

# Emergency Health Services for the Nation

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**T**ODAY there is no excuse for urban communities and rural counties to be saddled with inadequate emergency medical facilities and services. Change will come only when the public becomes aware that care received in the first hours after injury or at the onset of sudden illness may be a greater factor in the prevention of death or disability than the subsequent hospitalization.

All communities can have totally adequate emergency health services systems as well as adequate ambulance services. The most immediate way to influence the emergency medical care system, as recommended by the American Medical Association's Commission on Emergency Medical Services, is by organizing a community emergency medical care committee.

## Obtaining Community Participation

There are roughly two ways of getting broad community participation for such an undertaking. One approach, of which the best example I can cite, was that of the staff of the New York State Department of Health. Many years ago in organizing local health services countywide, they chose what we might call the rifle approach.

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They engaged a team of sociologists from Cornell University to spend 2 to 3 months in each county studying the way the county operated and its power structure. At the end of this time the staff of the State health department knew exactly where to go and with whom to talk in each county studied to win affirmative support from the key people who were making the decisions about a county health department.

The other approach might be termed the shotgun approach. The best example of this approach was Dr. Martha Sabin's effort in Colorado in the late 1940's to interest communities in the development of county health departments. Dr. Sabin talked with almost everyone who might be interested or who might participate in the decision to form and develop a county health department. Over a period of a few years she talked with Governors and legislators, she talked with members of medical societies, individual physicians, and hospital administrators. She also talked before consumer and civic groups, and, finally, with individual persons so that, after a few years, almost everyone in the State of Colorado knew what a county health department was and why it was needed.

Both of these approaches were successful, and I think that any approach can be successful if you either talk with enough people or the right people. If, however, something must be done—know the facts. Be familiar with the entire gamut of the emergency health services system from the onset of the emergency. How much

time does it take the community to respond to the need? In what way does the community respond? What type of ambulance services exists? What is the relationship of the ambulance services to the hospital? What are the total capabilities of the hospital and its staff? First of all, what are the needs for these services? What is the demand?

In the entire United States about one person in every four has what he considers a medical emergency each year. Is there that much demand for services in a particular community, or are there special conditions or areas that may result in increased demand? Is there a special season, such as winter in ski resorts, when the need for emergency medical services is greater than at other times of the year? How can these needs be met economically? Once the demands for services are known, it must be determined how well the community can meet these demands.

### Community Resources

What resources does the community have? How many ambulances? Are there enough? What is an acceptable response time? Usually, in a metropolitan area, it is 15 minutes. Certainly this response time cannot be expected in rural areas. If a 15-minute response time is demanded, how many ambulances are required, and where must they be positioned to provide reasonable assurance that this criterion can be met? How many people in the community are trained in first aid or medical self-help? How often has a person received lifesaving first aid before the ambulance arrives?

*Communications.* What communications are available to medical personnel in the community? Is there a central dispatch service which allows a person to dial a telephone number, such as 911, to say an ambulance is needed immediately at the corner of 14th and Oak Streets, and to know that one will be there within 15 minutes?

If a community has a central dispatch service for any type of emergency, whether it is for police, fire, or ambulance, the telephone company is now able and willing to put in this single emergency telephone number, 911. Most communities of 50,000 or more in the United States

already have standby emergency operating centers equipped by the Office of Civil Defense. We now have an agreement with the Office of Civil Defense and Department of Transportation which will allow these centers to be used day to day as a central dispatch center.

Funds for additional essential equipment for the center or for hospitals and ambulances can be obtained from various sources, and there is no longer any excuse for any large community in the United States not to have central dispatch with two-way radio communications between the hospital, the ambulance, central dispatch, police, civil defense, and fire services. All the community leaders need to do is get together and decide that this type of communication is something they want and need.

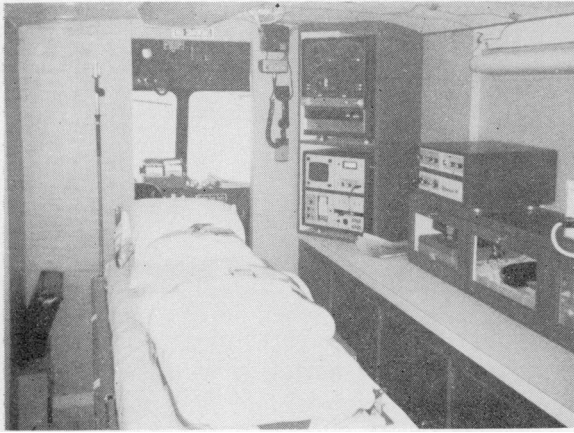
*First-aid training.* When the ambulance arrives at the scene of the medical emergency, what happens? What kind of training does the ambulance team have? If needed, can this team perform cardiopulmonary resuscitation? Have they been instructed how to maintain an open airway? Can they recognize the danger of injuries to the spinal cord when extricating a person from a wrecked vehicle? Do they know how to stop arterial bleeding? Have they had training in all essential areas so they can perform lifesaving functions?

In one State there is a requirement, and this State is one of the few that now has this requirement, that ambulance attendants must have 30 hours of training in first aid. This State re-



Montgomery County Heart Association photo

**Heartmobile, Montgomery County, Md., an experimental approach to emergency coronary care**



Montgomery County Heart Association photo

**Heartmobile interior. Electrocardiogram, heart beat sounds, and nurse's observations are transmitted via telemetry and data-phone to physician**

quires a year's academic training and a year's apprenticeship before it will give a person a license to cut hair, yet to do all the things that we have previously discussed in lifesaving emergencies, to assist in emergency childbirth, or to recognize the danger signals in emergencies, the requirement is only 30 hours of training.

*Ambulances.* What kind of an ambulance is sent to the scene? I don't mean how fast can it go, or how loud a siren, or how luxurious and shiny an exterior. What kind of equipment does it have? Is there ample headroom so that an attendant can kneel beside the patient on the cot and do cardiopulmonary resuscitation? Is the ambulance long enough so that an attendant can sit at the head of the patient and maintain an open airway if necessary? Does the ambulance carry resuscitative equipment, oxygen, airways, backboards? Is there a two-way radio communications system which enables ambulance attendants to talk to a physician at the hospital and relay symptoms observed which may mean a difference of life or death? The Division of Emergency Health Services has recently released two publications on equipping ambulances (1, 2).

*Special hospital care.* A great potential exists for saving lives in coronary attacks. It is estimated that there are 750,000 coronary attacks a year in the United States which result in 400,000 deaths. This number is almost 20 per-

cent of the total annual deaths in the United States. Of these 400,000 deaths we estimate that 45,000 could be prevented by adequate care in a coronary care unit once the patient arrives at the hospital (3). This lifesaving potential has been recognized by the medical profession and hospital administrators and is demanded by the public. There are now about 500 units for coronary care in U.S. hospitals, and more are being developed each week.

The cost of saving a life in a coronary care unit is high, maybe as high as \$25,000 per person. But we can save more lives at less cost. One demonstration underway in this country is in Dade County, Fla., and there has been a coronary care van in operation for more than a year in Belfast, Ireland, where the ambulance is equipped with two-way radio communication and telemetry.

This equipment enables a physician at the hospital to get a printout of the electrocardiogram of a patient while he is being transported to the hospital so that the physician can determine if defibrillation or other similar lifesaving measures are indicated. The emergency medical technician in the ambulance has been trained to recognize symptoms, to operate the electrocardiogram, to defibrillate as instructed, and use other equipment and medicine in the mobile unit for coronary care.

This equipment, this training of personnel, and the total system will save an additional 20,000 to 25,000 lives a year, at a cost of approximately \$7,500 per life. It is, therefore, a paradox and without rationale for communities to demand and to set up units for coronary care in hospitals without providing for the resuscitative services needed to assure that the patient will arrive at the hospital alive, when this can be done at much lesser cost to the community, to the insurer, or to the individual patient.

Similarly, demonstrations of specially equipped ambulances have indicated that a sizable number of newborn babies could be saved if they are moved from rural areas to special treatment centers in a properly equipped ambulance. One ambulance for coronaries, one for newborn babies, and another for highway injuries is not economically justified. A single ambulance properly equipped and with trained personnel could provide all services.

*Emergency rooms.* When the patient arrives in the emergency room or is brought there, is the proper emergency equipment available? What training does the nurse have who, in most instances, sees the emergency patient first? Is her job full time in the emergency room or does she have other duties? Is a physician available in the hospital? If not, what arrangements have been made to contact him, and how long does it take him to arrive? What is his training in trauma and medical emergencies? What backup support does the hospital have? What specialty or intensive care units are there? Is there a disaster plan which can be put into effect when more than one medical emergency occurs?

Planners need to know all these things and must know them before they can go to the medical society, to hospital administrators, to city administrators and say "this is what we must have in this community if we are going to provide the services to which the people are entitled and which will result in the prevention of many deaths and even more permanent disabilities."

In studies of emergency health services across the nation, we discovered that great need exists in this area in almost every State. We discovered, also, that the situation in emergency departments of hospitals might best be described as chaotic.

A recent preliminary analysis covering 77 of the largest metropolitan areas in the United States and about eight statewide surveys indicate that much improvement could be made in the emergency departments of hospitals. First, there were no directional signs on major highways indicating hospital emergency departments in nearby towns, there were no signs on city streets indicating routes to the hospital, and, finally, a great many hospitals had no emergency entrance signs! We discovered that few hospitals had radio communications with the ambulance service in the community.

Within the doors of the emergency room itself many hospitals showed a lack of organization and direction for giving emergency aid—probably because the demand for hospital-based emergency services has increased so swiftly that their importance is yet to be realized. This year 50 million people will seek assistance in emergency departments of hospitals. Of course only

30 million of these will be true emergencies as defined by a physician, but an emergency remains an emergency until determined otherwise. Twenty-five percent of the beds in hospitals are occupied by patients admitted through emergency departments.

*Subsidizing services.* The major problem in the development of a totally adequate emergency health services system for the nation is economics. Those who may have had an opportunity to review the report prepared for the Department of Transportation on the economics of highway emergency ambulance services will recall that almost all the services in the nation require some sort of subsidy (4). This subsidy may be through free volunteer services, the tax-supported salaries of firemen or policemen, the advertising value for funeral homes, or direct subsidies from the Government. A family may be willing to pay \$70 a day for a hospital bed but still be unwilling to pay as much as \$50 for a 5-mile trip to assure that the family member arrives at the hospital alive.

Similarly, emergency departments of hospitals are often understaffed and ill equipped because hospitals do not charge enough for this department to be self-supporting. Nongovernmental general hospitals today are a \$18 billion a year business. The 50 million visits to emergency departments account for no more than 2 percent of this sum. Many hospitals have not yet recognized the need and the fact that these services must be self-supporting.

### **A Look Into the Future**

The day is rapidly approaching when ambulance services will be hospital based, not necessarily hospital operated, for it is in the emergency department of the hospital that the ambulance attendant, to be called the emergency medical technician, will be trained by physicians. Here he will retain his learned skills through practice. Litters will be interchangeable with those of the hospital, and the patient will not be moved a half-dozen times while X-rays are taken.

If there is more than one hospital or ambulance service, there will be a central dispatch and a single emergency telephone number, 911. There will be two-way radio communication be-



**National Guard helicopter transporting hurricane victims. Helicopter ambulance service is being tried by the University of Maryland Trauma Research Center**

tween the ambulance and hospital. In the ambulance there will be an electrocardiogram and defibrillator as standard equipment and, through telemetry, the trained technician, under direction of a physician in the hospital, will take whatever steps are necessary to stabilize the patient's heart. Once the hospital and physician are reached they will be ready for the emergency and, by using the intensive care units, they can do the job that is now being done so effectively in Vietnam. When will this happen? When an aware and aroused public demands it.

### **Conclusions**

The first step in obtaining adequate emergency medical facilities and services is to form a community health services council. The council will (a) itemize needs and define the extent

of the problem, (b) inventory ongoing emergency care activities and other potential resources, (c) establish priorities, and (d) expedite and coordinate all emergency medical care activities with the hospital as the hub of the total community system.

Public awareness of the quality and quantity of emergency care services must be fostered. The need for a sound financial base for all elements of the system must be stressed and fragmentation of services must be eliminated. Only through day-to-day appraisal of all emergency health care activities will communities be able to assure:

- A communications system that provides timely responses to all emergencies
- Prompt, safe, and appropriate emergency care on the spot and in transit for victims of sudden illness or injury

- Transportation by trained personnel in first-class ambulances with equipment suitable to meet all emergencies
- Topflight hospital emergency medical departments.

#### REFERENCES

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#### Tearsheet Requests

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## Uranium Mine Becomes Laboratory

A uranium mine has been leased by the New Mexico Department of Health and Social Services under a contract with the Environmental Control Administration, Environmental Health Service. The mine will serve as a laboratory where investigations related to the health and safety of miners will be conducted.

The research will take place in the Ambrosia Lake uranium mining district of west central New Mexico.

Long-term surveys indicate that lung cancer can be caused by prolonged exposure to concentrations of uranium decay products. The mine laboratory will permit controlled conditions for a practical approach to the various problems of miners' health.

Previously, it was extremely difficult to obtain accurate measurements in an operating mine where the airflow, dust, smoke, and radon content were constantly changing. With this new underground laboratory, drilling, blasting, slushing, and other everyday mining operations will be carried out with controls that are difficult in operating mines. The laboratory will also enable researchers and others to control the concentrations of decay products in any given area of the mine. Although emphasis is on uranium mines, the research will be useful in any mine atmosphere.

The mine laboratory, available on a no-cost basis to research teams from private industry, universities, or government agencies, has been completely renovated to provide a safe environment. Eight areas have been sealed off with permanent ventilation, lighting, and the latest safety and control devices to provide special test chambers.

Although radon daughter concentrations can be as high as 1,000 times the presently allowable levels in the test chambers, two ventilating fans keep the concentrations below acceptable limits in the occupied portions of the laboratory.

Personnel working in the mine will not be allowed to exceed radon daughter exposure levels of 2 working-level months in any calendar quarter or 4 working-level months in each calendar year. Also, the New Mexico State mine inspector along with the State health department will routinely monitor the mine to assure safe working conditions.

Information on availability of facilities for special research projects may be obtained from the New Mexico Department of Health and Social Services, P.O. Box 2348, Santa Fe, N. Mex. 87501 or the Environmental Health Service, Bureau of Occupational Safety and Health, 5600 Fishers Lane, Rockville, Md. 20852.