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ABSTRACT

This course guide is intended to assist course coordinators in planning and managing a course to train emergency medical technicians to work with ambulance or other specialized rescue services. Materials are presented to enable students to perform the following functions: recognize the nature and seriousness of the patient's condition or extent of his injuries to assess requirement for emergency care; administer appropriate emergency care to stabilize the patient's condition; and lift, move, position, and otherwise handle the patient in such a way as to minimize discomfort and further injury. The guide is divided into the following sections: the instructional program (course goals, skills of the competent emergency medical technician-ambulance, student qualifications, course scope and objectives, and course design); course planning considerations (course scheduling, class size, instructor qualifications, materials and equipment, facilities, and course costs); and program management and evaluation (maintaining records, assessing student achievement, and program evaluation). (MN)

U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

Emergency Medical Technician–Ambulance: National Standard Curriculum

Course Guide (Third Edition)

1984

Contents

Preface iii
Foreword v
Introduction vii
The Instructional Program
Course Goals 1
The Competent EMT-A 1
Student Qualifications 1
Course Scope, Performance Objectives
and Instructional strategy 2
Course Design 3
Course Planning Considerations
Course Scheduling 7
Class Size 7
Instructor Qualifications 7
Materials and Equipment 10
Facilities 11
Estimating Course Costs 14
Program Management And Evaluation
Maintaining Records 17
Assessing Student Achievement 17
Program Evaluation 18

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Preface

The National Highway Traffic Safety Administration has assumed responsibility for the development of training courses that are responsive to the standards established by the Highway Safety Act of 1966 (amended). Since these training courses are designed to provide national guidelines for training, it is NHTSA's intention that they be of the highest quality and be maintained in a current and up-to-date status from the point of view of both technical content and instructional strategy. To this end, NHTSA supported the current project which involved revision of selected curriculum packages deemed of high value to the States in carrying out their annual work programs. This course is one of a series of courses making up a National EMS training program for prehospital care. This program is a major component of total EMS system development.

The original package of the current training program was prepared in 1969 and was titled "Basic Training Program for Emergency Medical Technician—Ambulance." This training course was revised in 1977 and generally reflected the coverage and design of the original training. A Student Study Guide was developed which was not included as part of the original package. During the revision of the third edition, all three documents have been updated. This revised Course Guide reflects the changes in the curriculum as they affect planning considerations. The Instructor Lesson Plans have been updated and expanded to reflect a greater emphasis on the practical application aspects of being an EMT-A as well as to represent the current state of the art in prehospital emergency care at a basic life support level. The Student Study Guide has been revised to parallel the changes in Instructor Lesson Plans. The material which was previously contained in the DOT Patient Handling Manual has likewise been incorporated into the Student Study Guide along with instruction on the Military Anti-Shock Trousers (MAST).

Since the inception of this training course, the Department of Transportation has worked closely with many consultants to assure the quality of the medical content of this curriculum. Most notably, the American Academy of Orthopaedic Surgeons has contributed substantially to the quality of this endeavor. As early as 1964, the Academy established and conducted training courses for ambulance personnel. From these courses the original National Standard Curriculum was developed along with the Academy's reference textbook. **Emergency Care And Transportation Of The Sick And Injured.** The third edition of this text, published by the Academy in 1981, has served as the primary reference test for the medical content of this curriculum to provide much new material and to update and refine many of the older concepts.

NHTSA wishes to thank the membership of the National Council of State Emergency Medical Services Training Coordinators for their assistance in the development and review of these materials. Specifically, acknowledgement is provided to the following project staff for the National Council of State EMS Training Coordinators who coordinated this revision effort:

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Program Manuals

The Course Guide has been designed specifically to aid the course coordinator in carrying out his responsibilities relative to the training course. Two other documents complete the training package:

Instructor's Lesson Plans. This document has been designed for use by the course instructors. It contains detailed content outlines, requirements and guidance for teaching each course lesson.

Student Study Guide. This document provides an overview of each course lesson and includes study suggestions to aid students in achieving course objectives. This guide directly parallels the Instructor Lesson Plans and encourages the student to participate more fully in the training program.

The Course Guide

This manual is designed to assist the course administrator in understanding, developing and implementing all phases of an EMT program. The manual is divided into four sections:

The Introduction: This section is designed to provide an overview of the training program and the administrators responsibilities in the organization and management of the program.

The Instructional Program: This section covers work performance addressed by the course, student qualifications, student performance objectives, and course structure and instructional strategy. It includes a brief description of each course lesson.

Course Planning Considerations: This section includes suggestions for scheduling course lessons; determining class size; instructor qualifications; and required materials, equipment and facilities. It also includes considerations involved in estimating course costs.

Course Management and Evaluation: The final section includes suggestions for managing and evaluating students, achievement in the course and program evaluation processes.

Introduction

This *Course Guide* has been prepared to aid the course coordinator in planning and managing the *Emergency Medical Technicians Ambulance (EMTs-A): National Standard Curriculum*. The overall objective of the course is to improve the quality of emergency care rendered to victims of accidents and illness. As such, the course develops skills in symptom recognition and in all emergency care procedures and techniques currently considered to be within the responsibilities of an EMT providing emergency medical care with an ambulance service. While the course is designed specifically for ambulance service members, it is recognized that other applications of the training course exist.

The purpose of the training is to **ensure individual competency in each student** by the successful completion of each objective. The course consists of 33 lessons involving 100 hours of classroom and field training plus a minimum of 10 hours of in-hospital observation and training for a total program of 110 hours. The titles and times required for each of the 33 course lessons are provided on page 16 of this guide. The specified training times are minimal; actual training time (including clinical experiences) is expected to range from the recommended minimum of 110 hours to 140 hours or more depending on individual state program requirements.

There will often be a number of persons involved in the production of an EMT course. For clarity the following terms are defined as they will be used throughout this document:

These identified roles and responsibilities are a necessary part of each EMT-A course. However, the individual carrying them out may vary from program to program and from locality to locality as the exact roles interface and overlap. In fact one person may, if necessary, carry out all the roles in some programs.

- **Course Administrator:** An individual responsible for course planning, operation and evaluation. While the course administrator is responsible for the overall operation of the training course, this person need not be qualified or involved in the actual teaching of specific course lessons.
- **Instructor/Coordinator:** The EMT-A Instructor/Coordinator is the individual responsible for coordinating and conducting the Emergency Medical Technician Ambulance course. He/she is responsible to act as the liaison between the students, the sponsoring agency, the local medical community, and the State level certifying or licensing agency. He/she is further responsible to see that the course goals and objectives (and those set forth by any licensing, registering or certifying agency as applicable) are met.
- **The EMT-A Instructor/Coordinator** is expected to be knowledgeable in all aspects of prehospital emergency care, in the techniques and modalities of adult education, managing resources and resource personnel. He/she should be in attendance at most, if not all class sessions to insure program continuity and to be able to identify that the students have the cognitive and psychomotor skills sufficient to function as Emergency Medical Technicians-Ambulance.
- **Course Medical Director:** The Medical Director of the EMT-A course should be a local physician with emergency medical experience who will act as the ultimate medical authority regarding course content, procedures and protocols. The Medical Director and the Instructor/Coordinator should work closely together in the preparation and presentation of the program. The Medical Director can assist in recruiting physician lecturers, settling questions of medical protocol and acting as a liaison between the course and the medical community. During the training program the Medical Director will be responsible for reviewing the quality of care of the EMT-A rendered in the clinical and field setting.
- **Lead Instructor:** An individual who is responsible for the teaching of a specific lesson of the EMT-A course.

- **Practical Skill Instructors:** The individuals who assist the lead instructor of any lesson in the demonstration and practice sessions designed to develop and evaluate student skill competencies.

Additional information on the roles and qualifications of these individuals will be found in the appropriate places throughout the *Course Guide*.

The Course Administrator is responsible for EMT-A course planning, operation and evaluation. As such, the Course Administrator may be called upon to perform the following functions:

- Recruiting and screening of students
- Selecting of qualified instructors for each lesson
- Orienting and briefing of all lead instructors and aides about their administrator responsibilities in the EMT-A course
- Planning and scheduling all lessons
- Selecting appropriate facilities and resources for each lesson
- Assuring continuity among course lessons
- Planning and scheduling of in-hospital training and other practical experience
- Assuring the smooth operation and technical accuracy of the course
- Collecting and maintaining appropriate records to document and evaluate the course
- Ensuring that all training goals are consistent with local training needs and state requirements
- Operating the course within established budgets

The course administrator is responsible for program planning, conducting and evaluation. He recruits and screens students. He selects qualified instructors for each lesson and assures that all instructors are thoroughly knowledgeable about their special responsibilities in teaching the course. He plans and schedules all sessions and assures that appropriate facilities and resources are available as needed. He arranges for continuity among sessions and plans and schedules in-hospital training and other appropriate practical experience. He assures the smooth functioning as well as the technical quality of the program and collects and maintains appropriate records to document and evaluate the program. In carrying out these planning and management activities, he must ensure that his training goals are consistent with training needs and requirements in his State and that he accomplishes these goals within an established budget.

The course coordinator must be not only competent as a manager but also experienced in the field of emergency care and completely knowledgeable about the roles and responsibilities of emergency medical technicians and the constraints under which they work. He may or may not be a physician. If he is a non-physician, a physician should serve as the course medical director with responsibility ensuring the medical accuracy of the course.

The course coordinator requires thorough knowledge of the training program and all documents comprising the curriculum package. In addition, he needs information in the following areas:

- Duties which students will be able to perform on the job as a result of successfully completing the course.
- Capabilities and characteristics of the student and of the competent EMT-A. These aid in defining student qualifications for attending the course as well as for successfully completing the course.
- Student performance objectives addressed by the course, that is, what the student will be able to demonstrate in the classroom as a result of successfully completing the course. These aid in defining course scope and training time.
- Course structure and instructional strategy.

- Resources and facilities required for the course.
- Qualifications of the instructional team and tasks that instructors will be required to perform.
- Methods of scheduling course lessons; assigning dates, times and personnel as appropriate; and estimating costs.
- Alternatives for managing and evaluating program results.
- State and local requirements and policies related to course administration and EMT-A functioning.

The Instructional Program

Course Goals

This course is designed to train students to the level of Emergency Medical Technician-Ambulance (EMT-A) who serves as a vital link in the chain of the health care team. It is recognized that training at all levels of the health care team is necessary for effective patient care. It is also recognized that the majority of prehospital emergency care will be provided by the Emergency Medical Technician-Ambulance. This includes all skills necessary for the individual to provide emergency medical care at a basic life support level with an ambulance service or other specialized rescue service.

Specifically, after successful completion of the program, the student will be capable of performing the following functions:

- Recognize the nature and seriousness of the patient's condition or extent of his injuries to assess requirements for emergency care.
- Administer appropriate emergency care to stabilize the patient's condition.
- Lift, move, position and otherwise handle the patient in such a way as to minimize discomfort and further injury.

It is obvious that EMT's provide a service in a special environment requiring special skills and knowledge in such areas as communications, transportation, record keeping, and liaison with other emergency services. The course provides an introduction to these concepts although individual orientation to the specific systems and services with which the EMT will be affiliated is necessary to achieve total competence.

The Competent EMT

"The EMT's primary responsibility is to bring expert emergency medical care to the victims of emergencies and to transport them safely and expeditiously to the proper facility." The EMT-A must accomplish these duties unsupervised, in a great variety of circumstances and often under considerable physical and emotional stress. The concept of an emergency medical technician, therefore, is of a person capable of exercising technical skills with authority and good judgment under difficult and stressful conditions. Personal qualities of stability, leadership and judgment are primary. It must also be stressed that ongoing medical control and evaluation of the functioning EMT is essential to the maintenance of medical care quality.

As with all professionals in the medical community, it must be realized that continuing education is an integral part of the EMT's ability to maintain a high degree of competency.

The competent EMT-A assesses the seriousness of the patient's condition, uses appropriate emergency care techniques and equipment to stabilize his condition, and transports the patient to the proper facility. In addition to caring for patients in an emergency, the EMT-A must deal with the patient's relatives, friends, bystanders, police and other officials; secure the safety of the emergency scene if necessary; observe and preserve evidence as appropriate; plan and carry out procedures to care for patients in wrecked vehicles or other inaccessible locations and remove them from such locations if necessary; maintain communications with a dispatcher and other emergency personnel; record a variety of information; participate in disaster planning and exercises; maintain his vehicle and equipment in a ready state; and drive the ambulance safely and expertly under all conditions of weather, traffic and terrain.

Student Qualifications

This course is designed for all individuals desiring to provide emergency medical care with an ambulance service or other prehospital rescue services routinely providing emergency care.

Prior emergency care experience or training is not required of the course applicant.

Specific student prerequisites for attending the course should include those specified by State EMS agency and any additional local requirements.

Course Scope, Performance Objectives and Instructional Strategy

The course includes coverage of the following medical conditions: airway problems, cardiac arrest, external and internal bleeding, shock, injuries to all body parts, fractures, dislocations, sprains, poisons, heart attack, stroke, diabetes, acute abdomen, communicable diseases, patients with abnormal behavior, alcohol and drug abuse, the unconscious state, emergency childbirth, burns (chemical, electrical, heat and radiation), emergencies caused by hot and cold environmental conditions and emergencies resulting from water hazards. With regard to *equipment and materials*, in addition to stretchers, the EMT-A should be trained to be proficient in using the following: suctioning devices, airways, resuscitation devices, oxygen equipment and delivery systems, sphygmomanometer and stethoscope, splints of all types (including spine boards and specialized equipment), basic extrication tools, and dressings and bandages.

The EMT-A should be trained in the use of pneumatic counter pressure devices (MAST). Training and proficiency in the use of pneumatic counter pressure devices is considered to be within the scope of the EMT's responsibility.

As indicated previously, the training course only provides an introduction to the job functions that the competent EMT-A must perform. With these concepts in mind, as well as the preceding assumptions regarding course scope and equipment, the following performance objectives are specified for the training course.

Given a hypothetical ambulance call, the student will:

- Describe the roles and responsibilities of the EMT during each phase of an ambulance run.

Given a simulated patient (or manikin as appropriate), the student will:

- Conduct a patient assessment for illnesses/injuries.
- Identify any emergency medical conditions
- Identify and describe appropriate signs and symptoms.
- Provide appropriate emergency care.
- Lift and move the patient to a stretcher and position him appropriately depending on his emergency condition.

Given an emergency medical condition, the student will:

- Identify and describe signs and symptoms.
- Describe the cause of the condition.
- Describe the design, purpose and function of the body parts involved.
- Indicate priority for triage purposes.
- Describe appropriate emergency care procedures.
- Identify any precautions in dealing with the emergency condition.
- Identify any special legal requirements for dealing with the emergency condition.

Given a hospital patient to observe, the student will:

- Participate in the assessment and treatment of the patient as directed and supervised by the physician in charge.
- Discuss any known emergency care provided prior to hospital entry.
- Describe care observed subsequent to hospital entry.

The course emphasizes the development of student skill in recognition of signs and symptoms of illnesses and injuries and in proper procedures of emergency care. The instructional strategy postulated for the course is one of learning by doing. Most lessons provide for practice of specific skills and knowledges taught in the lesson. Certain critical skills are practiced in several lessons. In addition, special practice, test and evaluation sessions are interspersed throughout the program to assure attainment of student proficiency. Furthermore, the course includes a minimum of 10 hours of in-hospital training and observation to aid students in developing expertise in the

emergency medical care field. Patient assessment exercises should be held frequently and the importance of thorough, prompt patient assessments emphasized.

Course Design

On the basis of the preceding course scope, performance objectives, and instructional strategy, the EMT-A course consists of 33 lessons requiring a minimum of 100 hours of training. Ten hours of in-hospital training brings the total course time to a minimum of 110 hours.

The course provides for an early and continuing emphasis on patient assessment as well as reinforcement of the basic sequence of emergency care procedures. Lesson 1 introduces the student to the course and to the emergency medical technician's role and responsibilities. Three lesson blocks or modules comprise the bulk of the course:

- Lessons 2-8 on patient assessment and basic life support.
- Lessons 9-18 on injuries to various body parts.
- Lessons 19-28 on common medical emergencies, emergency childbirth, environmental emergencies, techniques of lifting and moving patients, extrication, and field practice in "packaging" individuals with suspected spinal and other injuries.

Each of these lesson blocks has its own practice, test, and evaluation sessions. The operational aspects of the EMT's job is covered in lessons 29 and 30. A review of field situations that could be encountered by the EMT-A is presented in lesson 31. The course concludes with a written test of knowledge (lesson 32) and a practical evaluation of skills (lesson 33). The title, minimum time required, and a brief description of each of the 33 lessons follows:

Lesson 1 **Introduction to Emergency Care Training (3 hrs).** Overview of course objectives, scope, EMT-A roles and responsibilities, legal aspects of emergency care. The importance of the EMT-A should be emphasized. The victims of medical emergencies depend on them for preservation of life and limb outside the hospital.

Lesson 2 **Anatomy and Physiology and Patient Assessment (3 hrs).** Overview of human systems, including anatomy, physiology and an introduction and practice in patient assessment.

Lesson 3 **Airway Obstruction and Respiratory Arrest (3 hrs.)** Basic mechanics of respiration; signs of airway obstruction and respiratory arrest; maintaining an open airway; pulmonary resuscitation; variations for infants, children and laryngectomees.

Lesson 4 **Cardiac Arrest (3 hrs.).** Basic mechanics of circulation; signs of cardiac arrest; cardiopulmonary resuscitation by a lone rescuer and by a team of rescuers; variations for infants and children.

Lesson 5 **Manikin Practice and Certification (4 hrs.).** This lesson when combined with lessons 3 and 4 should provide the student with sufficient practice to be certified in CPR to American Heart Association Standards.

Lesson 6 **Practical Use of Airway Adjuncts (3 hrs.).** Use of airways, suction equipment, oxygen equipment and delivery systems, resuscitation devices. Special considerations in CPR.

Lesson 7 **Bleeding and Shock (3 hrs.).** Basic mechanics of circulation; determining blood pressure; signs of shock; preventing shock; treating shock; signs of external and internal bleeding; controlling bleeding; performing an examination for life-threatening problems; taking blood pressure; additional practice on airway care; pulmonary and cardiopulmonary resuscitation; use of mechanical aids to airway care and resuscitation.

Lesson 8 **Test and Evaluation—Airway Care, Pulmonary Arrest, Cardiac Arrest, Bleeding and Shock (3 hrs.).** Test of knowledge taught thus far; practice on an evaluation of skills taught thus far.

Lesson 9	**Review of Shock and Introduction to Practical Use of Military Anti-Shock Trousers (MAST) or Pneumatic Counter Pressure Devices (PCPD) (4 hrs.).** This lesson provides a review of shock, indications and contraindications in the use of pneumatic counter pressure devices and provides practice in their application.
Lesson 10	**Soft Tissue Injuries (3 hrs.).** Anatomy and physiology of the skin, signs and significance of various wound types, basic care of wounds, dressing and bandaging wounds.
Lesson 11	**Principles of Musculoskeletal Care and Fractures of the Upper Extremity (3 hrs.).** Anatomy and physiology of the musculoskeletal system; definitions and types of fractures and dislocations; signs and symptoms of fractures, dislocations and sprains; examining a patient for injuries; techniques of immobilizing fractures and dislocations of the upper extremity.
Lesson 12	**Fractures of the Pelvis, Hip and Lower Extremity (3 hrs.).** Signs and symptoms of fractures and dislocations of the pelvis, hip and lower extremity; immobilizing fractures and dislocations of the pelvis, hip and lower extremity; practice in examining a patient for injuries and in the use of pneumatic counter pressure devices.
Lesson 13	**Practical Lab: Fracture Care of the Upper and Lower Extremities (3 hrs.).** Practice in the recognition and treatment of fractures of the upper and lower extremities.
Lesson 14	**Injuries of the Head, Face, Eye, Neck and Spine (3 hrs.).** Anatomy and physiology of the nervous system; signs and symptoms of spine fractures; general rules of caring for patients with spine injuries; signs of a skull fracture; caring for patients suffering from injuries to the skull, brain, face, eye and neck; practice in immobilizing patients on short and long backboards.
Lesson 15	**Practical Lab: Patient Assessment and Spine Immobilization (3 hrs.)** Practice of patient assessment techniques and in the recognition and treatment of spine injuries.
Lesson 16	**Injuries to the Chest, Abdomen and Genitalia (3 hrs.).** Parts and functions of the abdomen, digestive system and genitourinary system; chest, abdomen, and genitalia; techniques of care; dressing and bandaging the chest; practice in performing a complete patient examination for life-threatening problems and injuries.
Lesson 17	**Practical Lab:—Injuries I (3 hrs.).** Practice in the recognition and treatment of injuries to various body parts including: performing a patient examination, use of pneumatic counter pressure devices, dressing and bandaging, spine immobilization and fracture immobilization.
Lesson 18	**Test and Evaluation—Injuries II (3 hrs.).** Written and practical examination covering "the recognition and treatment of injuries to various body parts including: performing a patient examination, use of pneumatic counter pressure devices, dressing and bandaging, spine immobilization and fracture immobilization."
Lesson 19	**Medical Emergencies I (3 hrs.).** Causes, signs, symptoms and techniques of care for poison victims; victims of bites and stings; heart attack patients: stroke patients; patients suffering from dyspnea. Practice in CPR and mechanical aids to resuscitation.
Lesson 20	**Medical Emergencies II (3 hrs.).** Causes, signs, symptoms and techniques of care for diabetic patients, patients suffering from acute abdominal problems, patients with communicable diseases, poisoning patients, patients having seizures, pediatric patients, practice in patient assessment.
Lesson 21	**Emergency Childbirth (3 hrs.).** Relevant anatomy, physiology, terms and emergency care equipment; delivery and care of the baby and mother during normal and abnormal births; resuscitating the newborn; care of the premature infant, practice in simulated deliveries.
Lesson 22	**Burns and Hazardous Materials (3 hrs.).** Estimating the degree and size of a burn, caring for the burned patient; special dangers of different types of burns (heat, chemical, electrical, radiation), identification and recognition of hazardous materials situation and proper precautionary procedures.

Lesson 23	**Environmental Emergencies (3 hrs.).** Signs, symptoms and techniques of care for the patient suffering from heat cramps, heat exhaustion, heat stroke, hypothermia and frostbite; signs, symptoms and techniques of care for the patient exposed to water related emergencies.
Lesson 24	**Psychological Aspects of Emergency Care (3 hrs.).** Considerations when dealing with special patients; infants, children, elderly, handicapped, psychologically disturbed; patients displaying abnormal behavior, substance abuse patients, dealing with death and dying and emotional aspects of providing care as an EMT.
Lesson 25	**Lifting and Moving Patients (3 hrs.).** Techniques of lifting and moving patients; immobilizing patients with suspected spine injuries on short and long backboards; loading and unloading stretchers; review of triage.
Lesson 26	**Principles of Extrication. (3 hrs.)** Principles and considerations involved in gaining access to and extricating persons from inaccessible situations, packaging and removing patients with suspected spine and other injuries; removing patients from beneath.
Lesson 27	**Practical Lab: Extrication (3-8 hrs.).** Practice in patient assessment, treatment and removal of patients from motor vehicles and other inaccessible situations.
Lesson 28	**Test and Evaluation—Medical Emergencies, Emergency Childbirth, Environmental Emergencies, Lifting and Moving (3 hrs.)** Test of knowledges and skills of medical emergencies, emergency childbirth, environmental emergencies, psychological aspects, and lifting and moving patients; extrication.
Lesson 29	**Ambulance Operations I—Driving an Emergency Vehicle, Records and Reports; and Communications. (3 hrs.).** Overview of regulations and recommendations pertaining to driving an emergency vehicle, provide an understanding of all records and reporting systems and forms utilized by the EMT-A and promote efficient and proper use of all radio communications equipment and systems the EMT-A will utilize.
Lesson 30	**Ambulance Operations II—(3 hrs.).** Provide an overview of such aspects of EMT-A responsibilities as: vehicle and equipment maintenance, emergency department procedures, scene control, special scene situations (crime, death, etc.). disaster planning and other non-medical functions during a typical ambulance run.
Lesson 31	**Situational Review (3 hrs.).** Review of course contents by group discussion of situational examples.
Lesson 32	**Final Written Test (2 hrs.).** Test of knowledge learned.
Lesson 33	**Final Practical Evaluation of Skills (3 hrs.).** Evaluation of skills learned in the emergency care course.
	The use of programmed patient simulations designed to create realistic field situations is mandatory throughout the training. The emphasis must be on the identification, prioritization and treatment of injuries and illnesses. Patient assessment must be reinforced in every practical skill development exercise and the students must be exposed to as many simulated patients as is practical during the course.
In Hospital Observation and Training	As indicated previously, the course includes a minimum of 10 hours of in-hospital observation and training in order to aid the student in becoming familiar with hospital procedures, staff and patient care techniques. It is recommended that such training include emergency, surgical, intensive care, obstetrical and psychiatric areas of a hospital. The course administrator will need to plan this phase of the training program so that the student receives the maximum exposure and benefit from the in-hospital experience. Each session should be no less than 2 hours in length.
	Instruction should be designed to demonstrate the importance and benefits of optimal emergency care, efficient transport, and adequate reporting; to emphasize the penalties of inadequate care and of improper procedures; to familiarize the student with the equipment and procedures used in each hospital department; to have ambulance personnel observe procedures in (and, if possible, 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.

Obviously, the course administrator will need to plan the in-hospital phase of the training in conjunction with the course medical director and representatives of the emergency medical facility. He will need to arrange for the best possible experience and exposure for the student depending on facilities and resources available. It is an important part of the student's training. In addition to providing such clinical exposure, it may provide an opportunity for the student to refine his basic emergency care skills under supervision. It can permit the student to observe continuation of field management and definitive care, and develop interpersonal/interdisciplinary relationships with the hospital staff.

When in-hospital observation and training can not be obtained, all skills and knowledge intended to be taught in this setting must be covered in other clinical settings or, in extreme cases, with programmed patient simulations. All variances of in-hospital observations and training should be approved in advance by the State EMS office.

Although not formally part of the training course, it is recommended that the course coordinator arrange, if possible, for students to participate in ambulance calls. In such experiences, students should serve as a third EMT; they should observe the two primary EMT's and assist them as requested. While the hospital in-service training and a ride-along program may introduce the student to general principles of field care, continuous practice throughout the training program is mandatory for achieving patient treatment proficiency.

In the brief time allotted to in-hospital training and participation in ambulance runs (if included in the course), exposure to a variety of cases may be minimal for any one student. It is therefore recommended that the course coordinator include time in the program, for students to discuss their in-hospital training and ambulance runs. For example, the student who was exposed to a tension pneumothorax could describe observations of the patient condition and management and thereby share experiences with fellow students.

Course Planning Considerations

Course Scheduling

As indicated previously, the course consists of 33 lessons requiring between 3 and 8 hours each plus 10 hours of in-hospital observation and training. The lessons may be given one or more times per week or may be combined into a training day of 5 or 6 hours or more. Regardless of whether the lessons are spread out or given in a compressed time frame, it is recommended that the general sequence of lessons presented in the previous section be followed. The extremes of an extremely compact course e.g. 3 weeks or a prolonged training schedule e.g. 1 year are ineffective and should be discouraged. The in-hospital training may be interspersed throughout the program or scheduled at or near the completion of classroom training. It is recommended that the entire training program be completed within one year.

It is recommended that all EMT-A training be arranged under the sponsorship of the local medical society or medical advisor to ensure medical accuracy and compliance with local treatment protocols. In addition, all courses should be coordinated with the appropriate governmental agency with designated responsibility for direction and planning of emergency medical services.

Class Size

As stated previously, the course emphasizes the development of student skills 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 out 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-discussion** periods of each lesson be limited to 20 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 6 students per instructor and set of equipment.

The limitations on class size have obvious implications for the number of instructor aides 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 6 to 1.

Instructor Qualifications

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 student attainment of specific skills, all instructors must exhibit the following characteristics.

- Be experienced in the field of emergency care.
- Be skilled instructors. Instructor training is recommended.
- Be specialists in the given topic area.
- Be skilled in the use and maintenance of all equipment required for the topic area.
- Be knowledgeable about legal constraints under which emergency medical technicians operate in the area of emergency care, ambulance and rescuer operations, vehicles and equipment, violent cases, procedures for handling the deceased, etc.
- Where required by the State EMS Agency, Instructors should be certified.

Recommended instructors and instructor aides for each lesson are listed on the following pages. It is recommended that the lecture-discussion portions of all medical lessons in the course be taught by physicians qualified in emergency medical care in

the field. Operational lessons should be taught by individuals with extensive experience in the ambulance service area. For instructor aides, maximum use should be made of certified emergency medical technicians and emergency qualified nurses. Instructors for all lessons in which cardiopulmonary resuscitation is taught should be certified by the American Heart Association as CPR instructors.

It is especially important that both the lead instructor and instructor aides for practice, test and evaluation lessons be thoroughly knowledgeable about the information and skills covered in these lessons. The final practical examination of skills should, whenever practical, be conducted by EMS qualified physicians and nurses, and EMT's who have been approved by the State lead EMS agency and who have not participated directly with the course. The final practical examination should be supervised by the course coordinator.

The lead instructor must be able to perform the following teaching functions:

- Deliver lectures
- Lead discussions
- Demonstrate and evaluate skills
- As appropriate, develop and use instructional aids
- As appropriate, develop written and practical examinations.

Should potential instructors lack the teaching skills listed above it will be necessary for the course administrator to arrange for an instructor training course to achieve instructional proficiency. Contact your state EMS office for information concerning such programs.

Recommended Instructors and Instructor Aides for Each Lesson

Lesson	Lead Instructor	Instructor Aides
1. Introduction to emergency care training.	State EMS Office Representative or Assignee.	None required
2. Anatomy and Psychology and Patient Assessment.	Physician, R.N. EMT-P or EMT-A.	EMT-P or EMT-A skilled in patient assessment.
3. Airway Obstruction and Respiratory Arrest.	Respiratory Therapist who is certified as a CPR Instructor.	EMT-P or EMT-A skilled in airway care and pulmonary resuscitation.
4. Cardiac Arrest.	Registered Nurse from Intensive Care Unit or Critical Care Unit who is a CPR Instructor.	Registered Nurse, EMT-P or EMT, certified as a CPR Instructor.
5. Manikin Practice and Certification.	EMT-P or EMT-A who is certified as a CPR Instructor.	EMT-P or EMT-A who is certified as a CPR Instructor.
6. Practical Use of Airway Adjuncts.	Respiratory Therapist who is certified as a CPR Instructor.	Respiratory Therapist, EMT-P or EMT-A, skilled in airway care and pulmonary resuscitation.
7. Bleeding and Shock	Physician	EMT-P or EMT-A.

8. Practice Test and Evaluation Airway Care, Pulmonary Arrest, Cardiac Arrest, Bleeding and Shock.	Course Administrator.	EMT-P or EMT-A certified as a CPR Instructor and proficient in all skills taught in Lessons 2-7.
9. Review of Shock and Introduction to Practical Use of Pneumatic Counter Pressure Devices (MAST).	State EMS Office Representative or Assignee.	EMT-P or EMT-A proficient in the use of pneumatic counter pressure devices.
10. Soft Tissue Injury.	EMT-P or EMT-A.	EMT-P or EMT-A skilled in bandaging.
11. Principles of Musculoskeletal Care and Fractures of the Upper Extremity.	Physician.	EMT-P or EMT-A skilled in splinting and patient examination.
12. Fractures of the Pelvis, Hip and Lower Extremity.	Physician	EMT-P or EMT-A skilled in splinting.
13. Practical Lab: Treatment or Fractures.	EMT-P or EMT-A.	EMT-P or EMT-A skilled in splinting and patient examination.
14. Injuries of the Head, Eye, Assessment Spinal Immobilization.	Physician.	EMT-P or EMT-A skilled in immobilizing patients.
15. Practical Lab: Patient Assessment Spinal Immobilization.	EMT-P or EMT-A.	EMT-P or EMT-A skilled in immobilizing patients.
16. Injuries to the Chest, Abdomen and Genitalia.	Physician.	EMT-P or EMT-A skilled in bandaging and patient examination.
17. Practical Lab: Review.	Course Administrator.	EMT-P or EMT-A skilled in bandaging and patient examination.
18. Test and Evaluation Injuries	Course Administrator.	EMT-P or EMT-A skilled in all materials covered to date.
19. Medical Emergencies I.	Physician	EMT-P or EMT-A certified as a CPR Instructor.
20. Medical Emergencies II.	Physician.	EMT-P or EMT-A skilled in patient assessment.
21. Emergency Childbirth.	Physician or R.N. with obstetrical experience	R.N. EMT-P or EMT-A skilled in teaching childbirth.
22. Burns and Hazardous Materials.	R.N./Burns and Emergency Medical Technician/Hazardous Materials.	R.N. or EMT-P or EMT-A.
23. Environmental Emergencies.	R.N., EMT-P or EMT-A.	None required.

24. Psychological aspects of Emergency Care.	Physician, R.N. or EMT-P.	R.N., EMT-P or EMT-A.
25. Lifting and Moving Patients.	Physical Therapist, EMT-P or EMT-A experienced in lifting and backboards.	Physical Therapist, EMT-P or EMT-A experienced in lifting and backboards.
26. Principles of Extrication.	EMT-P or EMT-A experienced in the principles of extrication.	EMT-P or EMT-A experienced in rescue.
27. Practical Lab: Extrication.	EMT-P or EMT-A.	EMT-P or EMT-A experienced in the principles of extrication.
28. Test and Evaluation—Medical Emergencies, Emergency Childbirth, Environmental Emergencies, Lifting and Moving.	Course Administrator.	EMT-P or EMT-A certified as a CPR Instructors and experienced in all material covered to date.
29. Ambulance Operations I.	State EMS Office Representative or Assignee.	None required.
30. Ambulance Operations II.	EMT-P or EMT-A knowledgeable in all operational subjects taught in course.	
31. Situational Review.	Physician.	None required.
32. Final written test.	Course Administrator	None required.
33. Final Practical Evaluation.	Course Administrator	EMT-P(s) or EMT-A(s) proficient in all skills taught in the course.

The course administrator or coordinator should brief all instructors on their roles and responsibilities prior to teaching the course. The briefing should include the following:

- The state's EMT training program
- The revised course-overall course design, functional training addressed, course objectives
- Course documents
- Technical coverage of each lesson
- Design of lesson plan
- Hints for using the lesson plans—preparing to teach each lesson and teaching tasks involved in each lesson
- Responsibilities relative to aiding students in achieving course objectives
- Administrative responsibilities relative to the course

Materials and Equipment

There are three types of training materials and equipment required for the course. One is the emergency care equipment and supplies required to train the student to perform the EMT's emergency medical care functions. The second is the standard teaching aid consisting of such items as chalkboards, projectors, screens, films, slides and other equipment and materials used by the instructor to facilitate learning. The third consists of student and instructor texts and reference sources.

The emergency care equipment and material requirements are listed by lesson on the following pages. The course coordinator is advised that the list is minimal and designed to provide a standardized base for the course. Where additional updated equipment is available, the course coordinator should include such equipment in the appropriate course lesson.

With regards to teaching aids, no specific set has been defined for this training course. It is assumed that a chalkboard will be available for each lecture-discussion session. It is recommended that the course coordinator preview the Audio-visual aids available as teaching aids for the course. The Audio-visual aids segment on emergency childbirth should show an actual delivery of a baby under field conditions to be a useful adjunct to the lesson on that topic. Other Audio-visual aids or slides should be selected at the discretion of the course administrator and state EMS office. Appropriate projection equipment and screens should be available for lessons in which films or slides are used. It might be noted that, for teaching anatomy and physiology, it would be helpful to have anatomic charts of each system discussed, as well as skeletons and available models of body parts and systems. A Geiger counter would be helpful for the lesson segment on radiation.

Whether prepared by the state EMS office or locally, the following handouts are essential. Additional handouts may be prepared or required.

Course schedule (Lesson 1)

Typical dispatch forms used in the area (Lesson 29)

Typical records and reports used in the area (Lesson 29)

In addition, of course, written tests will be required for Lessons 8, 18, 28 and 32. These tests will need to be developed by the course coordinator and course instructors. Checklists for evaluating student skills will be required for Lessons 8, 18, 28, and 33. Checklists may be developed from the steps for each skill outlined in the *instructor's lesson plans* document or accepted state or local treatment protocols.

All instructors should be provided with the detailed lesson plans from the *instructor's lesson plans* document for their particular topic areas. Sufficient copies of the *student study guide* should be available for each student.

Although the *student study guide* contains many specific facts, it is *not* a text. A standard text or reference source should therefore be chosen for the course. The appropriate text should be selected by the course administrator from a list of approved texts.

The CPR content of the current course was predominately based on the following references:

Standards for cardiopulmonary resuscitation (CPR) *and Emergency Cardiac Care* (ECC). JAMA, Vol. 244; 453-509, August 1, 1980.

For a list of approved textbooks, reference materials, training aids and student handouts, contact the State EMS Office.

Facilities

The standard facility for the majority of the lessons is a lecture hall with sufficient space for seating all students, a lecture and demonstration area, and practice areas (one for each 6 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 physical access to the practice areas.

Each practice area should be carpeted and large enough to accommodate 6 students working individually or in varying size groups, as well as the equipment and medical supplies with which they will be working. 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 motion picture projectors, if used.

One lesson (Lesson 27) 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. The instructor and course coordinator should provide a carefully prepared and hazard-free environment for this lesson.

Material and Equipment Requirements for Each Lesson	Lesson																														
EQUIPMENT/MATERIALS	**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**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**
Adult resuscitation manikin	X		1	1	1	1		1									1	1	1									1			X		X
Infant resuscitation manikin	X		1	1	1	1		1									1	1	1		1							1			X		X
Antiseptic solution and gauze pads	X		1	1	1	1		1									1	1	1		1							1			X		X
Stretcher	X			1	1			1						X	1										1			1			X		X
Oropharyngeal airway	X				6	1													1									1			X		X
Nasopharygeal airway	X				1	1													1									1			X		X
Lubricant jelly	X				3	1													1									1			X		X
Portable suction unit	X				3	1				1	1	1	1				1	1	1									1			X		X
Oxygen equipment and delivery system	X				3	1	1						1				1	1	1									1			X		X
Pocket mask with 02 inlet valve	X				1	1													1									1			X		X
Bag-valve-mask resuscitator	X				1	1													1												X		X
Demand-valve resuscitator	X					1																									X		X
Sphgmomanometer and stethoscope	X	3			3	1	2			1	1			1																	X		X
Universal dressing	X				3	1		3								1	1	1			1						1				X		X
Sterile gauze pads	X				6	1		3								1	1	1			1						1				X		X
Roller bandage	X				6	1		3								1	1	1			1						1				X		X
Self-adherent bandage	X				6	1		3								1	1	1													X		X
Occlusive dressing	X							3								1	1	1													X		X
Triangular bandage	X							3	6	6	6			6																	X		X
Tourniquet + bandage set	X				3	1		3																							X		X
Adhesive tape	X				6	1	1	3					2			1	1	1													X		X
Bandage scissors	X	1			6	1	1	3																							X		X
Moulage kit	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X						X				X		X

Material and Equipment Requirements for Each Lesson (Continued)

EQUIPMENT/MATERIALS	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	26	27	28	29	30	31	32	33
Blanket	X	1			1	1					1	3				1	1	1							3						X	X
Pillow	X				1	1					1	3				1	1	1							3						X	X
Short padded splints (set)	X								1		1																				X	X
Cardboard/ladder/ aluminum splints (set)	X								1		1																				X	X
Pneumatic Counter Pressure Devices	X						2				1	1				1	1	1													X	X
Long padded splints (set)	X								1	1							1	1													X	X
Short air splint	X						1	1	1			1					1	1													X	X
Long air splint	X						1	1	1			1					1	1													X	X
Traction splint	X										1	1					1	1													X	X
Short backboard with straps	X												2	2										1	1	1					X	X
Long backboard with straps	X										1	1	2	2		1								1	1	1					X	X
Sling	X									1																					X	X
Cervical Collar	X												2	2																	X	X
Sandbags	X												2	2	2	1	1							1	1	1					X	X
Cotton-tipped applicator	X														2	1	1							1	1	1					X	X
Eye protector	X																														X	X
Sterile Delivery pack	X																				1										X	X
Obstetrical manikin	X																				1										X	X
Premature infant carrier	X																				1										X	X
Vehicle (wreck)	X																									2					X	X
Extrication equipment	X																								1	2					X	X
Ambulance	X																								1			1			X	X

* Numbers in the table are based on 6 students, e.g., if there are 12 students, all numbers in the table should be doubled. An "x" indicates that only 1 of the items is required for the lesson regardless of the number of students. Where 2 items are boxed, either one or the other item may be employed for that lesson.

** Although no equipment is required for Lesson 1, the Course Administrator may wish to display all equipment and materials used in the course.

Estimating Course Costs

Planning considerations covered in this section of the course *guide* can provide the base for estimating costs for arranging for and conducting the training program. Other costs will be incurred in managing and evaluating the program. Specifically, the course coordinator should consider costs associated with the following:

Salaries:

- Medical Director
- Course coordinator
- Instructors and instructor aides
- Support staff (typing, data collection, records maintenance)

Facilities:

- Classroom and associated equipment (tables, chairs, lectern, etc.)
- Field training facility
- Office space and associated equipment (desks, chairs, files, etc.)

Materials:

- Emergency care equipment and supplies
- Training aids-slides, films, flip charts, projection equipment and screens, etc., handouts.
- Documents—course *guide, instructor's lesson plans, student study guides,* texts, supplementary references

Student and instructor recruiting materials, registration forms, data collection forms, records and reports, postage, etc.

Travel and per diem as appropriate:

- Medical director
- Course Coordinator
- Instructors and instructor aides
- Students

Examination and Certification costs as specified by the State EMS office.

In addition, of course, should training of instructors be required to achieve the specified instructor performance objectives, such costs should be included in estimating overall course costs.

Two of the course coordinator's main responsibilities are smooth functioning and evaluation of the training program. He must monitor the various lessons to assure appropriate content coverage, emphasis and procedures as well as to maintain the program on schedule. In addition, he must assure the collection, maintenance and dissemination as appropriate of any records required to document the conduct of the program and to assess how well the course achieves the objectives it was designed to achieve.

Maintaining Records

With regard to records, it is recommended that the course coordinator maintain, as a minimum, information on the following:

Student recruiting procedures and forms.

Instructor recruiting procedures and forms.

Conducting an instructor orientation.

Student attendance and performance at each lesson including comments as appropriate regarding need for improvement in skills, knowledge, attitudes or personal habits.

Results of evaluation sessions—grades for each written test and completed checklists for each skill evaluation.

Number and qualifications of students completing the course.

Number and qualifications of students who did not complete the course and the reason for not completing the course if known.

Number and qualifications of the instructional team.

Instructor performance.

Description of in-hospital exposure and experience.

Adequacy and availability of facilities and resources.

Costs—total program costs, costs for each program element, cost per student.

The preceding types of information can aid the course coordinator in evaluating each course as it is given and in improving the quality and efficiency of future courses.

Assessing Student Achievement

The training course includes several means for assessing student achievement of performance objectives. As indicated previously, there are interspersed practice, test and evaluation lessons as well as final examinations. The course coordinator is responsible for development, administration and grading of all written and practical examinations. All written examinations should be validated by a responsible agency. With regard to skill examinations, checklists should result in standardized evaluations that utilize appropriate evaluation criteria.

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. It is the responsibility of the course administrator to assure that students attain proficiency in each topic area before they proceed to the next area. If after counseling and special practice, a student fails to demonstrate the ability to learn specific knowledge and skills, the course administrator should not hesitate to fail the student. The level of knowledge 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 course administrator.

Student requirements for completing the course are as follows:

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 remedial sessions may be provided as needed.

Knowledge—In this area, students must receive a passing grade, not only on the final test, but also on selected tests of topic areas. Special remedial sessions may be provided as needed.

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 course administrator, a student missing a lesson may demonstrate the fulfillment of all skills and knowledges covered in this 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 examination sessions may be provided for students who miss tests for valid reasons.

In-hospital training—Prior to certification of course completion, 10 hours of in-hospital observation and training are required. Two consecutive hours are required at any one period.

Certification or licensure—Most states require specific testing, of both a written and practical nature prior to official certification or licensure as an Emergency Medical Technician-Ambulance. This certification or licensure is in addition to course completion and may be required by state statute. Contact the State EMS Office for information.

The ultimate indication of the effectiveness of the program, of course, is how the student performs on the job. If at all possible, the course administrator should include assessments of subsequent patient care provided by each student in his course evaluation plan.

Program Evaluation

An ongoing evaluation process must be initiated to identify organizational or instructional deficiencies which effect student performance. This evaluation process should be twofold in approach, objective and subjective. Two main methods of objective evaluation are generally used: 1. How well do students measure up to standardized examinations? and 2. How well do EMT's comply with established protocols post-training? Group and individual deficiencies in these areas may indicate significant problems in conducting the training course.

Subjective evaluations should be conducted on regular intervals by asking the students written questions on their opinions of program efficiency and effectiveness. At some point, the student should be provided the opportunity to comment on each instructor's presentation style and effectiveness. Likewise, the student should be asked to comment on the program's adherence to the specified course of instruction, the quantity and quality of practical skill development sessions and the validity of the examination sessions.

The purpose of program evaluation is, of course, to strengthen subsequent training efforts. Information provided from all sources should be legitimately reviewed and changes incorporated as suggested. Due to the important nature of this training program every effort should be made to ensure the highest quality of instruction possible.

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