Emergency Medical Services in a Rural State*

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Many diverse groups are currently interested in the various problems and solutions involved in establishing and implementing an effective system for the delivery of emergency medical care in rural areas. Because all of us, at one time or another, have been in a rural setting - either for recreational or other purposes - not only should we be quite interested in emergency medical services but more often than we realize, our lives may be dependent upon a rural system, quite far from home, responsible for the delivery of such care.

First, let us examine some techniques that are used in a rural state, such as Vermont, in implementing change in Emergency Medical Services. Our activities are described in two distinct phases. The pre-hospital phase deals with emergency care rendered at the scene and en route to the hospital, while the hospital phase deals with the care provided in the emergency room of the hospital.

Additionally, and perhaps this is a little unique, we would like to note that we view the role of state government in emergency medical services as a provider of assistance and guidance rather than as a governmental agency that often has the reputation for dictatorially setting up standards for enforcement.

Now, an overview of the problem: In 1969 a study of Vermont highway fatalities indicated that 23% of these individuals were dying of survivable injuries.[1] Half of these deaths were due to problems with care at the scene and en route to the hospital. The other half occurred because of problems in the hospital emergency room. Although we do not have specific data for survivability from acute illness and other forms of injuries, the evidence would tend to support that we would find a similar pattern - particularly since the primary cause of the problem can be identified as the inability of both ambulance and hospital emergency room personnel (nurses and physicians) throughout the system to effectively provide the basic skills necessary to deliver basic resuscitation and emergency care.

Additionally, a survey of ambulance services throughout the state[2] identified three top priority problem areas. We would venture to say that these are probably not much different from the problems experienced in many other rural areas of the country. These priority areas of need were identified as:

1) Training
2) Communications
3) Coordination

These served as our basis for implementing change. The initial efforts in solving these problems were four-fold and heavy emphasis was placed in the following areas.

1) Creation of Ambulance Districts. These were established by the legislature as political sub-divisions and constituted the patient-shed areas of hospitals throughout the state.

2) The establishment of a statewide hospital-ambulance communication system linking each emergency room with all ambulances in its area as well as those from other regions of the state.

3) The retention of a Coordinator of Emergency Medical Services.

4) And, quite important, the adoption of training for EMTs throughout the state.

All of these occurred simultaneously. In the beginning, primary emphasis was placed on training. The 81-hour EMT program, as developed by the Department of Transportation,[3] was adopted and used throughout the state. At the same time, we were attempting to stimulate ambulance district activities throughout the state to promote planning and activity at the local level for Emergency Medical Services.

Preliminary Findings

After approximately one year, we noted that where training programs had been established and the program had been basically a good one, it was easy for us to stimulate district activity. The changes in attitude and concepts of emergency medical services were remarkable and easy to sell when the district was made up of well-trained individuals. Demonstrable progress then became spontaneous.

As time went on, however, we identified more problems - very important ones:

1) Poor courses - We found in several areas that the local level had few qualified people who were able to teach practical skills and knowledge in Emergency Medical Care.

2) In areas where training did take place, we also started to receive the following complaints from ambulance groups: "We try to do a good job and when we get the patient to the hospital, they drop the ball in continuing care."

3) We also recognized our inability to respond to and meet local needs. Someone who lives in the capital or home office cannot effectively offer real and knowledgeable assistance at the local level.

Additionally, during this time span, we collected some new essential base line data on hospital emergency departments[4] throughout the state and on existing patterns of emergency communications systems, including ambulances, police and fire agencies.[5]

Accordingly, we re-evaluated our policy for a new and expanded approach to the problem.

Expanded Approach

1) One of the steps in our expanded approach was the development of training aids and the retention of knowledgeable and articulate personnel of the Emergency Medical Technician caliber to assist in teaching and improving basic practical skills taught at the local level. We are not concerned so much with whether the EMT can do an EKG, but more importantly, we feel he should not only know how to put on a splint, backboard or carry out other basic emergency care procedures, but that he also know when to. Especially important, he must have had some practice and have developed expertise in carrying out such procedures.

2) Regional Coordinators were retained to live and work at the local level and provide assistance to the Ambulance Districts, individual

ambulance squads, and hospitals within that area. Much of their activity has been involved in working with the pre-hospital phase of care. This activity includes such things as coordination of courses at the local level, stimulating activity in the Ambulance Districts, improving attendance and representation on the board, setting up communication procedures and protocols, planning for back-up ambulance response and equipment exchanges at the hospital.

Additionally, the establishment of ambulance critiques among the hospital and ambulance personnel is extremely important.[6] In a rural state, one does not get many emergency calls and thus field experience is limited, especially among a cadre of volunteers. Since experience is predicated on field time, many basic skills are likely to become rusty. A technique which can be used to minimize this disadvantage is for all personnel to review and critique each emergency ambulance call. Through such a review, many can benefit from the experiences of a few individuals in handling a particular emergency that they might not otherwise encounter.

All of the activities in which the regional coordinators are involved are directed at assisting in up-grading and maintaining the basic day-to-day activities in emergency medical services as well as at identifying problems at the local level.

In addition, the regional EMS Coordinators have the rather unique capability, utilizing assigned authorized emergency vehicles, to respond to the scene of major accidents and emergencies, in order to evaluate the quality of care both at the scene and in the Emergency Room. This is done with a view to identifying problems and providing guidelines in their solution, as well as assisting groups to be able to provide the most coordinated response and care.

3) In addition to the above, performance standards[7,8] were established for hospital emergency rooms by utilizing a statewide workshop and a state EMS Advisory Committee working closely with all interested and concerned parties to develop realistic and workable goals.

4) A training program for emergency room nurses was developed and offered. This will be examined momentarily.

The Results

1) We now have basically good EMT courses where individuals are taught and examined in the practical skills necessary in the field.

2) People are working together better and setting up a system at the local level as a result of good training and the assistance of the regional coordinators. This activity is most often generated at Ambulance District meetings and subsequently by the regional coordinators, who follow-up on activities discussed.

3) There is increased understanding between ambulance and hospital personnel on their respective roles in emergency medical services. This in turn has been reflected in a significant improvement in their working relationships.

4) The ambulance personnel and hospital staffs are using the right equipment (i.e. splints, backboards, etc.), and they are working together to do the job rather than undoing each other's efforts. Rather than the nurse or physician slamming the door in the ambulance attendant's face, they are having them in for coffee, they're talking, and they're having a good exchange of ideas and experience. An example is an accident patient who is brought to the hospital by ambulance, immobilized on a backboard and splinted. Now the emergency room staff leave the equipment in place and take evaluation x-rays. In the past, it was noted that they might remove the splint and backboard and later put them back on with the observation, "Yeah, that leg really is broken!"

Change utilizing these techniques is slow; however, it is based on knowledge and acceptance and is more permanent. The key to implementing change is predicated on training, coordination and communications, and by far the most important of these is training.

These foregoing remarks have addressed themselves basically to the problems and solutions generated in the PRE-hospital phase of care.

Now, the four major factors influencing the direction that change took in the HOSPITAL phase of emergency care included:

1) The survivable injury study
2) The results of upgraded EMT training
3) A hospital emergency survey revealing deficits in availability of equipment, staffing patterns and training, and
4) The fact that in rural hospitals the nurse is the person most readily available to the emergency room in a life-threatening situation.

These problems were tackled at a workshop[9] attended by physicians, nurses and administrators from all Vermont hospitals and representatives from all professional groups. As a result, performance standards for hospital emergency rooms were set as a basis for classification, and a 30-hour training program for emergency room nurses was developed. The standards for classification as a Basic Hospital state specifically the basic skills that both physicians and nurses must have to resuscitate and stabilize seriously ill or injured emergency patients. The hospital performance standards have been published, and preliminary implementation has begun. Emergency procedure protocols, transfer procedures and emergency department committee functions are also being developed.

The course to teach nurses the required didactic material and practical skills was presented five times last fall to some 100 nurses.[10] Heavy emphasis was placed on the practical skills of patient evaluation, airway

maintenance, resuscitation of pulmonary and cardiac arrest, treatment of chest trauma, hemorrhage and shock, and fracture immobilization. A six-month follow-up evaluation indicates that the objectives have been met to a very high degree.

There has been a significant increase in the number of nurses permitted and willing to carry out basic but crucial emergency procedures. This is occurring both before the physician arrives and, after his arrival, supplementing - and probably in some instances guiding - the delivery of basic and definitive emergency medical care. A number of examples include: initial examination of patients, use of hospital-ambulance radio for definitive patient data, use of oral airway, starting I.V.s, applying both air and traction splints, putting patients on backboards before further workup, applying cervical collars, stablilizing flail chests, sealing chest wounds and interpreting EKGs. Many of these are basic procedures and are part of the day-to-day armamentarium of the EMT. One would expect to find them carried out routinely in any emergency room, but our experiences have indicated the real need to focus on the deficits in these areas and provide the requisite training and skills to carry out the required procedures.

Other changes are also occurring in hospital emergency rooms, and as a results of the training, there is greater unification, understanding, and exchange of information between nurses and ambulance personnel. Training for physicians is also being planned.

Before concluding, some anecdotal but interesting observations should also be noted. In the beginning of our nursing course, a good proportion of the nurses with substantial emergency room responsibility and experience did not know how to properly position or use a bag-mask resuscitator. They themselves were a bit shocked by this realization and consequently were highly motivated to learn in what was a heavily skills oriented course.

Recently, another separate group of nurses, physicians and EMTs were tested for their proficiency in CPR - Cardio Pulmonary Resuscitation.[11]

Ninety-three percent of the EMTs were rated as proficient, while nurses and physicians had a 23 - 25% success rate in carrying out this basic resuscitative skill. Now that we've identified the problem, our work is cut out for us.

Fiscal Support

Much of our work has been carried out under an EHSDS contract (Experimental Health Services Delivery Systems) with the state of Vermont. The Department of Transportation (DOT) and the Northern New England Regional Medical Program (RMP) have also played significant roles in allowing us to accomplish our goals.

Summary

In summary, we are utilizing a comprehensive systematic approach in both the pre-hospital and hospital phases of emergency medical care - an approach of planning, organization, ongoing evaluation and most important, training. When good training programs are implemented, change occurs. We're convinced that this approach and concept works because we see change. The study of highway fatalities is being replicated and preliminary evidence indicates that as a result of this approach, we are seeing a decrease in deaths from survivable injuries.

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