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Rural Advanced EMT Training

Introduction. This paper will describe our success in training rural volunteer ambulance personnel in the starting of IV (intravenous therapy) on ambulance patients as an initial course in a modular program for advanced EMT training.

Background. Otsego County is a rural county in central New York State. It has a population density of less than 50 persons per square mile. The largest city is Oneonta, with a population of 16,000. The county is served by 16 volunteer ambulance services and one paid fire department ambulance service. Otsego County is included in the Appalachia Region.

The only main traffic route has been a New York State highway connecting Binghamton and Albany, until late in 1976 when Interstate 88 was opened. The length of time for ambulance transportation to either of those cities was in excess of 60 minutes. The county is served by two emergency departments located 20 miles apart (Fox Hospital, Oneonta and M.I. Bassett Hospital, Cooperstown). Both emergency departments are staffed 24 hours a day, seven days a week and both have radio communication with the ambulances in the county.

It is felt very strongly that advanced training is absolutely necessary in rural areas. The reasons for this are many, but one of the most important is the time factor. Patients in rural areas are under an EMT's care approximately 20-25 minutes from the time they leave the scene until they arrive at an adequately staffed ED. This is four to five times as long as in the urban area, where the average travel time is two to five minutes. Since the time is so prolonged, it is absolutely essential that the patient be given the best possible care; this can only be accomplished by obtaining advanced training for the volunteer EMT in the rural area.

In trying to develop a program for advanced emergency medical technician training for volunteers in Otsego County, it was decided that a single two, three, or four-hundred hour course based on consecutive weeks of training would be an impossibility. Most volunteer EMTs work a full-time job and spend volunteer hours in manning the ambulance and answering calls, participating in disaster training and attending squad meetings, and, in addition, obtaining the necessary minimum amount of training required by the New York State Health Department. Advanced training would be in addition to those activities in which they are already participating. It seemed unreasonable and certainly unlikely that we would be able to get enough volunteer members able to find time to gain the advanced training necessary to give advanced pre-hospital care.

When looking at the outlines of advanced courses it became clear that an entire course (such as a pre-hospital cardiac care course) could be broken down into several segments or modules. It was felt that a module on intravenous therapy would give us the ability to train rural ambulance personnel in some of the more difficult technical aspects. Such a module would also be the most beneficial to the majority of patients handled by the ambulance personnel in a rural setting.

Program. It was upon this basis that in 1973 the IV technician program for ambulance personnel was begun in Otsego County as the first module in advanced training. This program was approved by the New York State Bureau of Emergency Health Services.

Because ambulance personnel in rural areas get relatively few calls and because most rural hospitals have fewer patients than those in urban areas, it was decided to try to teach the ambulance personnel the technique of intravenous therapy utilizing a plastic IV training arm. During the initial year of the pilot program, all personnel taking the training practiced and were tested utilizing only the plastic training arm. At no point prior to actually starting an IV on a patient on an ambulance run did they train on a living person, healthy or otherwise. It was felt that if this approach was successful, personnel on each ambulance could purchase a training arm and train at their own headquarters to keep their skills current between the times that they actually started IVs. During the first year, approximately 120 EMTs who had been trained to the 81-hour level according to the Department of Transportation standards were trained in IV therapy.

Some of the requirements for the program in Otsego County are:

- The ambulance personnel must be trained to the EMT level as specified by the Department of Transportation.
- The ambulance must be equipped with radio communication to the emergency department, which is staffed with physicians 24 hours a day.
- All IVs are started after notifying the emergency department, giving the patient's problem, vital signs, and condition, and, when possible, name and age.
- IV is started only after a physician has given the order.

Intravenous Fluid Therapy Module: Course Outline.

Purpose. To establish an intravenous route for intravenous therapy at the scene of the accident or injury so that the patient may receive fluid therapy and to maintain an intravenous route for medication therapy should such become necessary.

Objective. For the emergency medical technician to learn proper technique and management of preparing intravenous therapy fluids, tubings, and insertion of

different forms of needles into the veins of patients.

Eligibility for the Course.

Graduate of EMT basic course.

Active member of an ambulance or rescue unit which has radio communications with the emergency department.

Prerequisite. An up-to-date EMT certification card.

IV Fluid Therapy Module: 24 hours

Session I: Didactic, three hours.

- Applicable medical terminology
- Anatomy and physiology of the circulatory system
  - Structure and nature of the vessels
  - Location and use of vessels in IV therapy
  - Blood and its components
- Techniques of patient assessment
  - History
  - Physical evaluation
  - Vital signs
- Shock
  - Types of
  - Mechanism of
  - Need for replacement fluid
  - Definitive treatment

Session II: Three hours.

- Indications and precautions for IV therapy
- Types of IV solutions
  - Indications for use
  - Contraindications for certain fluids

Skills Practice.

- Patient assessment
  - Physician evaluation
  - History
  - Blood pressure
  - Pulse
  - Respiration
- Techniques of IV administration, protocols and equipment
  - Communication protocol necessary for start authority
  - Site selection from hand to forearm and elbow
  - Number of attempts before transport
  - Attempt during transport

Session III: Three hours.

- Practice of IV techniques
- MAST trousers

Sessions IV to VII: Twelve hours.

- Practice of simulated run, including assessment, communications, IV start, etc.

Session VIII: Three hours.

- Final evaluation of skills
  - Patient assessment
  - Physical history
  - Vital signs
  - IV technique

Results. At the end of the first year a ten week evaluation was made which revealed 262 ambulance runs, with 63 attempts at starting IVs, and a completion of 56 IVs successfully. This gave a successful completion rate of 88%.

As a result of the success of the initial module the emergency squads of Otsego County are now in the process of being trained in an Airway Module, including the use of an Esophageal Obturator Airway, and are in the final planning stages for a Cardiac Care Module, including telephone modulation-demodulation transmission of EKG signal, IV medication, and defibrillation. These modules also utilize mannikins and electronic teaching devices rather than actual patients. If successful, then the continual practice and training necessary to retain the skills learned can be done on an individual squad basis in their own community.

Discussion. A recurring comment about emergency medical care is one dealing with the lack of good quality of care in rural areas. It is important that the training approach in rural areas be adapted to the availability of personnel, equipment *and* patients. If adequate numbers of patients are not readily available substitute methods must be sought.

Unfortunately, most federal and state agencies still require that the training for rural ambulance services be modeled on that given in urban areas. Alternate means of providing the training have only recently been investigated and approved.

If it is possible to teach the lay public cardiopulmonary resuscitation using mannikins, filmstrips and even paper cutouts then it should be possible to teach ambulance personnel the technical aspects of advanced training using mannikins, plastic models and electronic teaching devices. In rural areas this would solve the problem of not having large numbers of actual patients to practice on and such devices are mobile so that training can be taken to the individual squad's headquarters. This would solve the problem of squad members traveling long distances to urban teaching centers.

This paper describes a successful attempt to provide an alternate means of training in advanced techniques for a rural area. This was done by utilizing a plastic model IV arm to teach the technique of IV therapy.

This program was successful enough that it should be considered in other areas and could be adapted to the special needs of the area.

While this approach to advanced training will not qualify the EMT for the title of Paramedic, it will allow the EMT in rural areas to learn many of the specialized techniques that will improve prehospital emergency care for a large number of the more serious cases encountered in rural areas. ●