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ABSTRACT

In an effort to upgrade or further develop the skills levels of all individuals involved in the emergency medical care service, this training program was developed for the National Highway Safety Bureau. This specific course is an attempt to organize, conduct, and standardize a basic training course for emergency medical technicians (EMTs). The contents of this course outline include: prerequisites for both students and instructors, scheduling and class size, requirements for facilities, training aids and reference materials, and guidelines for conducting the course. This is not designed as an all-inclusive training course but rather as the first phase of training in the emergency medical career structure. It includes all techniques of emergency medical care presently considered within the responsibilities of the emergency medical technician as well as all operational aspects of the job to be performed. The course consists of 25 lessons involving 71 hours of classroom training plus 10 hours of in-hospital training. (DS)

Emergency Medical Service - Entrance Level Training

BASIC TRAINING PROGRAM FOR EMERGENCY MEDICAL TECHNICIAN-AMBULANCE

Course Guide

Dunlap and Associates, Inc.

Darien, Connecticut 06820

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FOREWORD

The Department of Transportation, the National Academy of Sciences and several other government and medical organizations have recognized the need for training ambulance personnel in emergency medical care. Based primarily on guidelines and recommendations of the National Academy of Sciences' Committee on Emergency Medical Services, Highway Safety Program Standard No. 11 - Emergency Medical Services, requires that all ambulances be equipped with a minimum of certain life saving equipment and manned by at least two men trained in specified areas of emergency care. It clearly identifies the responsibility of ambulance services to provide more than transportation, namely skilled emergency medical care to victims of all injuries and medical emergencies. Further, it identifies the need to establish an emergency care career pattern which provides attractive compensation, prestige and recognition commensurate with the services provided by ambulance personnel.

To assist the States in implementing the standard, the Department of Transportation considers it essential that the States be provided guidelines on programs of training to instruct ambulance personnel. The development of a basic training course is a necessary first step in an extended program to increase the competence and professionalism of all ambulance personnel. The objective of this course is to develop or upgrade the skills levels of all individuals involved in emergency medical care services. The course encompasses the knowledges and skills required to perform all emergency care procedures short of those rendered by physicians or by paramedical personnel under the direct supervision of a physician.

The training program described herein was prepared for the National Highway Safety Bureau, U.S. Department of Transportation, under the technical direction of Miss Janet Sprickman of the National Highway Safety Institute. Additional documents produced as part of this program include detailed Instructor's Lesson Plans, prepared to assist the instructor in conducting each lesson; a report entitled Concepts and Recommendations, which describes the development of the basic training program and its relationship to the emergency medical technician career structure; and a reported entitled Course Coordinator Orientation Program, which was prepared to assist state officials in training physicians who will be responsible for supervision of the basic training program.

All documents were prepared by Mr. Joseph T. Fucigna, Senior Vice President of Dunlap and Associates, Inc., and Dr. Richard D. Pepler and Miss Arlene Cleven of the Corporation's Behavioral Sciences Division.

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Walter A. Hoyt, Jr., M.D. - Chairman of the Committee on Injuries of the American Academy of Orthopaedic Surgeons

Joseph D. Farrington, M.D., Chairman, Sub-Committee on Transportation of the Injured, Committee on Trauma, American College of Surgeons

Mr. David H. Slayback, Executive Director, International Rescue and First Aid Association

A major contribution to the preparation of the course has been the cooperation of the American Academy of Orthopaedic Surgeons in making pre-publication chapters of the Academy's new text on emergency medical care available to Dunlap and Associates, Inc., for the preparation of detailed lesson plans.

The help received from the Norwalk Hospital Emergency Department and the Parent New Haven Ambulance Service, owned and operated by Mr. Raymond Parent, in allowing our staff to ride their ambulances as observers and discuss ambulance service tasks with their crews is gratefully acknowledged.

In addition, we appreciate the cooperation and time afforded us by Col. Charles C. Pixley, M.D., Commanding Officer, and the staff of the U.S. Army Medical Training Center, Fort Sam Houston, San Antonio, Texas.

Lastly, we are indebted to the Norwalk Hospital for providing the facilities, equipment and staff necessary to pilot test the course. We are particularly grateful to and wish to commend Dr. Edward A. Rem, Chief of the Norwalk Hospital Emergency Department who served as Course Coordinator as well as an instructor during the pilot test. The participation of all instructors and students in the pilot program is gratefully appreciated.

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Basic Training Program for

EMERGENCY MEDICAL TECHNICIAN--AMBULANCE

Purpose of the Guide

This Course Guide has been prepared to aid in organizing, conducting and standardizing a basic training course for Emergency Medical Technicians (EMT's). It contains a detailed outline of the course; prerequisites for both students and instructors; suggested scheduling and class size; requirements for facilities, training aids and reference materials; and guidelines for conducting the course.

Objectives and Scope of Course

The training course described herein represents the first phase of training in the emergency medical technician career structure. The course covers all techniques of emergency medical care presently considered within the responsibilities of the emergency medical technician as well as all operational aspects of the job which he will be expected to perform. Specific content of the course is based on the National Highway Safety Bureau Program Standard No. 11 and guidelines and recommendations for training ambulance personnel prepared by the Committee on Emergency Medical Services of the National Academy of Sciences.

The course emphasizes the development of student skill in recognition of symptoms of illnesses and injuries and proper procedures of emergency care. As such, reliance is placed heavily on demonstration and practice as a teaching method. Each lesson allows practice of specific skills covered in the lesson as appropriate and interleaved practice, test and evaluation sessions are designed to assure attainment of proficiency levels in all skills.

Specific objectives of the course follow:

> To teach students the overall role and responsibilities of the emergency medical technician in performing both the emergency care and operational aspects of the job.

To develop student skill in diagnosis and all emergency treatment procedures short of those rendered by physicians or by paramedical personnel under the direct supervision of a physician.

To develop student skill in the use of and care for all equipment required to accomplish his job.

Course Outline

Total course consists of 25 lessons involving 71 hours of classroom training plus 10 hours of in-hospital observation and training for a total of 81 hours. The first lesson is devoted to an overview of the emergency medical technician's job, a description of the training course and an overview of anatomy and physiology. It is followed by lessons on life threatening emergencies, injuries, common medical emergencies, childbirth and problems of child patients, lifting and moving patients, environmental emergencies, extrication from automobiles, and operational aspects of the EMT's job. Two lessons provide for an integration of operational and medical knowledge by a discussion of student responsibilities during various phases of responding to an ambulance call and by a review of field situations that will be encountered by the EMT.

As stated previously, each lesson provides for practice of the skills taught in that lesson. In addition, the course includes four interleaved lessons which provide the students with additional practice on skills and provide the instructor with an opportunity to evaluate both student knowledges and skills. The course also includes a final written test of knowledges and a final practical evaluation of skills.

In developing the course, it was determined that certain critical skills should be practiced as much as possible in various lessons throughout the course. Thus, for example, the critical skill of cardiopulmonary resuscitation is practiced or evaluated in six different lessons of the course. To ensure proficiency in the various skills, ten hours of in-hospital training and observation are recommended in emergency, surgical, intensive care, obstetrical and psychiatric areas of a hospital. Furthermore, during the period of formal training, the student should take advantage of every opportunity to participate in ambulance calls to observe the various skills being applied.

Lesson titles, objectives and times required for each follow:

No.	Lesson	Time Required
1	The Emergency Medical Technician (EMT) - His Role, Responsibilities and Equipment	3 hrs.

Inform the student of:

- Course objectives
- Scope
- Procedures
- Requirements for satisfactory completion

Provide an overview of the roles and responsibilities of the EMT:

- Prompt and efficient care of the patient
- Control of the accident scene
- Light extrication and preparation of the patient for transport
- Safe and efficient transport
- Orderly transfer of the patient and patient information to the hospital emergency department
- Communications
- Reporting and record keeping
- Vehicle and equipment care

Explain legal aspects relating to emergency care

Familiarize the student with the ambulance and its equipment

Provide an overview of anatomy and physiology

2	Airway Obstruction and Pulmonary Arrest	3 hrs.

Develop a basic understanding of:

- Mechanics of respiration
- Importance of oxygen to body functioning
- Signs of airway obstruction
- Manual techniques of airway care
- Manual techniques of pulmonary resuscitation
- Anatomy of laryngectomy and tracheostomy patients
- Resuscitation of laryngectomy and tracheostomy patients

Teach the following skills:

- Manual techniques of airway care
- Mouth-to-mouth (nose) technique of pulmonary resuscitation

No.	Lesson	Time Required
	Chest-pressure arm lift (Sylvester) method of pulmonary resuscitation Back pressure arm lift (Holger-Neilson) method of pulmonary resuscitation	
3	Mechanical Aids to Breathing and Pulmonary Resuscitation	3 hrs.
	Develop a working knowledge of operation and use of: Mechanical aids to breathing Mechanical aids to pulmonary resuscitation Teach the following skills: Use of two-way (S-shaped) airways Use of bag-mask resuscitator Use of oropharyngeal airways Use of suction unit Use of oxygen equipment	
4	Cardiac Arrest	3 hrs.
	Develop a basic understanding of: Mechanics of circulation Importance of oxygen to body functioning Technique of determining blood pressure Signs of cardiac arrest Technique of cardiopulmonary resuscitation Dangers to the patient if cardiopulmonary resuscitation is delayed or performed incorrectly Teach the following skills: Cardiopulmonary resuscitation by a lone rescuer Cardiopulmonary resuscitation by a team of rescuers Determination of blood pressure	
5	Bleeding, Shock and Practice on Airway Care, Pulmonary Resuscitation and Cardiopulmonary Resuscitation	3 hrs.
	Develop basic understanding of: Mechanics of circulation Signs of external bleeding: artery, vein, capillary	

No.	Lesson	Time Required

Signs of internal bleeding
Signs of shock
Use of pressure dressings to control bleeding
Use of pressure points to control bleeding
Use of inflatable splints to control bleeding
Dangers and use of tourniquets in controlling bleeding
Importance of preventing shock and techniques of caring for the patient in shock
Intravenous therapy

Teach the following skills:

Location of carotid, temporal, femoral, brachial and radial arteries
Control of bleeding by a pressure dressing
Application of inflatable splints to arm and leg

Provide additional practice in:

Airway care
Pulmonary resuscitation
Cardiopulmonary resuscitation
Determination of blood pressure

6 Practice, Test and Evaluation--Airway Care, Pulmonary Arrest, Cardiac Arrest, Bleeding and Shock — 3 hrs.

Test basic knowledges and skills associated with:

Airway care
Pulmonary arrest
Cardiac arrest
Bleeding
Shock

Provide practice on and evaluate the following skills:

Use of suction equipment
Use of oxygen equipment
Pulmonary resuscitation using the bag-mask resuscitator
Cardiopulmonary resuscitation by a single rescuer
Cardiopulmonary resuscitation by a team of rescuers
Determination of blood pressure

No.	Lesson	Time Required
7	Wounds	3 hrs.

Develop the following knowledges:

- Signs and significance of various wound types
- Causes and danger of infection in open wounds
- Basic care of wounds
- Techniques of dressing and bandaging wounds

Develop skill in dressing and bandaging the following body parts:

- Extremities
- Forehead and scalp
- Neck
- Shoulder
- Hip

8	Fractures of the Upper Extremity	3 hrs.

Develop a basic understanding of the following:

- Parts and functions of the musculo-skeletal system
- General concepts of fractures and dislocations
- Types of splints and general rules for splinting
- Signs and symptoms of fractures, dislocations and sprains
- Techniques of immobilizing fractures and dislocations of the upper extremity

Develop skill in immobilizing and splinting fractures and dislocations of the upper extremity

9	Fractures of the Lower Extremity	2 hr., 30 min.

Develop a basic understanding of the following:

- Signs and symptoms of fractures and dislocations of the lower extremity
- Techniques of immobilizing fractures and dislocations of the lower extremity

Develop skill in immobilizing fractures of the lower extremity

No.	Lesson	Time Required
10	Injuries of the Head, Face, Neck and Spine	3 hrs.

Develop a basic understanding of the following:

- Elements and functions of the nervous system
- Signs and symptoms of a spinal fracture
- General rules of caring for patients with spinal injuries
- Signs of a skull fracture
- Techniques of caring for the patient suffering from injuries to the skull and brain
- Techniques of caring for the patient suffering from injuries to the head, face and neck
- Techniques of bandaging the skull, cheek, ear, and jaw

Develop skills in dressing and bandaging the following injuries:

- Skull fracture
- Lacerated cheek
- Avulsed ear
- Fractured jaw

Develop skill in immobilizing a fractured neck

11	Injuries to the Eye, Chest, Abdomen, Pelvis, Genitalia	3 hrs.

Develop a basic understanding of the following:

- Parts and functions of the abdomen, digestive system and genito urinary system
- Types of injuries to the eye, chest, abdomen, pelvis and genitalia
- Techniques of care for injuries to the eye, chest, abdomen, pelvis and genitalia

Develop skills in dressing and bandaging the following:

- Eye, with and without a protruding object
- Sucking chest wound with or without rib fracture

No.	Lesson	Time Required
12	Practice, Test and Evaluation--Injuries I	3 hrs.
	Test basic knowledges and skills associated with injuries to various body parts	
	Provide practice on and evaluate skills in dressing and bandaging various body parts	
13	Practice, Test and Evaluation--Injuries II	2 hrs., 30 min.
	Provide practice on and evaluate skills in immobilizing fractures of the:	
	Upper extremity Lower extremity Ribs Neck	
14	Medical Emergencies --I	3 hrs.
	Develop a basic understanding of the causes, signs, symptoms and techniques of care of:	
	Poison victims Victims of bites and stings Heart attack patients Stroke patients Asthmatic patients	
	Provide additional practice in administering:	
	Oxygen Cardiopulmonary resuscitation	
15	Medical Emergencies--II	2 hrs.
	Develop a basic understanding of causes, signs, symptoms and techniques of care of:	
	Diabetic patients Patients suffering from acute abdominal problems Patients with communicable diseases	

No.	Lesson	Time Required
	Emotionally disturbed and unruly patients, including alcoholics and patients in a drug stupor Epileptic patients Unconscious patients	
16	Childbirth and Problems of Child Patients	3 hrs.
	Develop a basic understanding of the following: Parts of the female anatomy involved in childbirth Parts developing during pregnancy Obstetrical terms and their meaning Equipment and supplies used during emergency childbirth Emergency care procedures for various phases and conditions associated with pregnancy and childbirth Delivery and care of baby during normal and abnormal births Clamping and cutting umbilical cord Use of special carrier for premature babies Resuscitation of infant Procedures for caring for certain childhood problems	
17	Lifting and Moving Patients	3 hrs.
	Develop a basic understanding of the following: Principles of moving and positioning patients for transportation Techniques of moving patients from a bed-or floor-height surface to a stretcher Techniques of moving patients with suspected spinal injuries and immobilizing them on a backboard Technique of moving stretchers around narrow corners and down stairways Loading stretchers on ambulances, securing them in place and unloading them	

No.	Lesson	Time Required
	Teach the following skills: Two man lifts from a bed- or floor-height surface to a stretcher Immobilizing patient with spinal injuries on backboard Loading and unloading stretchers	
10	Practice, Test and Evaluation--Medical Emergencies, Emergency Childbirth, Lifting and Moving	3 hrs.
	Test basic knowledges and skills associated with: Poisoning Bites and stings Heart Attack Stroke Asthmatic states Diabetes Acute abdomen Transporting patients with communicable diseases The emotionally disturbed and unruly Epilepsy The unconscious state Emergency childbirth Lifting and moving patients Provide practice on and evaluate the following skills: Two man lifts from a bed- or floor-height surface to a stretcher Immobilizing patients with spinal injuries on backboards Cardiopulmonary resuscitation by a lone rescuer Cardiopulmonary resuscitation as a member of a team using the bag-mask resuscitator	

No.	Lesson	Time Required
19	Environmental Emergencies	2 hrs. 30 min.

Develop a basic understanding of the following:

- Estimation of severity of burn
- Techniques of care for the burned patient
- Special dangers of different types of burns--heat, chemical, electrical, radiation
- Signs, symptoms and techniques of care for the patient suffering from heat cramps, heat exhaustion, heat stroke and frostbite
- Techniques of rescuing and caring for the drowning person
- Techniques of rescuing and caring for the victim of diving injuries
- Signs, symptoms and techniques of care for the patient suffering from air embolism, bends, squeeze injuries, oxygen poisoning and nitrogen poisoning
- Major dangers of explosions

20	Extrication from Automobiles	3 hrs.

Develop a basic understanding of principles and considerations involved in extricating persons from automobiles

Teach the following skills:

- Techniques of removing patients with suspected spine injuries from automobiles
- Techniques of removing patients from beneath automobiles

21	Operations--Driving an Emergency Vehicle, Maintaining a Safe and Ready Vehicle, Records and Reports, Communications and Procedures at Hospital Emergency Rooms	3 hrs.

Develop a basic understanding of the following:

- Laws relating to operating an emergency vehicle
- When and how to use emergency privileges

No.	Lesson	Time Required
	Procedures for daily inspections of vehicle systems and equipment and inspections to be made after each run Information obtained and recorded by EMT's Importance of communications and typical communications procedures Procedures at hospital emergency rooms	
22	Responding to an Ambulance Call	2 hrs. 30 min.
	Develop a basic understanding of the duties and responsibilities of the EMT during the various phases of an ambulance run.	
	Preplanning considerations while driving to the scene Considerations in analyzing the situation upon arrival at the scene Procedures for examining patients Triage procedures Considerations during loading and transport	
	Teach the following skill: Systematic procedures for examining patients	
23	Situational Review	3 hrs.
	Provide an opportunity for integration and review of course contents by group discussion of situational examples	
24	Final Written Test	2 hrs.
	Test major knowledges taught in the emergency care course	

No.	Lesson	Time Required
25	Final Practical Evaluation of Skills	3 hrs.

Evaluate student demonstration of the following skills:

Setting up, adjusting and closing down oxygen equipment
Bandaging the head, eye and extremity
Cardiopulmonary resuscitation alone and as a member of a team
Use of the bag-mask resuscitator
Performing an examination for life-threatening problems and a systematic check of injuries
Splinting a fracture of the upper extremity
Splinting a fracture of the femur
Lifting and moving patients from bed- or floor-height surfaces and positioning them on a stretcher
Immobilization of the neck and torso of a sitting patient on a short backboard
Moving a patient with a suspected cervical spine injury from the floor and immobilizing him on a long backboard
Determining blood pressure

Detailed plans for conducting each of the lessons as well as guidance for testing and evaluating students are included in the Instructor's Lesson Plans.

COURSE REQUIREMENTS

Course Scheduling

The course consists of 25 lessons requiring between 2 and 3 hours each plus 10 hours of in-hospital observation and training. The student is expected to complete all reading assignments before coming to each lesson. If students are employed on a full-time basis, no more than two lessons should be given in any one week, to provide time for completing reading assignments. If students are unemployed, lessons may be given on a daily basis. However, no more than 6 hours of training should be given in one day.

Class Size

As stated previously, the course emphasizes the development of student skill in symptom recognition and emergency care and therefore relies heavily on demonstration and practice as a teaching method. In order that maximum student participation can be achieved in both lecture/demonstration periods and practice periods of each lesson, the class size of necessity must be small.

The class size for lecture/demonstration periods must be small enough to allow interaction between student and instructor, permit the instructor to know if his points are getting across and to recognize variations in student ability and knowledge, and permit demonstration of skills to be easily viewed by all students. It is preferable, therefore, that the class size for lecture-demonstration periods of each lesson be limited to 20 students. In no case should it exceed 40 students.

Practice periods of each lesson must permit sufficient individual supervised practice for each student to attain skill in the given topic area covered in that lesson. In addition, instructors must be able to observe and evaluate each student's performance. It is essential, therefore, that practice be performed in small groups. The group size for practice periods should not exceed 10 students.

The limitations on class size have obvious implications for the number of instructors required for each lesson. The lead instructor for any one lesson will require sufficient instructor aides in order that the student-to-instructor ratio for practice will not exceed 10 to 1. Should there be more than 10 students for any given instructor or instructor aide, a proportional increase in time for practice will be required for each lesson.

Course Coordinator

The overall course is designed to be under the supervision of a physician. He will be responsible for selecting qualified instructors for teaching each lesson and for assuring that all instructors are thoroughly knowledgeable about their special responsibilities in teaching this course. In addition, the Course Coordinator will insure that sufficient instructor aides are available for each lesson, will maintain master records on student attendance and performance, will assure that slow students receive counseling in specific topis areas, and will be responsible for certifying that individual students have successfully completed the course. The Course Coordinator should provide for continuity among sessions by assuring that the review period at the beginning of each lesson is covered by an individual knowledgeable in the subject matter and that practice, test and evaluation lessons are conducted by individuals thoroughly versed in the skills and knowledges evaluated in these lessons. The Course Coordinator will plan and schedule in-hospital training sessions and arrange, if possible, for students to participate in ambulance calls.

The course coordinator will assure that appropriate facilities are available for conducting each lesson and will assist individual instructors as necessary in obtaining proper equipment and teaching aids for their lessons.

In addition to being a physician, it is especially desirable that the course coordinator be experienced in the field of emergency care. He should be knowledgeable about legal constraints under which emergency medical technicians operate in the areas of emergency care, ambulance operations, vehicles and equipment, handling of violent cases, and procedures for handling the deceased. He should be totally familiar with the entire course including specific subject matter covered in each lesson and reference materials recommended for each lesson. As such, he should attend a special indoctrination or orientation seminar on techniques of coordinating this course.

Before instructors teach their lessons, the course coordinator should assure that each is thoroughly briefed about his responsibilities in teaching the course. Specifically, he should cover the following topics as contained in the course coordinator orientation program:

The EMT training program in relation to the state's overall emergency medical service plan

Objectives, scope and orientation of the EMT basic training course

Functions of the EMT

Medicolegal aspects of the EMT's job

Using the lesson plan

Using the teaching aids

Obtaining class participation

Aiding slow learners

Maintaining records of student attendance and performance

Developing test materials and conducting evaluation lessons

At the briefing, it is suggested that the course coordinator provide each lesson instructor with a copy of a checklist which provides the instructor with a list of procedures he should follow in preparing for and conducting his lesson. A sample checklist appears below.

Sample Instructor Checklist

1. Thoroughly study all assigned reading.

2. Review in detail the lesson plan, noting time estimates allocated to specific topic areas, methods of teaching suggested, time allocated to didactic vs. practice.

3. Use appropriate column to jot down additional points to be covered.

4. Select teaching aids (e.g., slides) to be used as appropriate.

5. Assure that all equipment and materials specified for the lesson are available, operable and ready for use before the class starts.

6. Read Appendix B to the Instructor's Lesson Plans before conducting the class to obtain guidance for effective teaching.

7. Read Appendix A to the Instructor's Lesson Plans for guidance in developing written test items and checklists for evaluating skills.

8. Develop written test items and checklists as appropriate.

9. Thoroughly brief all instructor aides on their role and responsibilities before the start of class.

10. At the completion of the lesson, turn in to the Course Coordinator:

    Record of students' attendance and performance including suggestions for counseling of individual students where needed

    Written test items covering the lesson

    Checklists for evaluating skills covered in the lesson where appropriate

Lesson Instructors

The lead instructor for each lesson will be responsible for the lecture/demonstration period of that lesson. He will be assisted as necessary by instructor aides in the practice period of the lesson. Since both the lead instructor and the instructor aides will be responsible for developing student skills and for evaluating students for attainment of specific skills, they must both exhibit the following characteristics:

Be experienced in the field of emergency care or specialists in the given topic area.

Be skilled in the use and maintenance of all equipment required for the topic area, including that required for teaching the topic area, e.g., manikins, projection equipment.

Be knowledgeable about legal constraints under which emergency medical technicians operate in the area of emergency care, ambulance operations, vehicles and equipment, violent cases, procedures for handling the deceased, etc.

Be skilled instructors.

Maximum utilization should be made of medical specialists, qualified advanced American Red Cross instructors, policemen, firemen, legal authorities, experienced ambulance personnel, industrial safety and communications experts, nurses and qualified emergency medical technicians. It is recommended that all medical lessons in the course be taught by a physician. Operational lessons should be taught by an individual with extensive experience in the ambulance service area. With certain exceptions, instructor aides may consist of experienced lay individuals in the field of emergency care. These may include experienced instructors from municipal, proprietary, hospital or volunteer ambulance services of qualified Red Cross instructors. The exception includes all lessons in which cardiopulmonary resuscitation is taught; instructor aides for these lessons should have special training in teaching cardiopulmonary resuscitation.

It is especially important that both the lead instructor and instructor aides for practice, test and evaluation lessons be thoroughy knowledgeable about the information and skills covered in these lessons.

Recommended instructors and instructor aides for each lesson are listed on pages 18 and 19.

Recommended Instructors and Instructor Aides for Each Lesson*

Lesson	Lead Instructor	Instructor Aides
1-The EMT--His role, responsibilities, and equipment	Introductory remarks: course coordinator. Remainder of lesson may be taught by lay instructor with extensive experience in ambulance service area	None required
2-Airway obstruction and pulmonary arrest	Physician (preferably anesthesiologist)	Lay instructor skilled in airway care and pulmonary resuscitation
3-Mechanical aids to breathing	Physician (preferably anesthesiologist)	Lay instructor skilled in mechanical aids to breathing
4 -Cardiac arrest	Physician trained in teaching cardiopulmonary resuscitation	Lay instructor trained in teaching cardiopulmonary resuscitation
5-Bleeding, shock and practice in skills taught in Lessons 2 - 4	Physician trained in teaching cardiopulmonary resuscitation and proficient in all skills taught in Lessons 2 - 4	Lay instructor trained in teaching cardiopulmonary resuscitation and proficient in all skills taught in Lesson 2-4
6-Practice, test and evaluation	Physician trained in teaching cardiopulmonary resuscitation and proficient in all skills taught in Lessons 2 - 5	Lay instructor trained in teaching cardiopulmonary resuscitation and proficient in all skills taught in Lessons 2-5
7-Wounds	Physician	Lay instructor skilled in bandaging
8-Fractures of the upper extremity	Physician (preferably orthopedic surgeon)	Lay instructor skilled in splinting
9-Fractures of the lower extremity	Physician (preferably orthopedic surgeon)	Lay instructor skilled in splinting
10-Injuries to the head, face, neck, spine	Physician	Lay instructor skilled in bandaging
11-Injuries to the eye, chest, abdomen, pelvis, genitalia	Physician	Lay instructor skilled in bandaging

* The course coordinator may teach any or all lessons as desired. It is recommended that he attend all evaluation sessions.

Lesson	Lead Instructor	Instructor Aides
12-Practice, test and evaluation	Physician proficient in all skills taught in Lessons 7 - 11	Lay instructor skilled in bandaging
13-Practice, test and evaluation	Physician proficient in all skills taught in Lessons 7 - 11	Lay instructor skilled in splinting
14-Medical emergencies--I	Physician trained in teaching cardiopulmonary resuscitation	Lay instructor trained in teaching cardiopulmonary resuscitation
15-Medical emergencies--II	Physician	None required
16-Childbirth and child patients	Physician (preferably obstetrician)	Lay instructor skilled in teaching childbirth
17-Lifting and moving patients	Lay instructor with extensive experience in ambulance service area	Lay instructor with extensive experience in ambulance service area
18-Practice, test and evaluation	Physician trained in teaching cardiopulmonary resuscitation and proficient in all skills taught in Lessons 14 - 17	Lay instructor trained in teaching cardiopulmonary resuscitation and with extensive experience in ambulance service area
19-Environmental emergencies	Physician (who may wish to use specialists for topic areas, e.g., electricity, radiation, drowning problems)	None required
20-Extrication from automobiles	Lay instructor with extensive experience in ambulance service area, especially rescue	Lay instructor with extensive experience in ambulance service area, especially rescue
21-Operations	Lay instructor with extensive experience in ambulance service area	None required
22-Responding to an ambulance call	Physician knowledgeable in all subjects taught in course, operational and medical	Lay instructor with special training in examining patients
23-Situational review	Physician--same as 22, above	None required
24-Final Written Test	Lesson may be monitored by any instructor associated with the course	None required
25-Final practical evaluation	Physician proficient in all skills taught in the course	Lay instructor proficient in all skills taught in the course

Students

This course has been developed for all groups who provide ambulance services; students may include individuals from municipal, proprietary, volunteer, and hospital services. To be eligible to attend the basic course for emergency medical technicians, students must:

Have a high school diploma or its equivalent.

Be proficient in reading, writing and speaking English.

Hold a current driver's or chauffer's license.

Be at least 18 years of age.

Be physically fit, of good moral character and motivated to serve independently as an EMT--ambulance.

Meet any additional unique requirements imposed by the state in which the course is given.

Facilities

1. Standard Facility. The standard facility for the majority of the lessons is a lecture hall with sufficient space for seating a maximum of 40 students, a lecture and demonstration area, and practice areas (one for each 10 students). It is recommended that the standard facility be located at a hospital if possible. If this is not feasible, any convenient place of assembly may be used, e.g., a school.

The facility should be well lit to assure adequate viewing of visual aids and demonstrations. In addition, heating and ventilation of the facility should assure student and instructor comfort.

The lecture area should contain a lectern for lesson plans, notes and references. A large table should be provided in the lecture area for displaying equipment, medical supplies and training aids, and for demonstrating emergency medical procedures. A chalkboard, projection screen and stand for charts should be located in the lecture area. If possible, light switches should be convenient to the lecture area.

The student area should contain tables or chairs with writing surfaces for note taking. Chairs should be arranged for unobstructed visual access to the instructor, demonstration area, screen, etc., and convenient physicial access to the practice area.

Each practice area should be large enough to accommodate 10 students working individually or in varying size groups plus the equipment and medical supplies used in practicing procedures. Tables should be provided in the practice area for equipment and supplies and for use during certain procedures.

Sufficient space should be provided for accommodating slide and movie projectors.

2. Special Facility. One lesson (Lesson 20) requires the use of automobiles (wrecks). If possible, the facility for this lesson should be located indoors to avoid lesson scheduling problems due to inclement weather. A suitable facility might be a local armory, school or garage. In the absence of such facilities, an adjacent parking lot may be employed.

Material and Equipment

The materials and equipment required for this course are listed below. The Course Coordinator is advised that the equipment specified here is minimal and is designed to provide a standardized base of equipment for the course. Where additional updated equipment is available in the area, the Course Coordinator should include such equipment in his lessons. The minimal list includes:

One fully equipped ambulance.
Hinged half-ring lower extremity splint (one for each 3 students).
Long board splints (one set for each 3 students).
Rigid splints (wood, wire or cardboard)(1set for each 2 students).
Inflatable splints, arm and leg (1 each for each 10 students).
Long backboard with two 9-foot straps (2 for each 10 students).
Short backboard with two 9-foot straps (2 for each 10 students).
Chin strap and padded head strap (1 for each 10 students).
Cervical collar or universal dressing (2 for each 10 students).
Rope sling (one for each 10 students).
Oxygen tanks and transparent masks for adults, infants, and children (1 for each 10 students).
Bag-mask resuscitator with adult, child and infant masks (one for each 10 students).
Suction apparatus with catheter (1 for each 10 students).
Two-way resuscitation airways for adults and children (1 for each 10 students).
Adult, infant and child size oropharyngeal airways (1 for each 10 students).
Three tongue blades taped together and padded
Blood pressure manometer and stethoscope (1 set for each 10 students).

Universal dressing (1 for each 2 students).
Sterile gauze pads (1 for each 2 students).
Adhesive tape (one-, two- and three-inch sizes).
Six-inch roller type bandages (1 for each 2 students).
Triangular bandages (4 for each student).
Paper cup or cone for bandaging eye (1 for each 2 students).
Blankets or mats (1 for each 2 students).
Wheeled stretcher (1 for each 10 students).
Pole stretcher.
Emergency childbirth delivery pack.
Premature baby carrier (1 for each 10 students).
Cardiopulmonary resuscitation manikin (1 for each 5 students).
Obstetrical manikin (if available) (1 for each 10 students).

See page 23 for specific material and equipment requirements for each lesson.

Materials and equipment specified here do not include such items as a chalkboard which should be available for each lesson. In addition they do not include materials that are recommended as handouts for the students; these materials are listed in the appropriate lesson plans.

Visual Aids

In the lesson plans, asterisks (*) are used to indicate the points in the lecture where slides or charts are recommended. Except for films and slides known to be available, a skeleton and certain other aids (such as flip charts), no specific slides are recommended since there is no known source of supply at present which can completely satisfy the unique requirements of this course. Furthermore, since teaching aids serve to complement rather than replace the spoken word, each instructor may wish to tailor the teaching aids to suit his own needs and style and may have access to slides or films which he regards as superior to those available now or in the future.

Recommended films and slide sets known to be available are as follows:

Pulse of Life (available on loan through local American Heart Association).

Emergency Childbirth (Medical Self-Help Training Course Lesson 11, U.S. Public Health Service; available through local Office of Civil Defense).

American Heart Association Slide Set (EM 376) - Emergency Measures in Cardiopulmonary Resuscitation (available on loan through local American Heart Association).

American Heart Association Slide Set (EM 386) - Training of Ambulance Personnel in Cardiopulmonary Resuscitation (available through local American Heart Association).

Additional films on CPR training and information for obtaining a film reference guide is contained in Appendix C of the Instructor's Lesson Plans.

Material and Equipment Requirements for Each Lesson*

EQUIPMENT	LESSON																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Ambulance	x																x								
Inflatable splints (arm and leg)	x				1			1																	
Traction splint	x								3				3												1
Long board splint (set)	x								3				3												3
Rigid splint (set)	x							5	5	x			5												5
Long backboard with straps	x																2	1		2					1
Short backboard with straps	x																			2	x				1
Chin and padded head strap																				1	x				1
Cervical collar/univ.dressing										5			1				2	1			x				1
Rope sling																				1					
Manometer and stethoscope	x			1	1	1																			1
Oxygen tanks and masks	x		1	1	1	1								1											1
Bag-mask resuscitator	x		1	1	1	1												1							
Suction apparatus	x		1		1	1																			
Two-way (S-shaped) airways	x		1																						
Oropharyngeal airways	x		1																						
Tongue blades--taped, padded	x																								
Universal dressing	[x]				[x]		[5]	[x]		[5]	[5]	[5]								2					5
Sterile gauze pads	[x]				[x]		[5]	[x]		[5]	[5]	[5]													5
Adhesive tape	x																								
Roller bandage	x						5	x		5	5	5													5
Triangular bandage	x				5			40	40	4			40							1					40
Paper cup or cone											5														5
Blanket		5			5			x	5								4	1		1		5	x		1
Wheeled stretcher				x													x	1							1
Pole stretcher																	x								
CPR manikin		1	1	1	1	2								1				1				1			1
Obstetrical manikin																1									
Baby carrier																1									
Delivery pack																x									
Vehicle (wreck)																				1					
Pillow								x																	

*Numbers in the table are based on 10 students; e.g., if there are 20 students, all numbers in the table should be doubled. An "x" indicates that only one of the items is required for the lesson regardless of the number of students. Where two items are boxed, either one or the other item may be employed for that lesson.

Required Texts and Supplementary References

The Lesson Plans are based primarily on the text entitled Emergency Care and Transportation of the Sick and Injured, prepared by the Committee on Injuries of the American Academy of Orthopaedic Surgeons. Since it is recommended as the primary reference for the course, each student and instructor should be provided with a copy. It is available through the American Academy of Orthopaedic Surgeons, 430 North Michigan Avenue, Chicago, Illinois 60611.

In addition, each student and instructor should be provided with a copy of the pamphlet, "First Aid for Laryngectomees," available from the American Cancer Society. An excellent reference for students and instructors in the area of anatomy and physiology is "The Wonderful Human Machine," available from the American Medical Association.

Appendix C to the Instructor's Lesson Plans contains a list of documents in the area of emergency medical care for use as supplementary references. Of these references, specific supplementary readings have been recommended for instructors of certain lessons. These include the following:

Committee on Cardiopulmonary Resuscitation, American Heart Association. Cardiopulmonary Resuscitation. A manual for instructors. American Heart Association: New York, 1967. 71 p.

Committee on Cardiopulmonary Resuscitation, American Heart Association. Training of ambulance per sonnel in cardiopulmonary resuscitation. American Heart Association: New York, 1965. 14 p.

Committee on Cardiopulmonary Resuscitation, American Heart Association. Emergency measures in cardiopulmonary resuscitation. Discussion Guide. American Heart Association: New York, 1965. 17 p.

American National Red Cross. First Aid. 4th Ed. Doubleday and Co.: Garden City, New York, 1957. 249 p.

Cole, Warren H. and Charles B. Puestow. First Aid. Diagnosis and Management. Sixth Ed. Appleton-Century-Crofts: New York, 1965. 455 p.

Farrington, J. D. Extrication of victims--surgical principles. J. Trauma. 8: No. 4, 493-512, 1968.

Conducting the Course

Using the Lesson Plan

Each lesson plan consists of three parts. The first two parts briefly outline the objectives and requirements for the lesson. The last part gives detailed procedures for conducting each lesson. Each part of the lesson plan is described below.

1. Objectives of Lesson. Specified here are the objectives of the lesson in terms of knowledges to be developed and the skills to be taught.

2. Requirements. Specified here are requirements for number of instructors, instructor references, and materials, equipment, charts, slides, and films recommended as teaching aids. The number of instructors specified is the maximum number needed for both the lecture-demonstrations and practice periods of the lesson. It is assumed that the lead instructor who gives the lecture and demonstration period of the lesson will also participate as an instructor in the practice period of the lesson. If there are more students per instructor than that specified, additional time will be required for practice.

Materials and equipment requirements are specified on a lesson or student basis as appropriate. The instructor should assure that all equipment specified for the lesson is available, operable and ready for use before the start of each lesson. All equipments recommended for demonstration and practice periods should be utilized in the lessons. They have been specifically chosen to introduce realism into the learning situation and to provide techniques for direct evaluation of student performance. If there are more students for a given piece of equipment than that specified, additional time will be required for practice in order that students may attain skill proficiency.

3. Outline of Instruction. This part of the lesson plan gives detailed procedures for conducting the lesson. They typically adhere to the following pattern:

Administrative matters-taking attendance, making announcements
Review of previous lesson
Lecture on new material
Demonstration of new skills
Class practice of new skills
Summary of lesson--a brief verbal summary of the main points covered in the lesson

In general, materials presented in each lecture following their presentation in the text. The level of detail in each lesson plan is therefore brief. It includes only the major topic coverage and special points to be emphasized. The instructor is advised to be thoroughly familiar with all materials covered in the text so that details of specific areas are not omitted. Where information is taken from a source other than the reference

text, that reference source is indicated in parentheses beside the topic area covered. A column is provided to the right of the lesson outline for the instructor to note additional points he wishes to cover. The instructor is advised that the course emphasizes the practical skills of emergency care and transportation of the sick and injured. He is therefore urged to keep his coverage of a topic area relevant to emergency care and not to definitive care.

Estimates of both elapsed time and projected time for each topic area within a lesson are included. Time estimates are given for two purposes:

To aid the instructor in maintaining his lesson on schedule.

To provide a means by which the instructor can determine the emphasis to be given to a specific area. For example, the course emphasizes practical skills of emergency care as opposed to details of anatomy and physiology. Therefore, the instructor will find that time estimates for anatomy and physiology are generally short.

The instructor is advised that time estimates devoted to lecture periods of each lesson are not extensive. He is therefore cautioned against extensive discussion of his personal experiences. As stated previously, the course emphasizes development of skills as opposed to theory and therefore includes sufficient supervised practice to assure that students become proficient in all skills. In general, practice periods tend to be placed near the end of each lesson; the instructor may therefore extend time for these practice periods as necessary to assure attainment of specific skills. Also, if students are exceptionally capable, time for practice periods may be shortened.

The course emphasizes student participation in both lecture/demonstration and practice periods. The instructor will note that he frequently is advised to ask a member of the class to respond to a question covered in the assigned reading. Techniques of asking questions as well as other guidelines for effective teaching are given in Appendix B to the Instructor's Lesson Plans.

Aiding Student Learning

The instructor should recognize that his class may include students of varying ability and knowledge. Some students may have no prior experience or training in the emergency care field; while others may have taken courses or have been active in the field for several years. Regardless of the extent of the students' previous training or experience, the instructor should not assume that the student is knowledgeable in any given subject area.

Skills may have been improperly taught or knowledges inadequately learned. A primary purpose of the course is to make certain that emergency medical technicians learn standardized emergency care procedures. Each student, therefore, must demonstrate attainment of knowledge and skill in each area taught in the course.

However, because of differences in background as well as differences in student ability to learn, the instructor will find variation in the times required for students to attain proficiency in all aspects of emergency care. In practice sessions, experiences students who have demonstrated skill proficiency may be used to aid the inexperienced or slow learners. In addition, special counseling sessions should be provided for slow learners.

It is the responsibility of the instructor and the course coordinator to assure that students attain proficiency in each topic area before they proceed to the next area. If, after counseling and special practice, students fail to demonstrate the ability to learn specific knowledges and skills, the course coordinator should not hesitate to fail the student. The level of knowledges and skills attained by a student in the classroom will be reflected in his performance on the job as an emergency medical technician. This is ultimately a reflection on the individual who trained him.

Maintaining Records

Master records for each student should be maintained by the course coordinator. These include information on the student's attendance at each lesson, an estimate of his skill proficiency for each lesson, grades for each testing session, and comments regarding the student's performance, attitude and personal habits.

A sample format for a record sheet to be completed for each lesson appears below. Such a record sheet should be submitted to the course coordinator at the completion of the lesson. The course coordinator should assure that his instructors realize that the purpose of these records is twofold:

To maintain information on student attendance
To maintain information on student performance

Thus, the lead instructor or instructor aide for each lesson must personally observe each student in the practice periods to assure that the student demonstrates proficiency in the skills being taught in the lesson. If a student is having difficulty in developing skill proficiency and appears to need additional practice, that fact should be noted in the appropriate column on the lesson record sheet.

In addition to daily records of student attendance and performance, special records should be maintained for all practice, test, and evaluation lessons. These include the percentage scores obtained on written tests as well as checklists used for evaluating student skills. Procedures for developing written tests and checklists are included in Appendix A to the Instructor's Lesson Plans.

Instructor_____ Lesson No._____

Date_____

Sample Lesson Record Sheet

Student Name	Attendance (✓)	Skills satisfactory*	Indicate any areas where skills, knowledges or personal characteristics of student need improvement

*Instructor should sign his initials here as each student has demonstrated proficiency in the skills taught in the lesson.

In-Hospital Training

As recommended in the NAS/NRC guidelines for training of ambulance personnel, in-hospital training consists of observation, demonstration and participation to the extent permitted by the professional staff. Instruction is designed: 1) to demonstrate the importance and benefits of optimal emergency care, efficient transport and adequate reporting; 2) to emphasize the penalties of inadequate care or improper procedures; 3) to familiarize the student with the equipment used, staffing, operating policies and procedures of the department; 4) to have ambulance personnel observe procedures in and develop skills in resuscitation, handling the unconscious, management of the mentally disturbed and unruly, and techniques of delivery and care of both the infant and mother; 5) to keep ambulance personnel abreast of new developments in equipment and emergency care; and 6) to have ambulance personnel engage in disaster drills.

Responsibility for conduct of this program should be assigned to the staff of the emergency department. Training areas include the emergency department, operating and recovery rooms, the intensive-care unit, the obstetrical department and the psychiatric department. Two consecutive hours of training are required at any one period in order to receive credit toward completion of a course in the assigned department for a total of 10 hours.

Testing and Grading Students

Students will be tested on both their skills and knowledges. The course includes four practice, test and evaluation lessons of related topic areas, as well as a final test of skills and knowledges.

Student knowledge is evaluated by means of a written test. Written tests are given in three of the practice, test and evaluation sessions as well as in the final test. Each instructor will be responsible for preparing questions for tests in his own area of responsibility. The Course Coordinator will be responsible for consolidating the questions, preparing a balanced test and administering and grading the examination. Guidance for developing and scoring such tests is given in Appendix A to the Instructor's Lesson Plans. Students will receive a percentage score on written tests. Pass or fail grades for each test will be established by the Course Coordinator.

Students' skills are evaluated by means of demonstration. Techniques for evaluating skills are included in each lesson plan devoted to testing.

The Course Coordinator will be responsible for ensuring the provision of sufficient numbers of qualified instructors to administer and evaluate the skill demonstration session. Further, he will ensure that each participating instructor is familiar with and utilizes suitable evaluation criteria. Guidance for developing checklists for evaluating student skills is given in Appendix A of the Instructor's Lesson Plans. The student will receive a pass/fail score on skills.

Student Requirements for Course Completion

Students will be evaluated on the following criteria:

Skills
Knowledges
Personal attitude
Personal appearance
Attendance

Skills. In the area of skills, students either pass or fail. Students must demonstrate proficiency in all skills, not only on the final test, but also in each testing session of selected topic areas. Special makeup sessions may be provided by the instructor, as appropriate.

Knowledges. In this area, students must receive a passing grade, not only on the final test, but also on selected tests of topic areas. Special makeup sessions may be provided by the instructor, as appropriate.

Personal attitude. Each student must demonstrate conscientiousness and interest in the course. Students who fail to do so should be counseled while the course is in progress so that they may be given the opportunity to develop and exhibit the proper attitude expected of an emergency medical technician.

Personal appearance. Each student should be neat, clean and well groomed at each session. Students who fail to exhibit good personal hygiene habits should receive special counseling while the course is in progress in order that they may be given the opportunity to correct their personal habits.

Attendance. Students should be required to attend all lessons. At the discretion of the instructor, a lesson may be missed if the student can successfully demonstrate attainment of all skills and knowledges covered in

that lesson. One-hundred percent attendance is required at all practice, test and evaluation sessions, as well as the final test. At the discretion of the Course Coordinator, special makeup sessions may be provided for slow learners or for students who miss tests for valid reasons.

In-Hospital Training. Preferably during the period of formal training, but in any event prior to certification of course completion, 10 hours of in-hospital observation and training are required in emergency, surgical, intensive care, obstetrical and psychiatric areas of a hospital. Two consecutive hours are required at any one period. During the period of this course, the student should take advantage of any opportunity to participate in ambulance calls.