts Ambulance Run Reporting System Pilot Study; Critical-Care Emergency Department Nurse Education Program (CEDNEP) curriculum; interim first responder training guidelines and EMT refresher training programs. In addition, the Board has reviewed and supported the backbone communications system design for Massachusetts and its implementation, and assists OEMS in its EMS-related legislative efforts.

Cou.

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Boston, MA 02111

APPENDIX

EMS ABSTRACT FORMAT

(TITLE - ONE LINE, ALL CAPS)

Body of abstract arranged in paragraph form. All of the abstract; title, body and authors must be within this size box (8 1/2 x 6") Typing may go all the way to the edge of this box. Every abstract used must be reduced to one page of no more than 250 words. No exceptions.

Suggested outline: statement of the problem, task or need process; highlights of solution, workplan, or implementation; and summary, conclusion or statement of present status.

When a subject is complex and the 250 work limit is not sufficient, definitely separate aspects may be written up as a single abstract and several abstracts may be submitted.

The abstract usually cannot tell the whole story, and in most cases, this should not be attempted.

Do not include charts or any attachments.

If possible, use elite or pica type.

Do not reproduce the lines of this box. Use only for size of the manuscript.

Do not use letterhead paper. (Please try to use 8" x 10 1/2" stationary).*

Use single-spacing and consolidate paragraphs. Please do not exceed 250 words if they can be fitted into this space. Use no more than two lines between body of abstracts and authors.

Send to: David R. Boyd, M.D.C.M.
Director, Division of Emergency
Medical Services
6525 Belcrest Road - Room 320
Hyattsville, Md. 20752

* 8 x 10 1/2 is the standard page size for Federal use.

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