VI. 3. THE TRAINING OF EMERGENCY MEDICAL TECHNICIANS--CARDIOVASCULAR

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Emergency Medical Technicians have been trained in the basic program in the State of Oregon, USA, for at least ten years. More than 1,000 men throughout the state have received this training as a result of the standardized program developed through the cooperation of the National Research Council and the American College of Orthopedic Surgeons. In 1968 we were asked to develop a program for Emergency Medical Technicians who had satisfactorily completed the basic course, to train them in advanced techniques which would make it possible for them to deliver more sophisticated emergency cardiac care in the field. A program was designed to upgrade the training of existing personnel. Initially a select group of men were chosen for the advanced program which included didactic, hospital, and animal laboratory training in the following subjects:

1. Anatomy, Physiology, and Pathology
2. Electrocardiographic Rhythms
3. Clinical observations, especially vital signs
4. Recording of findings
5. Defibrillation
6. Intravenous Therapy
7. Basic pharmacology of drugs used in resuscitation
8. Endotracheal Intubation.

From the first, training to a level of competency was stressed rather than the number of hours required for the subject to be covered. The competency in cardiopulmonary resuscitation including the management of airways and aids to ventilation, such as mask-valve-bag respirators is determined by anesthesiologists. Competency in electrocardiographic rhythm diagnosis is determined by cardiologists.

When the training is judged to be adequate by tests of performance, the men are put into a functioning unit under the supervision of an advanced Emergency Medical Technician. A functioning unit is defined as one mobile unit that has sufficient trained staff to operate 24 hr a day. Each functioning unit or group of functioning units is under the supervision of a medical advisor. The medical advisor evaluates the performance of the men in the field, in the Emergency Department, and meets periodically with them to review their records and performance. When the medical advisor has ascertained that the training and performance of the Emergency Medical Technician is adequate on all levels, he receives a certificate from the State Health Division attesting to the completion of his training in these specified areas.

The curriculum has now been standardized so that a minimum of 150 hours of training are required above the basic Emergency Medical Technician course. The program is generally divided into 80 hours of work emphasizing cardiac monitoring and arrhythmia detection, effective cardiopulmonary resuscitation, defibrillation, clinical observation, taking and recording vital signs, recording events and effect of cardiopulmonary resuscitation and defibrillation during transport and at the scene. For the development of basic skills in intravenous therapy and pharmacology, 50 hours are required. Most of this time is spent under the
supervision of the intravenous department nurse, starting intravenous infusions in the hospital setting, using ordinary needles as well as plastic needles. A minimum program of 20 - 30 hours is required for instruction in endotracheal intubation. This is divided into 5 four hour sessions in the operating room following practice on the Laerdal manikin under the supervision of an anesthesiologist. In the operating room setting, the Emergency Medical Technician actually inserts the endotracheal tube under the direct supervision of the anesthesiologist.

Refresher training is provided by the ongoing conferences with the medical advisor. Periodically the Emergency Medical Technician returns to the hospital for refresher training in intravenous therapy and endotracheal intubation. Considerable practice is obtained in the field with the numerous cardiac arrest patients that are encountered by this group.

Defibrillation is permitted without contacting the physician. Intravenous bicarbonate may be given prior to contacting the physician. However, physician direction is required for drug therapy. Telemetry is available but in practice has not been required.

The results of the program show that these men can be trained to perform effectively and reliably in cardiac emergencies occurring outside of the hospital. The curriculum has been distributed to other communities and similar programs have been developed with success. The operation of the system by paramedical personnel will be described in a separate paper.

In conclusion, the following points are emphasized:
1. Training must be to the level of competency
2. Emergency Medical Technicians can be trained to perform only in the defined area
3. Ongoing supervision by a physician is required as well as
4. Ongoing training and refresher training under the supervision of the medical advisor.

References