**First Responder:**

**National Standard**

**Curriculum**

United States Department of Transportation

National Highway Traffic Safety Administration

United States Department of Health and Human Services

Maternal and Child Health Bureau

**First Responder: National Standard Curriculum**

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**Preface**

The National Highway Traffic Safety Administration (NHTSA) 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 the *Emergency Medical Services: First Responder Training Course,* deemed of high value to the states in carrying out their training programs. This course revision is being co-sponsored by the Maternal and Child Health Bureau, U.S. Department of Health and Human Services. Additional funding for this project was provided as in-kind services of the Center for Emergency Medicine and through a Grant from the Pittsburgh Emergency Medicine Foundation. This course is one of a series of courses making up a National EMS education program for out-of hospital care. The First Responder is a designated level of emergency medical care provider as outlined by the *National EMS Education and Practice Blueprint*.

The First Responder is an integral part of the Emergency Medical Services System. The term "first responder" has been applied to the first individual who arrives at the scene regardless of the individual's type of credential. It is the goal of the *First Responder: National Standard Curriculum* to provide students with the core knowledge, skills and attitudes to function in the capacity of a first responder. The First Responder uses a limited amount of equipment to perform initial assessment and intervention and is trained to assist other EMS providers. This level of provider is not intended to be utilized as the minimum staffing for an ambulance. Enrichment programs and continuing education will help fulfill other specific needs for the First Responder training.

It is recognized that there may be additional specific education that will be required of First Responders who operate in the field. It is also recognized that practice might differ from locality to locality, and that each training program, or system should identify and provide additional training requirements. Consistent with the intent and design of the *National EMS Education and Practice Blueprint*, some EMS systems will incorporate additional skills into the scope of practice of the First Responder.

**Acknowledgments**

From the very beginning of this revision project, the Department of Transportation relied on the knowledge, attitudes, and skills from hundreds of experts. These individuals sought their own level of involvement and contribution toward accomplishing the goals of this project. These contributions varied from individual to individual, and regardless of the level of involvement, everyone played a significant role in the development of the curriculum. It is essential that those who have assisted with the achievement of this worthy educational endeavor be recognized for their efforts. For every person named, there are 50 or more individuals who should be identified for their contributions. For all who have contributed, named and unnamed, thank you for sharing your vision. Your efforts have helped assure that the educational/training needs of First Responders are met so that they can provide appropriate and effective patient care.

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**Process**

The First Responder: National Standard Curriculum was designed and developed by a Curriculum Development Group (CDG) of emergency medicine and education experts. These experts met in person and via teleconference to review, edit, and critique the developmental document. The Co-Medical Directorsreviewed, critiqued, and approved the medical content of the curriculum. The Co-Principal Investigators and the Project Director actually put the "pen-to-paper" once the objectives and format were approved by the CDG.

Two pilot tests were conducted, one in Raleigh, North Carolina (representing urban/metropolitan First Responders), and the other in New Prague, Minnesota (representing rural First Responders). Eleven students participated in the North Carolina Pilot, and 39 students participated in the Minnesota Pilot. The project team was able to view and modify the content of the curriculum based on insight gathered from the pilot test process.

The National Registry of EMTs designed and developed modular examinations and the final evaluation tools that were used in the pilot test project. They also completed the tabulation and evaluation of the test scores.

**Cardiopulmonary Resuscitation**

This curriculum contains many of the knowledge and skill objectives of cardio-pulmonary resuscitation. In order to maintain an up-to-date curriculum, the didactic material has not been reproduced. Instructors must utilize the current American Heart Association Guidelines and teaching strategies as the basis for instruction in Module 2: Airway and Module 4: Circulation. In some states, or EMS systems, issuance of a "successful completion" card for CPR may be required to practice as a First Responder. Meeting the objectives of this program provides the First Responder with the ability to perform CPR; but the program does not contain all of the prevention and recognition material within the guidelines established by the American Heart Association. During the program, if issuance of a CPR card is desirable or required, additional information must be added to the program. Testing and/or other course requirements for issuance of a specific agency's CPR card will need to be completed within the First Responder Training Program. Requirements for issuing a successful completion card may be obtained from the local CPR training agency or your State Office of Emergency Medical Services.

**Integration with the Blueprint**

*The National EMS Education and Practice Blueprint* (Appendix BP), adopted through a national peer review and consensus process, guided the development of this curriculum. This constitutes the minimum national knowledge and skill competencies for a First Responder, who is identified in the Blueprint as an individual who:

*"...uses a limited amount of equipment to perform initial assessment and intervention and is trained to assist other EMS providers."*

As part of a consistent, organized, state-wide approach to the education and certification/licensure of First Responders, state EMS offices may wish to supplement this minimum national standard curriculum with additional knowledge and skills. However, to be consistent with the intent and philosophy of the *National EMS Education and Practice Blueprint,* state-wide additions to the First Responder's education and scope of care should reflect the Blueprint's continuum of knowledge and skills.

Each level of knowledge and skill includes all previous levels. If knowledge or skill items are "out of synch" with the logical continuum, the utility and value of the Blueprint is significantly decreased. For example, in the Core Component of CIRCULATION, Automated Defibrillation is the next skill above First Responder and comes before Pneumatic Anti-Shock Garment (PASG). Therefore, if the PASG is a skill added by a state to the First Responder Program, consistency with the Blueprint would require that AED be included also.

When knowledge and skills are added to the First Responder's scope of care, the additional information should be consistent with the corresponding levels of the next higher level of national curriculum. For instance, if a state requires automated external defibrillation at the First Responder level, the corresponding lesson from the *1994 EMT-Basic: National Standard Curriculum* should be used thus assuring a logical, inclusive continuum of education.

Vital signs, supplemental oxygen, automated defibrillation, simple immobilization and other knowledge or skills may be added to the First Responder program and remain consistent with the Blueprint providing they are allowable by the state EMS office, occur in the same order identified in the Blueprint continuum, and reflect the content of the *1994 EMT-Basic: National Standard Curriculum.*

**Medical Oversight Statement**

Medical oversight should exist for the First Responder to help ensure quality care. This should occur in the context of the local EMS System's medical oversight. The primary role of the physician will be to supervise the development of patient care protocols and to respond to questions about patient care issues.

Quality improvement is also a required component of EMS training. The role of medical oversight is paramount in ensuring the highest quality out-of-hospital care. Medical directors should work with individuals and systems to review out-of-hospital cases and achieve a sound method of continuous quality improvement.

**Curriculum**

**History**

The *First Responder: National Standard Curriculum* was last reviewed in the late 1970s. The current revision came about as a result of the National Highway Traffic Safety Administration's (NHTSA) January 1990 *Consensus Workshop on Emergency Medical Services Training Programs*. Participants discussed the national training curricula needs of Emergency Medical Service (EMS) providers. Using a nominal group process, the participants identified the top priority needs for EMS training in the United States.

The top priorities identified at that meeting led to issuance of a Request for Proposal (RFP) by NHTSA to revise the *Emergency Medical Service: First Responder Training Course* based upon the 1994 *EMT-Basic: National Standard Curriculum* and the *National EMS Education and Practice Blueprint.* The following priorities from the 1990 consensus workshop recommendations played a directing role in the revision of this First Responder Curriculum:

Review and development of a blueprint/model and core curriculum for each provider level, based upon task analysis focusing on field impact (evaluating positive/negative outcomes) and the most utilized knowledge and skill areas. Identify "need to know" versus "nice to know" content. Conduct an analysis of interventions and outcomes for both the patient and the care provider. (What are we really doing in EMS? What's making a difference? Define what we want to do).

Establish a Physician Board to review and approve all medical curriculum content.

Emphasize an assessment-based format rather than a diagnostic-based format for all levels and all ages.

Ensure that there is adequate focus on primary skills of assessment and ABCs in all provider levels (with emphasis on airway).

Include an objective assessment of all published studies in peer journals when revising curricula.

Emphasize rescuer and patient safety components, including infection control, in all curricula.

Ensure that out-of-hospital providers have adequate skills to care for children and infants by integrating information throughout the curricula at all levels, within the established course items.

Build in clearly defined medical control for all levels, not just EMT-Paramedic.

Utilize measurable educational objectives (knowledge, skills, judgement) to determine individuals' learning needs and duration of training program.

Develop a nationally acceptable core curriculum for each provider level, with a mechanism for customizing for local needs.

Place curriculum revision emphasis on EMT-A and First Responder courses.

Revise basic course to be no more than 110 hours in length.

Add automated defibrillation (fully automatic and semi-automatic) for CPR by EMTs and First Responders.

Develop an integrated/situational (real-world) approach for EMT training.

Develop a mechanism for consensus on EMS education among national groups.

Evaluate delivery methods of training.

Include sufficient information in basic EMT-A curriculum to comply with hazardous materials (HAZMAT) worker protection standard.

Include more on medical emergencies as opposed to trauma (including airway).

**Course Goals**

This instructor's course guide has been designed and developed to assist the course coordinator, instructors, and others in planning, managing and teaching the First Responder: National Standard Curriculum. The goals and objectives of this curriculum are to improve the quality of emergency medical care.

This course is designed to instruct a student to the level of First Responder, who serves as a vital link in the chain of the health care team. This curriculum includes skills necessary for the individual to provide emergency medical care with a limited amount of equipment. Specifically, after successful completion of the program, the student will be capable of performing the following functions at the minimum entry level:

Recognize the seriousness of the patient's condition or extent of injuries to assess requirements for emergency medical care;

Administer appropriate emergency medical care for life threatening injuries relative to airway, breathing and circulation;

Perform safely and effectively the expectations of the job description.

It is obvious that First Responders provide a service in an environment requiring special skills and knowledge. They also serve as liaisons with other emergency services. This course provides an introduction to these concepts. Individual orientation to the specific systems and services with which the First Responder will be affiliated is necessary to achieve a full level of competency within a specific organization.

The entire curriculum is surrounded by continuing education, which is designed to reflect two primary goals. First, during the instruction of the First Responder: National Standard Curriculum, additional continuing education in related content may be provided. Second, continuing education is an integral component of any educational process and the First Responder should be committed to continuous improvement of knowledge and skills.

**FIRST RESPONDER: NATIONAL STANDARD CURRICULUM**

**DIAGRAM OF EDUCATIONAL MODEL**

**Course Design**

**Module 1 Preparatory**

**Lesson 1-1**

**Introduction to EMS Systems**

Familiarizes the First Responder candidate with the introductory aspects of emergency medical care. Topics include the Emergency Medical Services system, roles and responsibilities of the First Responder, quality improvement, and medical oversight.

**Lesson 1-2**

**Well-Being of the First Responder**

Covers the emotional aspects of emergency medical care, stress management, introduction to Critical Incident Stress Debriefing (CISD), scene safety, body substance isolation (BSI), personal protection equipment (PPE), and safety precautions that can be taken prior to performing the role of a First Responder.

**Lesson 1-3**

**Legal and Ethical Issues**

Explores the scope of practice, ethical responsibilities, advance directives, consent, refusals, abandonment, negligence, duty to act, confidentiality, medical identification symbols, and crime scenes.

**Lesson 1-4**

**The Human Body**

Enhances the First Responder's knowledge of the human body. A brief overview of body systems, anatomy, and physiology will be given in this session.

**Lesson 1-5**

**Lifting and Moving Patients**

Provides students with knowledge of body mechanics, lifting and carrying techniques, and principles of moving patients.

**Lesson 1-6**

**Evaluation: Preparatory**

Evaluates the student's level of achievement of the cognitive, psychomotor, and affective objectives for this module of instruction.

**Module 2 Airway**

**Lesson 2-1**

**Airway**

Addresses airway anatomy and physiology, how to maintain an open airway, pulmonary resuscitation, variations for infants and children, as well as patients with laryngectomies. The use of airways, suction equipment, and barrier devices will be discussed in this lesson. Also included is the management of foreign body airway obstructions.

**Lesson 2-2**

**Practical Lab: Airway**

Provides supervised practice for students to develop the psychomotor skills of airway care. The use of airways, suction equipment, and barrier devices will be included in this lesson. Students will have an opportunity to practice the techniques of removing a foreign body airway obstruction.

**Lesson 2-3**

**Evaluation: Airway**

Evaluates the student's level of achievement of the cognitive, psychomotor, and affective objectives for this module of instruction.

**Module 3 Patient Assessment**

**Lesson 3-1**

**Patient Assessment**

Enhances the First Responder's ability to evaluate a scene for potential hazards, to determine the number of patients, whether additional help is necessary, and to evaluate the mechanism of injury or nature of illness. This lesson provides the knowledge and skills to properly perform the initial assessment. In this session, the student will learn about forming a general impression, determining responsiveness, and assessing the airway, breathing, and circulation. Students will discuss how to determine priorities of patient care. This lesson also teaches the knowledge and skills required to continue the assessment and management of the ill or injured patient.

**Lesson 3-2**

**Practical Lab: Patient Assessment**

Integrates the knowledge and skills learned thus far to assure that the student has the knowledge and skills of assessment necessary to continue with the management of patients with medical complaints and traumatic injuries.

**Lesson 3-3**

**Evaluation: Patient Assessment**

Evaluates the student's level of achievement of the cognitive, psychomotor, and affective objectives for this module of instruction.

**Module 4 Circulation**

**Lesson 4-1**

**Circulation**

This lesson provides the First Responder with the knowledge and skills of chest compressions and ventilations for adults, children, and infants.

**Lesson 4-2**

**Practical Lab: Circulation**

Draws on the knowledge and skills learned thus far in this practical lab. Students will be given the opportunity to practice CPR skills.

**Lesson 4-3**

**Evaluation: Circulation**

Evaluates the student's level of achievement of the cognitive, psychomotor, and affective objectives for this module of instruction.

**Module 5 Illness and Injury**

**Lesson 5-1**

**Medical Emergencies**

Discusses the recognition and management of general medical complaints, seizures, altered mental status, environmental emergencies, behavioral emergencies, psychological crisis, and typical patient situations.

**Lesson 5-2**

**Bleeding and Soft Tissue Injuries**

Reviews the cardiovascular system, describes the care of the patient with internal and external bleeding, and teaches the management of soft tissue injuries and burns. Techniques of dressing and bandaging wounds will also be taught in this lesson.

**Lesson 5-3**

**Injuries to Muscles and Bones**

Reviews the anatomy of and injuries to the musculoskeletal system. Presents information about injuries of the skeletal system. Reviews the anatomy of the nervous system and the skeletal system. Discusses injuries to the spine and head, including the mechanism of injury, signs and symptoms of injury, and assessment.

**Lesson 5-4**

**Practical Lab: Illness and Injury**

Provides practice in assessing and managing patients with traumatic injuries.

**Lesson 5-5**

**Evaluation: Illness and Injury**

Evaluates the student's level of achievement of the cognitive, psychomotor, and affective objectives for this module of instruction.

**Module 6 Children and Childbirth**

**Lesson 6-1**

**Childbirth**

Reviews the anatomical and physiological changes that occur during pregnancy. Demonstrates deliveries and newborn care.

**Lesson 6-2**

**Infants and Children**

Presents information concerning anatomical differences in infants and children, discusses common medical and trauma situations.

**Lesson 6-3**

**Practical Lab: Children and Childbirth**

Provides the First Responder student with the opportunity to interact with infants and children and to practice the knowledge and skills learned thus far concerning this special population.

**Lesson 6-4**

**Evaluation: Childbirth and Children**

Evaluates the student's level of achievement of the cognitive, psychomotor, and affective objectives for this module of instruction.

**Module 7 EMS Operations**

**Lesson 7-1**

**EMS Operations**

Presents an overview of the knowledge needed to function as a First Responder in the out-of-hospital environment. In addition this lesson provides the First Responder student with an overview of extrication and rescue operations and information on hazardous materials, mass casualty situations, and basic triage.

**Lesson 7-2**

**Evaluation: EMS Operations**

Evaluates the student's level of achievement of the cognitive, psychomotor, and affective objectives for this module of instruction.

**How to Use the Curriculum and Lesson Plans**

There are seven modules of instruction in the core content. There are 26 lessons within the seven modules. Each lesson has the following components:

**Objectives**

The objectives are divided into three categories: Cognitive, Affective, and Psychomotor.

CognitiveAffectivePsychomotor

**thinking--emotional response--physical process--**

knowledgefeelingsphysical movement

comprehensionemotional intensityskilled activities

application

To assist with the design and development of a specific lesson, each objective has a numerical value, e.g., 3-1.1. The first number is the module of instruction, followed by a hyphen and the number of the specific lesson. For example, 3-1.1 is:

Module 3:Patient Assessment

Lesson 3-1:Patient Assessment

Objective 3-1.1Recognize hazards/potential hazards. (C-1)

At the end of each objective is a letter for the type of objective: C = Cognitive; A = Affective; and P = Psychomotor. (The example above is cognitive). The number following the type of objective represents the level of objective: 1 = Knowledge; 2 = Application; and 3 = Problem Solving. (The example above is knowledge).

**Preparation**

Motivation -- Each lesson has a motivational statement that should be read by the instructor prior to teaching the lesson. It is not the intent for the instructor to necessarily read the motivational statement to the students, but more importantly to be familiar with its content and to be able to prepare the students or explain why this lesson is important.

**Prerequisites**

Prior to starting a lesson, the instructor should assure that the students have completed the necessary prerequisites.

**Materials**

Audio Visual (AV) Equipment -- In recent years, high quality video materials have become available for the EMS community. They should be used as an integral part of the instruction in this program. The course coordinator should ensure in advance that the necessary types of AV equipment are available for the class. If possible, the course administrator should have a video library available for the student.

**Emergency Medical Services (EMS) Equipment**

Each lesson plan contains a list of equipment that should be available for instruction.

**Personnel**

Primary Instructor

Assistant Instructor

Program personnel are a primary instructor and an assistant instructor. Their roles of the program personnel are discussed in more detail under Program Personnel.

**Recommended Minimum Time to Complete**

Each lesson plan has a recommended minimum time for completion. Although the time for each lesson has been pilot tested, because of the varying nature of adult learners the enrichment and the need for remediation may require additional time. Time limits may be extended to bring the students to the full level of competency.

**Presentation**

**Declarative (What)** -- This is the cognitive lesson plan, the information that the instructor provides the students. This may be accomplished by various methods, including lectures, small group discussion, and the use of audio-visual materials. Demonstrations, if the instructor desires, may be used as part of the instruction. The instructor must be well versed in the entire content of the lesson plan. It is not appropriate to read the lesson plans word for word to the students. Lesson plans should be considered dynamic documents that provide guidelines for the appropriate flow of information. The instructor's lesson plans should be based upon local practice, national standards, and scientific evidence approved by the Course Medical Director. The instructor should feel free to write notes in the margins and make the lesson plan his own.

**Application**

**Procedural (How)**

This is the skills portion of the program. The students should be able to demonstrate competency in all skills listed in each section. If the declarative (what) content was presented as a lecture, the instructor should perform demonstrations prior to having the students perform the skills. If the instructor performed a demonstration as part of the declarative component, the students may begin by practicing skills in the practical setting.

When this component of the lesson is being conducted, there should be one instructor for every six students. Students should be praised for their progress. For those students having difficulty performing a skill or skills, remediation is required. It is well known that a demonstration must be followed by practice, which must be drilled to a level that assures mastery of the skill. It has been proven that demonstration followed as soon as possible by organized, supervised practice enhances mastery and successful applications.

**Contextual (When, Where, and Why)**

This section is designed to help the students understand the application of their knowledge and skills relating to their performance as First Responders. This section relates back to the motivational statement and represents the reasoning as to why, where, and when a First Responder would need to use the knowledge or perform the skills. It is of utmost importance that the instructor be familiar with the intent of this section and relay that intent to the students.

**Student Activities**

Students learn by various methods. The three learning styles are auditory, visual, and kinesthetic (A-V-K). The intent of this section is to ensure that the content of the curriculum is presented to meet the needs of the three different types of learning styles. These three areas should not necessarily be used separately from the lesson plan, but as an adjunct to it. An attempt to provide instruction to the student with these three types of modalities will enhance student learning. Instructors should feel free to add additional A-V-K experiences appropriate for each lesson.

**Auditory (Hearing)**

This section allows the instructor to provide material in an orally. Students who learn best by hearing will benefit from this method of instruction.

**Visual (Seeing)**

This section allows the instructor to provide material in a visually. Visual learners will benefit from this method of instruction.

**Kinesthetic (Doing)**

This section allows the instructor to teach material by having the students perform the skill. Those students who learn best by doing will benefit from this method of instruction.

**Instructor Activities**

This section is to remind the instructors that they should always supervise student practice and praise progress. They should reinforce student progress in cognitive, affective, and psychomotor domains. If students are having difficulty understanding the content or performing the skills, the instructor should redirect them. If additional time is needed to complete this task beyond the assigned times of the program, the instructor should complete a remediation form to schedule additional assistance for the student or group of students experiencing difficulty with the task.

**Evaluation**

**Written --**The instructor should design and develop various quizzes, verbal reviews, handouts, and any other desired materials for the students. Ideally, the instructor should provide a brief quiz after every lesson to determine if the students are comprehending the material.

**Practical --** The instructor should provide students with practical evaluations when applicable. The skill sheets provided within the curriculum will assist the students in preparing for field performance and the final practical evaluation. State EMS Offices and program personnel should work together to determine minimum performance for successful course completion.

**Remediation**

The intent of this section is to ensure that the instructor meets the needs of those students who are experiencing difficulty understanding the material or performing practical skills. Remediation sheets supplied in this guide will enable the instructor to keep track of those students. If a student requires remediation frequently, a decision should be reached as to whether the student should continue in the program. (see Appendix E for Remediation sheet.)

**Enrichment**

This section is designed to allow the instructors, the course medical director, the course coordinator, the region, or state to add additional information, or augment the curriculum. Anything that is unique to your area should be added. Refer to Appendix D for an Enrichment Lesson Plan.

**Instructors**

**Assessing Student Achievement**

This training program includes several methods for assessing student achievement. As mentioned before, quizzes of the cognitive and affective domains should be provided at the completion of each lesson. Time is allocated at the end of each module of instruction for a cognitive and psychomotor evaluation. The primary instructor in conjunction with the course coordinator, program director, and course medical director is responsible for the design, development, administration and grading of all written and practical examinations. The instructor should feel free to use outside agency-approved psychomotor evaluation instruments or those found in texts. All written examinations used within the program should be valid and reliable and conform to psychometric standards. Instructors should be encouraged to use outside sources to validate examinations and/or as a source of classroom examination items.

The primary purpose of this course is to prepare students to meet the entry-level job expectations for a First Responder. Each student, therefore, must demonstrate attainment of knowledge, attitude, and skills in each area taught in the course. It is the responsibility of the course coordinator, medical director, primary instructor, and educational institution to assure that students obtain proficiency in each module of instruction before they proceed to the next area. If after counseling and remediation a student is not able to demonstrate the ability to learn specific knowledge, attitudes, and skills, the program director should not hesitate to dismiss the student. The level of knowledge, attitude and skills attained by a student in the program will be reflected in performance on the job as a First Responder. It is not the responsibility solely of the certifying examination to assure competency over successful completion of the course. Program directors should recommend only qualified candidates for licensure, certification or registration.

Requirements for successful completion of the course are as follows:

**Cognitive** -Students must obtain passing grades on all module examinations and the final examination. Special remedial sessions may be utilized to assist in the completion of a lesson or module of instruction. Scores should be in accordance with accepted practices.

**Affective** - Students must demonstrate conscientiousness and interest in the program. Students who do not should be counseled while the course is in progress in order to provide them the opportunity to develop and exhibit the proper attitude expected of a First Responder.

**Psychomotor** -Students must demonstrate proficiency in all skills in each testing session of selected topic areas and mastery of skills in the final examination. Special remedial sessions may be utilized to assist in the completion of a lesson or module of instruction. Pass/fail scores should be in accordance with accepted practices. Usage of the skill measurement instruments within this curriculum or developed by way of a valid process is strongly recommended to achieve maximum results with the students.

The additional areas that should be utilized for evaluation of student achievement include:

**Personal Appearance** - Each student should be neat, clean, well groomed, and physically fit to perform the minimal entry-level job requirements. Students who do not exhibit good hygiene habits should be counseled while the program is in session to provide them with the opportunity to correct the habits.

**Attendance** - Students are required to attend all lessons. At the discretion of the program director or designee, a student missing a lesson may demonstrate the fulfillment of all cognitive, affective, and psychomotor objectives covered in the missed lesson.

**Clinical or Field Rotation Experience** - Prior to certification of course completion, some states may require satisfactory clinical or field experience.

**Program Personnel**

There are several sets of responsibilities required to present the First Responder program. These identified roles and responsibilities are a necessary part of each First Responder course. The individuals carrying them out may vary from program to program and from locality to locality as the roles may interface and overlap. In fact, one person, if qualified, may carry out all of the roles in some programs.

For clarity, the following terms are defined as they will be used throughout this document.

**Program Director:**The program director is responsible for course planning, operation, and evaluation. While the Program Director is responsible for the overall operation of the education experience, this person need not be qualified or involved in the actual instruction of specific course lessons. The Program Director is responsible for First Responder course planning.

**Course Coordinator**:The Course Coordinator is the individual responsible for coordinating and conducting the First Responder program. The Course Coordinator acts as the liaison among the students, the sponsoring agency, the local medical community, and the state-level certifying or licensing agency and is responsible for assuring that the course goals and objectives (and those set forth by any licensing, registering, or certifying agency as applicable) are met. The Course Coordinator may also serve as the Primary Instructor.

**Primary Instructor**:The Primary Instructor must be knowledgeable in all aspects of out-of-hospital emergency medical care, in the techniques and methods of adult education, and in managing resources and personnel. This individual should have attended and successfully completed a program in EMS instruction methodology. The Primary Instructor should be present at most, if not all, class sessions to assure program continuity and to be able to identify that the students have the cognitive, affective, and psychomotor skills necessary to function as a First Responder. This person is responsible for the teaching of a specific lesson of the First Responder course. This individual should have attended a workshop that reviews the format, philosophy, and skills of the new curriculum.

**Assistant Instructor**:This person assists the Primary Instructor of any lesson in the demonstration and practice designed to develop and evaluate student skill competencies.

**Course Medical Director**:The program should have a course Medical Director. The need for an active medical director increases as the state adds enhancements to the scope of practice as reflected in the *National EMS Education and Practice Blueprint*. When utilized, the Course Medical Director, Course Coordinator, and the Primary Instructor should work closely together in preparing and presenting the program. The Course Medical Director may also serve as the Primary Instructor for one or more or all lessons. The Course Medical Director must be a physician knowledgeable of state EMS rules, EMS system configuration, national standards of care, and educational principles.

**Philosophy Regarding Adult Learners**

Individuals participating in this educational program should be considered adult learners even in those programs instructing students younger than age 18. Adult learners are responsible for their own learning. There are several characteristics regarding the adult learner as a First Responder student.

1.First Responder students usually want to utilize knowledge and skills they have learned soon after they have learned them.

2.First Responder students are interested in learning new concepts and principles; they enjoy situations that require problem-solving, not necessarily learning facts. It is less difficult for them to use the concepts and principles they have gained if they are able to participate actively in the learning process.

3.First Responder students learn best if they are able to proceed at their own pace.

4.Motivation is increased when the content is relevant to the immediate interests and concerns of the First Responder student.

5.Immediate feedback is essential to the First Responder student, who needs to be kept informed of progress continuously.

One intent of this revised curriculum is to alter the methods of instruction used by the instructor. This curriculum has been designed and developed to reduce the amount of lecture time and move towards an environment of discussion and practical skills. This way both learners and instructors are active in the process of learning.

**Some Principles of Adult Education**

**1.Attract and maintain the attention of the First Responder student.**

If instructors get off to a bad start, it is often because they are not able to successfully gain and maintain the attention of the student. In these situations, students may be enthusiastic when they arrive and disappointed when they leave.

A clear statement of the purpose of each lesson is of utmost importance in gaining the student's attention. This may be accomplished by using the information found in the motivational statement or the contextual statement of the lesson plan.

There are many methods that may be used to gain the student's attention, e.g., telling a relevant anecdote, posing a unique situation, or asking how they would solve a problem. Once the attention of the student is gained, it must be maintained throughout the entire lesson. After about 15-20 minutes of presentation, it is essential that the student be reinvolved in the learning process. Three methods are often utilized to keep the students active in the process: questioning, brainstorming, and demonstration.

Questions should be used to promote thought, to evaluate what has been learned, and to continuously move students toward their desired goal. Questioning students keeps them actively involved and keeps them thinking. It is also appropriate to ask rhetorical questions that are not meant to be answered by the student, but that encourage thinking. Questions should be open-ended, that is questions should not have "yes" or "no" answers. Questions should be a significant part of the lesson and should be used in both didactic and practical presentation.

Brainstorming is a special and different type of questioning. This process generates a wide variety of creative ideas. There is no right or wrong answer, only creative thinking. A question is posed to the students, and they are then allowed to provide as many answers as possible. After all the ideas have been presented, the students can be moved toward the appropriate and important points.

The third technique is demonstration, which bridges the gap between theory and practice. When demonstrating, it is beneficial to involve the students in the process. Demonstration should be used during the didactic component of the presentation to break up long runs of lecture material.

**2.Make the presentation clear and keep it organized.**

By following the lesson plans, instruction can be clear and organized. However, there are some additional tips that may assist further.

1.Tell the students what you are going to tell them.

2.Tell them.

3.Show them.

4.Let them try.

5.Observe.

6.Praise progress and redirect.

7.Tell them what you have told them.

8.Have them summarize what they have learned.

To help keep lessons clear, the students should know the objectives. The objectives should be presented to the students on the first day of class. It may be beneficial to give students the written lesson plans and allow them to write additional information in the margins.

**Conducting Patient Care Simulations in the Classroom**

Adults crave hands on training. One very effective method of teaching is the use of a patient care simulation in the classroom. This is actually acting out an EMS call to give the student the opportunity to respond with equipment, evaluate the scene, assess the patient, control life threats and do any of the treatments covered in the course which would be appropriate while waiting for the ambulance to arrive.

Simulations give students the opportunity to demonstrate integration of the courses cognitive, affective, and psychomotor objectives into a real life scenario while working with a team of first responders. This is an application which puts it all together for the student as they will find patients in the field by incorporating their ability to hear, see, and do as well as begin to emphasize teamwork and leadership skills.

**Continuing Education**

It will be necessary to provide updates to the primary instructor and assistant instructors regarding new curriculum material, and annual updates should be scheduled to inform instructors of current trends in out-of-hospital emergency medicine.

**Students**

**Job Description - First Responder**

The First Responder may function in the context of a broader role, i.e., law enforcement, fire rescue, or industrial response. With a limited amount of equipment, the First Responder answers emergency calls to provide efficient and immediate care to ill and injured patients. After receiving notification of an emergency, the First Responder safely responds to the address or location given.

Functions in uncommon situations;

Has a basic understanding of stress response and methods to ensure; personal well-being;

Has an understanding of body substance isolation;

Understands basic medical-legal principles;

Functions within the scope of care as defined by state, regional and local regulatory agencies;

Complies with regulations on the handling of the deceased, protection of property and evidence at scene, while awaiting additional EMS resources;

Before initiating patient care, the First Responder will "size-up" the scene to determine that the scene is safe, to identify the mechanism of injury or nature of illness, and the total number of patients, and to request additional help if necessary. In the absence of law enforcement, creates a safe traffic environment. Using a limited amount of equipment, renders emergency medical care to adults, children, and infants based on assessment findings. Duties include but are not limited to:

Opening and maintaining an airway;

Ventilating patients;

Administering cardiopulmonary resuscitation;

Providing emergency medical care of simple and multiple system trauma such as:

Controlling hemorrhage,

Bandaging wounds,

Manually stabilizing injured extremities.

Providing emergency medical care to:

Assist in childbirth

Manage general medical complaints, altered mental status, seizures, environmental emergencies, behavioral emergencies and psychological crises.

Searching for medical identification emblems as a guide to appropriate emergency medical care.

Reassuring patients and bystanders by working in a confident, efficient manner.

Avoiding mishandling and undue haste while working expeditiously to accomplish the task.

Where a patient must be extricated from entrapment, assesses the extent of injury and assists other EMS providers rendering emergency medical care and protection to the entrapped patient. Performs emergency moves and assists other EMS providers in the use of the prescribed techniques and appliances for safely removing the patient. Under the direction and supervision of other EMS providers, assists in lifting the stretcher, placing the stretcher in the ambulance, and seeing that the patient and stretcher are secured. If needed, radios the dispatcher for additional help or special rescue and/or utility services. In cases of multiple patients, performs basic triage.

Reports directly to the responding EMS unit or communications center the nature and extent of injuries, the number of patients, and the condition of each patient. Identifies assessment findings that may require communicating with medical oversight for advice.

Constantly assesses patient while awaiting additional EMS resources. Administers additional care as indicated.

Orally reports their observations and emergency medical care of the patient to the transporting EMS unit. Upon request, provides assistance to the transporting unit staff.

After each call, restocks and replaces used supplies, cleans all equipment following appropriate disinfecting procedures, and carefully checks all equipment to ensure availability for next response.

Attends continuing education and refresher education programs as required by employers, medical oversight, and licensing or certifying agencies.

Meets qualifications within the functional job analysis. See Appendix A.

**Continuing Education and Its Importance in Lifelong Learning**

This curriculum is designed to provide the student with the essentials to serve as a First Responder. Employers and service chiefs are strongly encouraged to integrate new graduates into specific orientation training programs.

It is important to understand that this curriculum does not provide students with extensive knowledge in hazardous materials, blood-borne pathogens, emergency vehicle operations, or rescue practices in unusual environments. These areas are not core elements of education and practice as identified in the *National EMS Education and Practice Blueprint*. Identified areas of competency not specifically designed within the First Responder: National Standard Curriculum may be taught in conjunction with this program as a local or state option.

**Environment**

**Classroom Environment**

The intent of the revised curriculum is to allow for greater interaction between students and instructors. The instruction should be highly experiential and interactive. By using the procedural (how) section of the application area of the lesson plan as well as the kinesthetic (do) component of the student activity section, the instructor should be able to enhance the educational experience for the students.

**Clinical/Field Rotations**

Some states may require that the student have patient interactions in a clinical/field setting.

**Maintaining Records**

It is recommended that the Program Director/Course Coordinator maintain, as a minimum, information on the following:

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 and counseling sessions.

Grades for each written examination and completed checklists for each skill evaluation.

Number and qualifications of the instructional team.

Instructor performance.

Cost: total program costs, costs for each program element, and costs per student.

Lists of enrichments and add-on courses taught in conjunction with the program.

Results of course entry examinations and qualifications as required by the certifying agency, state EMS office, course medical director, or training institution.

**Credentialing**

In addition to course completion state regulatory agencies may require specific evaluation of cognitive and/or psychomotor performance prior to official licensure, certification, or registration as a First Responder. The National Registry of EMTs is a recognized agency that provides examinations for such certification and registration. The program director should contact the State Office of Emergency Medical Services for licensure, certification, or registration information.

**Program Evaluation**

On-going evaluation of the program must be conducted to identify instructional or organizational deficiencies affecting student performance. The evaluation process should be two-fold in nature, objective and subjective. Two main methods of objective evaluation generally used are:

1)How well do students measure up to standardized examination?

2) How well do First Responders practice in accordance with established standards of care?

Group and individual deficiencies may indicate problems in the training program.

Subjective evaluation should be conducted at regular intervals by providing students with written questions on their opinions of the program's strengths and weaknesses. Students should be given the opportunity to comment on the primary and assistant instructors, presentation styles and effectiveness. Students should also be asked to comment on the program's compliance with specified course of instruction, the quality and quantity of psychomotor skills labs, and the face validity of the examinations.

The purpose of this evaluation process is to strengthen future training efforts. All information obtained as part of the subjective evaluation should be reviewed for legitimacy and possible incorporation into the course. Due to the important nature of this educational program, every effort should be made to ensure instruction of the highest quality.

**Facilities**

The physical environment of the First Responder program is a critical component for the success of the overall program. The facility should have a large hall with sufficient space for seating all students. Abundant space should be made available for demonstrations. Additional rooms or adequate space should be available as a practice areas.

It is recommended that all the required equipment for the program be stored at the facility for ready availability. The facility should be well lit for adequate viewing of various types of visual aids and demonstrations. Heating and ventilation should assure student and instructor comfort, and the seats should be comfortable with desk tops or tables for taking notes. There should be an adequate number of tables for display of equipment, medical supplies, and training aids. A chalkboard (flip chart or grease board) should be in the main hall. A projection screen and appropriate audio visual equipment should be located in the presentation facility. If possible, light switches should be conveniently located in the presentation area. The practice areas should be carpeted and large enough to accommodate six students, one instructor, and the necessary equipment and medical supplies. Tables should be available for practice areas, with appropriate and sufficient equipment and medical supplies.

**Course Cost**

The cost for the provision of the First Responder education varies widely across the nation. Training considerations provided in this section may serve as a basis for estimating costs for conducting a First Responder program. Additional costs will be incurred in the management and evaluation of the program. Specifically, the course director should consider costs associated with the following:

**1.Compensation**

Program director

Medical director

Course coordinator

Primary instructor

Assistant instructors

**2.Facilities**

Classroom and associated equipment (tables, chairs, audio-visual equipment)

Field and clinical training facilities

Office space and associated equipment (desks, chairs, files)

**3. Materials**

Emergency medical care equipment and supplies

Educational aids (slides, film, video, flip chart, projection equipment, screens, handouts)

Documents, e.g., Instructor's Course Guide, Instructor's Lesson Plans, text material, study guides, reference books

Student and instructor recruiting materials, registration forms, data collection forms, records and reports, and postage should be considered in the formal budget.

**4.Travel and per diem, as appropriate**

Medical director

Program director

Course coordinator

Primary instructor

Assistant instructors

Students

**5.Examination and certification costs**

Examination and certification costs are as specified by the state emergency medical services office. If it is necessary to provide instruction to the primary instructor or assistant instructors, that cost should also be considered in calculating the overall cost of the First Responder program. In addition, it will be necessary to provide updates to the primary instructor and assistant instructors regarding new curriculum material. Annual updates should be scheduled to inform instructors of current trends in out-of-hospital emergency medicine.

**Module 1: Preparatory**

**Lesson 1-1 Introduction to EMS Systems**

**Objectives**

**Objectives Legend**

C=Cognitive P=Psychomotor A=Affective

1 =Knowledge level

2 = Application level

3 = Problem-solving level

**Cognitive Objectives**

At the completion of this lesson, the First Responder student will be able to:

1-1.1Define the components of Emergency Medical Services (EMS) systems. (C-1)

1-1.2Differentiate the roles and responsibilities of the First Responder from other out-of-hospital care providers. (C-3)

1-1.3Define medical oversight and discuss the First Responder's role in the process. (C-1)

1-1.4Discuss the types of medical oversight that may affect the medical care of a First Responder. (C-1)

1-1.5State the specific statutes and regulations in your state regarding the EMS system. (C-1)

**Affective Objectives**

1-1.6Accept and uphold the responsibilities of a First Responder in accordance with the standards of an EMS professional. (A-3)

1-1.7Explain the rationale for maintaining a professional appearance when on duty or when responding to calls. (A-3)

1-1.8Describe why it is inappropriate to judge a patient based on a cultural, gender, age, or socioeconomic model, and to vary the standard of care rendered as a result of that judgement. (A-3)

**Psychomotor Objectives**

***No psychomotor objectives identified.***

**Preparation**

**Motivation:**

The field of out-of-hospital emergency medical care is an evolving profession in which the reality of life and death is confronted at a moment's notice. EMS has developed from the days when the local funeral home served as the ambulance provider to a far more sophisticated system today. First Responders work within the EMS system to help deliver professional out-of-hospital emergency medical care. This course is designed to help the new First Responder gain the knowledge, skills, and attitudes necessary to be a competent, productive, and valuable member of the emergency medical services team.

**Prerequisites:**

None

**Materials**

**AV Equipment:**

Utilize various audio-visual materials relating to emergency medical care. The continuous development of new audio-visual materials relating to EMS requires careful review to determine which best meet the needs of the program. Materials should be edited to ensure that the objectives of the curriculum are met.

**EMS Equipment:**

None required

**Personnel**

**Primary Instructor:**

One First Responder Instructor knowledgeable in First Responder Course overview, administrative paperwork, certification requirements, Americans with Disabilities Act issues, and roles and responsibilities of the First Responder.The medical director should be present for the discussion of medical oversight.

**Assistant Instructor:**

None required

**Recommended Minimum Time to Complete:**

One hour

**Presentation**

**Declarative (What)**1. Course Overview

A.Paperwork

1.School

2.State

3.Local

B.Course description and expectations

C.Immunizations/physical exam

D.Review criteria for certification

1.Successful course completion

2.Mentally/physically meet criteria of safe and effective practice of job functions. **(REFER TO APPENDIX A, Functional Job Analysis)**

3.Written examination

4.Practical examination

5.State and local provisions

E.Policy on the Americans with Disabilities Act (ADA)

1.School policies

2.State policies

3.Local Policies

F.Policy on harassment in the classroom environment

1.School policies

2.State policies

3.Local Policies

G.Advancement to the EMT-Basic Level

I.The Emergency Medical Services System and the First Responder

A.Overview of the Emergency Medical Services system

1.A network of resources to provide emergency care and transport to victims of sudden illness and injury

a.Prevention of injury

b.Occurrence of the event

c.Recognition of the event and activation of the system

d.Bystander care/dispatch instructions

e.Arrival of First Responders

(1 Fire/Rescue Personnel

(2 Law enforcement

(3 Industrial response teams

f.Arrival of additional EMS resources

g.Emergency medical care at the scene

h.Transport to receiving facility

i.Transfer to in-hospital care system

2.Ten Classic Components of an EMS System

a.Regulation and policy

b.Resource management

c.Human resources and training

d.Transportation

e.Facilities

f.Communications

g.Public information and education

h.Medical oversight

i.Trauma systems

j.Evaluation

3.Access to the emergency medical services system

a.9-1-1

(1 Basic

(2 Enhanced 9-1-1

b.Non 9-1-1

4.Levels of training

a.First Responder

b.EMT-Basic

c.EMT-Intermediate

d.EMT-Paramedic

5.The in-hospital care system

a.Emergency departments

b.Specialty facilities

(1 Trauma centers

(2 Burn centers

(3 Pediatric Centers

(4 Perinatal centers

(5 Poison centers

c.Hospital personnel

(1 Physicians

(2 Nurses

(3 Other allied health professionals

6.Overview of the local EMS system

B.Roles of the First Responder

1.Personal, crew, patient, and bystander safety

2.Gaining access to the patient

3.First Responder patient assessment to identify life threatening conditions

4.Continuation of care through additional EMS resources

5.Initial patient care based on assessment findings

6.Assisting with the additional care

7.Participation in record keeping/data collection as per local/state requirements

8.Liaison with other public safety workers

a.Local law enforcement

b.State and federal law enforcement

c.Fire departments

d.EMS Providers

C.Responsibilities of the First Responder

1.Personal health and safety

2.Maintain caring attitude - reassure and comfort patient, family, and bystanders while awaiting additional EMS resources

3.Maintain composure

4.Neat, clean, and professional appearance

5.Maintain up-to-date knowledge and skills

a.Continuing education

b.Refresher courses

6.Put patient's needs as a priority without endangering self.

7.Maintain current knowledge of local, state, and national issues affecting EMS.

D.Medical Oversight

1.Definition

a.A formal relationship between the EMS providers and the physician responsible for the out-of-hospital emergency medical care provided in a community.

b.This physician is often referred to as the system medical director.

c.Every EMS System must have medical oversight.

2.Types of medical oversight

a.Direct medical control

(1 Also called "on-line", "base station", "immediate", or "concurrent"

(2 Simultaneous physician direction of a field provider.

(3 Communication may be via radio, telephone, or actual contact with a physician on-scene

b.Indirect medical control

(1 Also called "off-line", "retrospective", or "prospective"

(2 Includes everything that is not direct medical control

(3 System elements under medical oversight include:

(a system design

(b protocol development

(c education

(d quality management

3.The relationship of the First Responder to medical oversight

a.The First Responder may be a designated agent of the physician

b.Care rendered may be considered an extension of the medical director's authority (varies by state law).

E.Specific statutes and regulations regarding EMS in your state

**Application**

**Procedural (How)**

None identified for this lesson.

**Contextual (When, Where, Why)**

The student will use this information throughout the course to enhance his understanding and provide direction for the First Responder's relationship to the individual components of the EMS system. The lesson will provide the student with a road map for learning the skill and knowledge domains of the First Responder. Additionally, this lesson will identify that not all students meet the mental and physical requirements of the career field. After completion of the course, the First Responder will use this information to understand the process of gaining and maintaining certification, as well as understanding state and local legislation affecting the profession. This lesson sets the foundation for the remaining teaching/learning process. A positive, helpful attitude presented by the instructor is *essential* to assuring a positive, helpful attitude from the student.

**Student Activities**

**Auditory (Hearing)**

1.Students will hear specifically what they can expect to receive from the training program.

2.Students will hear the specific expectations of the training program.

3.Students will hear actual state and local legislation relative to EMS practice and certification.

**Visual (Seeing)**

1.Students will see audio-visual materials explaining the components of the health care system, First Responder level of care, First Responder's roles and responsibilities, professional attributes, and certification requirements.

2.Students will receive a copy of the cognitive, affective, and psychomotor objectives for the entire curriculum.

3.Students will receive the final skill evaluation instruments.

**Kinesthetic (Doing)**

1.Students will complete the necessary course paperwork.

2.Students will practice situations in which First Responders portray professional attributes.

3.Students will indicate if they will require/request assistance during the course or certification process based on the Americans with Disabilities Act. Additionally, students will provide the necessary documentation to support the requirements/request.

**Instructor Activities**

Facilitate discussion and supervise practice.

Reinforce student progress in cognitive, affective, and psychomotor domains.

Redirect students having difficulty with content. (Complete remediation form.)

**Evaluation**

**Written:**

Develop evaluation instruments, e.g., quizzes, oral reviews, and handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

**Practical:**

Evaluate the actions of the First Responder students during role play, practice or other skill stations to determine their compliance with the cognitive and affective objectives and their mastery of the psychomotor objectives of this lesson.

**Remediation**

Identify students or groups of students who are having difficulty with this subject content. Complete remediation sheet from the instructor's course guide.

**Enrichment**

What is unique in the local area concerning this topic? Complete enrichment sheets from instructor's course guide and attach with lesson plan.

**Lesson 1-2**

**The Well-Being of the First Responder**

**Objectives**

**Objectives Legend**

C=Cognitive P=Psychomotor A=Affective

1 =Knowledge level

2 = Application level

3 = Problem-solving level

**Cognitive Objectives**

At the completion of this lesson, the First Responder student will be able to:

1-2.1List possible emotional reactions that the First Responder may experience when faced with trauma, illness, death, and dying. (C-1)

1-2.2Discuss the possible reactions that a family member may exhibit when confronted with death and dying. (C-1)

1-2.3State the steps in the First Responder's approach to the family confronted with death and dying. (C-1)

1-2.4State the possible reactions that the family of the First Responder may exhibit. (C-1)

1-2.5Recognize the signs and symptoms of critical incident stress. (C1)

1-2.6State possible steps that the First Responder may take to help reduce/alleviate stress. (C-1)

1-2.7Explain the need to determine scene safety. (C-2)

1-2.8Discuss the importance of body substance isolation (BSI). (C-1)

1-2.9Describe the steps the First Responder should take for personal protection from airborne and bloodborne pathogens. (C-1)

1-2.10List the personal protective equipment necessary for each of the following situations:(C-1)

- Hazardous materials

- Rescue operations

- Violent scenes

- Crime scenes

- Electricity

- Water and ice

- Exposure to bloodborne pathogens

- Exposure to airborne pathogens

**Affective Objectives**

At the completion of this lesson, the First Responder student will be able to:

1-2.11Explain the importance for serving as an advocate for the use of appropriate protective equipment. (A-3)

1-2.12Explain the importance of understanding the response to death and dying and communicating effectively with the patient's family.

1-2.13Demonstrate a caring attitude towards any patient with illness or injury who requests emergency medical services. (A-3)

1-2.14Show compassion when caring for the physical and mental needs of patients. (A-3)

1-2.15Participate willingly in the care of all patients. (A-3)

1-2.16Communicate with empathy to patients being cared for, as well as with family members, and friends of the patient. (A-3)

**Psychomotor Objectives**

At the completion of this lesson, the First Responder student will be able to:

1-2.17Given a scenario with potential infectious exposure, the First Responder will use appropriate personal protective equipment. At the completion of the scenario, the First Responder will properly remove and discard the protective garments. (P-1,2)

1-2.18Given the above scenario, the First Responder will complete disinfection/cleaning and all reporting documentation. (P-1,2)

**Preparation**

**Motivation:**

First Responders encounter many stressful situations when providing emergency medical care to patients. These range from death and terminal illness to major traumatic situations and child abuse. First Responders will treat angry, scared, violent, seriously injured and ill patients and family members. The First Responder is not immune to the personal effects of these situations. First Responders will learn during this lesson what to expect and how to assist the patient, patient's family, the First Responder's family, and other First Responders in dealing with the stress. This lesson discusses methods of talking to friends and family, without violating confidentiality, but as a means of helping them cope with involvement in EMS. Finally, aspects of personal safety will be discussed. It is important to realize this is only a brief overview and will be readdressed with each specific skill or topic. To put this in perspective, remember: A dead or injured First Responder is of little or no use to a patient.

**Prerequisites:**

None

**Materials**

**AV Equipment:**

Utilize various audio-visual materials relating to emergency medical care. The continuous development of new audio-visual materials relating to EMS requires careful review to determine which best meet the needs of the program. Materials should be edited to ensure that the objectives of the curriculum are met.

**EMS Equipment:**

Eye protection, gowns, gloves, masks, forms for reporting exposures.

**Personnel**

**Primary Instructor:**

One First Responder instructor knowledgeable in critical incident stress debriefing, identifying child/elderly abuse, stages of death and dying, and aspects of scene safety.

**Assistant Instructor:**

None required

**Recommended Minimum Time to Complete:**

One hour

**Presentation**

**Declarative (What)**1.Emotional Aspects of Emergency Medical Care

A.Stressful situations

1.Examples of situations that may produce a stress response

a.Mass casualties

b.Pediatric patients

c.Death

d.Infant and child trauma

e.Amputations

f.Violence

g.Infant/child/elder/spouse abuse

h.Death/injury of co-worker or other public safety personnel

2.The First Responder will experience personal stress as well as encounter patients and bystanders in severe stress.

B.Death and dying

1.Everyone is affected by death (family, First Responder, bystanders)

2.Response is highly individualized

3.The grieving process helps people cope with death

4.You will interact with people in all phases of the grieving process

5.Familiarity with the normal grieving process may provide insight to reactions.

a.Denial/Disbelief

(1 "Not me."

(2 Defense mechanism creating a buffer between shock of dying and dealing with the illness/injury.

(3 Often families will be at the denial stage, which is difficult to deal with.

b.Anger

(1 "Why me?"

(2 First Responders may be the target of the anger.

(a Don't take anger or insults personally.

(b Be tolerant.

(c Do not become defensive.

(d Employ good listening and communication skills.

(e Be empathetic.

c.Bargaining

(1 "OK, but first let me..."

(2 )Agreement that, in the patient's mind, will postpone the death for a short time.

d.Depression

(1 Characterized by sadness and despair.

(2 Patient is usually silent and retreats into his own world.

e.Acceptance

(1 Does not mean the patient will be happy about dying.

(2 The family will usually require more support during this stage than the patient.

6.Dealing with the dying patient and family members

a.Patient needs include dignity, respect, sharing, communication, privacy, and control.

b.Allow family members to express rage, anger, and despair.

c.Listen empathetically.

d.Do not falsely reassure.

e.Use a gentle tone of voice.

f.Let the patient know that everything that can be done to help will be done.

g.Use a reassuring touch, if appropriate.

h.Comfort the family.

C.Stress management

1.Recognize warning signs

a.Irritability to co-workers, family, friends

b.Inability to concentrate

c.Difficulty sleeping/nightmares

d.Anxiety

e.Indecisiveness

f.Guilt

g.Loss of appetite

h.Loss of interest in sexual activities

i.Isolation

j.Loss of interest in work

2.Life-style changes

a.Helpful for "job burnout"

b.Change diet

(1 Reduce sugar, caffeine, and alcohol intake

(2 Avoid fatty foods

c.Avoid alcohol

d.Exercise

e.Practice relaxation techniques, meditation, visual imagery

3.Balance work, recreation, family, health, etc.

4.EMS personnel and their families and friends responses

a.Lack of understanding

b.Fear of separation and being ignored

c.On-call situations cause stress

d.Frustration caused by wanting to share

5.Work environment changes

a.Request work shifts allowing for more time to relax with family and friends.

b.Request a rotation of duty assignment to a less stressful assignment.

6.Seek/refer professional help.

a.Mental health professionals

b.Social workers

c.Clergy

D.Comprehensive critical incident stress management includes:

1.Pre-incident stress education

2.On-scene peer support

3.One-on-one support

4.Disaster support services

5.Critical Incident Stress Debriefing (CISD)

6.Follow-up services

7.Spouse/family support

8.Community outreach programs

9.Other health and welfare programs such as wellness programs

E.Critical incident stress

1.The normal stress response to abnormal circumstances

2.A system has been developed to assist emergency workers to cope with stressful situations.

3.Usually consists of a team of peer counsellors and mental health professionals.

4.Designed to accelerate the normal recovery process after experiencing a critical incident.

5.Techniques

a.Defusings

(1)Much shorter, less formal and less structured version of CISD

(2)Used a few hours after the event

(3)Last 30-45 minutes.

(4)Allow for initial ventilation

(5)May eliminate the need for a formal debriefing

(6)May enhance the formal debriefing.

b.Debriefings

(1)Meeting is held within 24 to 72 hours of a major incident.

(2)Open discussion of feelings, fears, and reactions

(3)Not an investigation or interrogation

(4)All information is confidential

(5)CISD leaders and mental health personnel evaluate the information and offer suggestions on overcoming the stress.

6.When to access CISD

a.Line of duty death or serious injury

b.Multiple casualty incident

c.Suicide of an emergency worker

d.Serious injury or death of children

e.Events with excessive media interest

f.Victims known to the emergency personnel

g.Event that has unusual impact on the personnel

h.Any disaster

7.How to access the local CISD system

I.Body Substance Isolation (BSI)

A.First Responders must be aware of the risks associated with emergency medical care.

1.Barrier devices or ventilation masks should be used when ventilating a patient.

2.Personal protective equipment should be utilized as needed or required by the local system.

3.First responders are exposed to infectious diseases when treating patients.

a.Assess potential for risk

b.Take appropriate precautions

B.OSHA/state regulations regarding BSI

C.Infection Control

1.Techniques to prevent disease transmission

a.Handwashing/personal hygiene

b.Equipment replacement, cleaning, and disinfection

2.Body substance isolation

a.Eye protection

(1)If prescription eyeglasses are worn, then removable side shields can be applied to them.

(2)Goggles are NOT required.

b.Gloves (vinyl or latex, synthetic)

(1)Needed for contact with blood or other body fluids.

(2)Should be changed between contact with different patients.

c.Gloves (utility) - needed for cleaning vehicles and equipment

d.Gowns

(1)Needed for large splash situations such as with childbirth and major trauma.

(2)Change of uniform is preferred.

e.Masks

(1)Surgical type for possible blood splatter (worn by care provider)

(2)High Efficiency Particulate Air (HEPA) respirator (worn by provider) if patient is suspected of or diagnosed with tuberculosis. HEPA filters are primarily used in enclosed spaces - uncommon for First Responder

(3)Airborne disease - surgical type mask (worn by patient)

f.Requirements and availability of specialty training

3.Recommended immunizations

a.Tetanus prophylaxis

b.Hepatitis B vaccine

c.Tuberculin testing

d.Others

e.Access or availability of immunizations in the community

D.Statutes/regulations reviewing notification and testing in an exposure incident

II.Scene Safety

A.Scene safety

1.Definition - an assessment of the scene and surroundings that will provide valuable information to the First Responder and will help ensure the well-being of the First Responder.

2.Personal protection - Is it safe to approach the patient?

a.Crash/rescue scenes

b.Toxic substances - low oxygen areas

c.Crime scenes - potential for violence

d.Unstable surfaces: slope, ice, water

3.Protection of the patient - environmental considerations

4.Protection of bystanders - do not let the bystander become ill or injured

5.If the scene is unsafe, make it safe. Otherwise, do not enter.

B.Personal Protection

1.Hazardous materials

a.Identification of potential hazards

(1)Binoculars

(2)Placards

(3)Hazardous Materials, The Emergency Response Handbook, published by the United States Department of Transportation

b.First Responders provide care only after the scene is safe and containment is completed.

c.Hazardous materials scenes are controlled by hazardous materials teams.

d.Requirements and availability of specialty training

e.Accessing local teams

2.Motor vehicle crashes

a.Identify and reduce potential life threats

(1)Electricity

(2)Fire

(3)Explosion

(4)Hazardous materials

(5)Traffic

b.Dispatch rescue teams for extensive or heavy rescue

3.Violence

a.Violent scenes should always be controlled by law enforcement personnel before the First Responder enters the scene and provides patient care.

b.Actions at crime scene

(1)Do not disturb the scene unless required for medical care.

(2)Maintain a chain of evidence.

**Application**

**Procedural (How)**

1.The First Responder will know how to access additional information on hazardous materials and infectious disease exposure, notification and follow-up.

**Contextual (When, Where, Why)**

1.The First Responder will use the aspects of scene safety and personal protection every day and on every emergency run.

2.While the First Responder may not be a member of a hazardous material or heavy rescue team, this lesson should provide the personal incentive to seek out and attend continuing education programs relative to personal safety during hazardous material incidents, rescue situations, and violent crime scenes.

3.If the First Responder fails to develop personal safety skills, his or her First Responder career may come to a premature end through serious injury or death.

4.The well-being of the First Responder depends upon the ability to recognize that stressful traumatic situations do occur and that the effect of those situations is felt by the patient, family members, and the First Responder. In recognizing this, the First Responder must be aware of internal and external mechanisms to help himself or herself, the patient, the patient's family, First Responder's family, and other First Responder's deal with reactions to stress.

5.The First Responder will use proper communication techniques when dealing with the grieving process.

**Student Activities**

**Auditory (Hearing)**

1.The student should hear the instructor state methods of communicating with patients and family members of terminally ill patients.

2.The student should hear the instructor state methods of communicating with friends and family members of a dead or dying patient.

**Visual (Seeing)**

1.The student should see various audio-visual materials of scenes requiring personal protection.

2.The student should see various audio-visual materials of personal protection clothing worn by hazardous material/rescue teams.

3.The student should see the gown, gloves, masks, and eye protection associated with body substance isolation (BSI).

**Kinesthetic (Doing)**

1.The student should role play, talking to patients in various stressful/traumatic situations.

2.The student should practice putting on and removing gowns, gloves and eye protection gear.

**Instructor Activities**

Facilitate discussion and supervise practice.

Reinforce student progress in cognitive, affective, and psychomotor domains.

Redirect students having difficulty with content. (Complete remediation form.)

**Evaluation**

**Written:**

Develop evaluation instruments, e.g., quizzes, oral reviews, and handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

**Practical:**

Evaluate the actions of the First Responder students during role play, practice or other skill stations to determine their compliance with the cognitive and affective objectives and their mastery of the psychomotor objectives of this lesson.

**Remediation**

Identify students or groups of students who are having difficulty with this subject content. Complete remediation sheet from the instructor's course guide.

**Enrichment**

What is unique in the local area concerning this topic? Complete enrichment sheets from instructor's course guide and attach with lesson plan.

**Lesson 1-3**

**Legal and Ethical Issues**

**Objectives**

**Objectives Legend**

C=Cognitive P=Psychomotor A=Affective

1 =Knowledge level

2 = Application level

3 = Problem-solving level

**Cognitive Objectives**

At the completion of this lesson, the First Responder student will be able to:

1-3.1Define the First Responder scope of care. (C-1)

1-3.2Discuss the importance of Do Not Resuscitate [DNR] (advance directives) and local or state provisions regarding EMS application. (C1)

1-3.3Define consent and discuss the methods of obtaining consent. (C-1)

1-3.4Differentiate between expressed and implied consent. (C-3)

1-3.5Explain the role of consent of minors in providing care. (C-1)

1-3.6Discuss the implications for the First Responder in patient refusal of transport. (C-1)

1-3.7Discuss the issues of abandonment, negligence, and battery and their implications to the First Responder. (C-1)

1-3.8State the conditions necessary for the First Responder to have a duty to act. (C-1)

1-3.9Explain the importance, necessity and legality of patient confidentiality. (C-1)

1-3.10List the actions that a First Responder should take to assist in the preservation of a crime scene. (C-3)

1-3.11State the conditions that require a First Responder to notify local law enforcement officials. (C-1)

1-3.12Discuss issues concerning the fundamental components of documentation. (C-1)

**Affective Objectives**

At the completion of this lesson, the First Responder student will be able to:

1-3.13Explain the rationale for the needs, benefits and usage of advance directives. (A-3)

1-3.14Explain the rationale for the concept of varying degrees of DNR. (A-3)

**Psychomotor Objectives**

***No psychomotor objectives identified.***

**Preparation**

**Motivation:**

Legal and ethical issues are a vital element of the First Responder's daily life. Should a First Responder stop and treat an automobile crash victim when off duty? Should patient information be released to the attorney on the telephone? Can a child with a broken arm be treated even though the parents are not at home and/or only the child care provider is around? These and many other legal and ethical questions face the First Responder every day. Guidance will be given in this lesson to answer these questions and learn how to make the correct decision when other legal and ethical questions arise.

**Prerequisites:**

None.

**Materials**

**AV Equipment:**

Utilize various audio-visual materials relating to emergency medical care. The continuous development of new audio-visual materials relating to EMS requires careful review to determine which best meet the needs of the program. Materials should be edited to ensure that the objectives of the curriculum are met.

**EMS Equipment:**

None required.

**Personnel**

**Primary Instructor:**

One First Responder instructor knowledgeable in the legal aspects and ethical issues that the First Responder will encounter.

**Assistant Instructor:**

None required

**Recommended Minimum Time to Complete:**

One and a half hours

**Presentation**

**Declarative (What)**1.Scope of Care

A.Legal duties to the patient, medical director, and public

1.Provide for the well-being of the patient by rendering necessary interventions outlined in the scope of care.

2.Defined by state law

a.Enhanced by medical oversight through the use of protocols and standing orders

b.Referenced to the National Standard Curricula

3.Legal right to function as a First Responder may be contingent upon medical oversight.

a.Telephone/radio communications

b.Approved standing orders/protocols

c.Responsibility to medical oversight

B.Ethical responsibilities

1.Make the physical/emotional needs of the patient a priority.

2.Practice of skills to the point of mastery.

3.Attend continuing education/refresher programs.

4.Review performances, seeking ways to improve response time, patient outcome, communication.

5.Honesty in reporting

I.Competence

A.Competence is the ability to understand the questions of the First Responder and to understand the implications of decisions made.

B.In order for a First Responder to receive consent or refusal of care, the First Responder should determine competence.

C.May not be possible in certain cases:

1.Intoxication

2.Drug ingestion

3.Serious injury

4.Mental incompetence

II.Consent

A.A competent patient has the right to make decisions regarding care.

B.A patient must consent to emergency medical care.

C.The acceptance of care based on the information provided

D.Types of consent

1.Expressed

a.Patient must be competent and of legal age

b.Patient must be informed of the steps of the procedures and all related risks.

c.Must be obtained from every responsive, mentally competent adult before rendering emergency medical care.

d.Methods of obtaining consent

(1)Identify yourself

(2)Inform the patient of your level of training

(3)Explain the procedures to the patient

(a)Identify the benefits

(b)Identify the risks

2.Implied

a.Consent assumed from the unresponsive patient requiring emergency intervention

b.Based on the assumption that the unresponsive patient would consent to life saving interventions

E.Children and mentally incompetent adults

1.Consent for emergency medical care must be obtained from the parent or legal guardian.

a.Emancipation issues

b.State regulations regarding age of minors

2.When life threatening situations exist and the parent or legal guardian is not available for consent, emergency medical care should be rendered based on implied consent.

III.Advance Directives/Do Not Resuscitate (DNR) orders

A.Patient has the right to refuse resuscitative efforts.

B.In general, requires written order from physician.

C.Review state and local legislation/protocols relative to DNR orders and advance directives.

D.When in doubt or when written orders are not present, the First Responder should begin resuscitation efforts.

IV.Refusals

A.Competent adult patients have the right to refuse emergency medical care.

B.The First Responder should not make an independent decision regarding the refusal of care.

C.The patient may withdraw from emergency medical care at any time. Example: an unresponsive patient regains responsiveness and refuses transport to the hospital.

D.Refusals must be made by mentally competent adults following the rules of expressed consent.

E.The patient must be informed of and fully understand all the risks and consequences associated with refusal of emergency medical care

F.When in doubt, err in favor of providing care.

G.The First Responder must ensure that additional EMS resources will evaluate the patient.

H.While awaiting arrival of additional EMS resources the First Responder should:

1. Try again to persuade the patient to accept care.

2. Determine whether the patient is able to make a rational, informed decision, e.g., is not under the influence of alcohol or other drugs or illness/injury effects.

3. Inform the patient why he/she should accept care and what may happen to him if he does not.

4. Consult medical oversight as directed by local protocol.

5.Consider assistance of law enforcement.

6. Report any assessment findings and emergency medical care provided.

V.Assault/Battery

A.Not a universal definition

B.Unlawfully touching a patient without consent

C.Providing emergency medical care when a competent patient does not consent to the emergency medical care

VI.Abandonment - terminating care of the patient without insuring that care will continue at the same level or higher.

VII.Negligence

A.Deviation from the accepted standard of care resulting in further injury to the patient.

B.Components of negligence

1.Duty

a.Duty to Act

(1)A contractual or legal obligation must exist.

(2)Formal - As part of First Responder's occupation, they are required to render emergency medical care.

(3)Implied

(a)Patient calls for assistance and the dispatcher confirms that help is being sent.

(b)The First Responders are dispatched as part of the EMS response.

(c)Emergency medical care is begun on a patient.

(4)"Legal" duty to act

(a)Varies according to state law

(b) Moral considerations

(c)Ethical considerations.

(5)Specific state regulations regarding duty to act.

b.Duty to act appropriately

(1)Following guidelines for standards of care

(2)Acting as another prudent individual would in that situation

2.Breach of the duty

a.Failure to act

b.Failure to act appropriately

3.Injury/damages were inflicted

a.Physical

b.Psychological

4.The actions or lack of actions of the First Responder caused the injury/damage.

VIII.Confidentiality

A.Confidential information

1.Patient history gained through interview

2.Assessment findings

3.Emergency medical care rendered

B.Releasing confidential information

1.Release of information requires a written release form signed by the patient.

2.Do not release any patient information on request, unless authorized in writing.

3.Release are not required when:

a.Other health care providers need to know information to continue care.

b.State law requires reporting incidents (examples: rape, abuse or gun shot wounds).

c.Subpoena

IX.Special Situations - Medical Identification Insignia

A.Bracelet, necklace, card

B.Indicates a medical condition of the patient

1.Allergies

2.Diabetes

3.Epilepsy

X.Potential Crime Scene/Evidence Preservation

A.Dispatch should notify police personnel.

B.Responsibility of the First Responder

1.Emergency medical care of the patient is the First Responder's priority.

2.Do not disturb any item at the scene unless emergency medical care requires it.

3.Observe and document anything unusual at the scene.

4.If possible, do not cut through holes in clothing from gunshot wounds or stabbing.

XI.Documentation

A.Fundamental medical documentation

1.System/local requirements for documentation

2.State requirements for documentation

B.Special Reporting Situations

C.Established by state regulations or statutes and may vary from state to state

D.Commonly required reporting situations

1.Abuse

a.Child

b.Elderly

c.Spouse

2.Crime

a.Wounds sustained or potentially sustained by violent crime

b.Sexual assault

E.Infectious disease exposure

**Application**

**Procedural (How)**

None identified for this lesson.

**Contextual (When, Where, Why)**

Legal and ethical issues are present in every aspect of patient care. Decisions to treat or not treat a patient, to release or not release information, to report or not report an incident all require a knowledge of current state and local legislation, policy, and protocol. Up-to-date knowledge of the current legal interpretation of issues such as negligence, battery, confidentiality, consent, and refusal of emergency medical care is essential for the First Responder.

**Student Activities**

**Auditory (Hearing)**

1.Students should hear actual case law and common law decisions relative to First Responder care.

**Visual (Seeing)**

1.Students should see actual copies of medical identification insignia, organ donor cards, Do Not Resuscitate orders, and information release forms.

2.Students should see audio-visual materials of definitions of legal terms such as negligence, abandonment, battery, duty to act, consent, confidentiality.

**Kinesthetic (Doing)**

1.Students should practice making decisions while role playing the various legal and ethical situations that occur in the EMS environment (including consent, abandonment, battery, duty to act, negligence, and confidentiality).

2.Students should role play situations in which DNR orders are in effect.

3.Students should role play situations of patients refusing emergency medical care.

**Instructor Activities**

Facilitate discussion and supervise practice.

Reinforce student progress in cognitive, affective, and psychomotor domains.

Redirect students having difficulty with content. (Complete remediation form.)

**Evaluation**

**Written:**

Develop evaluation instruments, e.g., quizzes, oral reviews, and handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

**Practical:**

Evaluate the actions of the First Responder students during role play, practice, or other skill stations to determine their compliance with the cognitive and affective objectives and their mastery of the psychomotor objectives of this lesson.

**Remediation**

Identify students or groups of students who are having difficulty with this subject content. Complete remediation sheet from the instructor's course guide.

**Enrichment**

What is unique in the local area concerning this topic? Complete enrichment sheets from instructor's course guide and attach with lesson plan.

**Lesson 1-4**

**The Human Body**

**Objectives**

**Objectives Legend**

C=Cognitive P=Psychomotor A=Affective

1 =Knowledge level

2 = Application level

3 = Problem-solving level

**Cognitive Objectives**

At the completion of this lesson, the First Responder student will be able to:

1-4.1Describe the anatomy and function of the respiratory system. (C-1)

1-4.2Describe the anatomy and function of the circulatory system. (C-1)

1-4.3Describe the anatomy and function of the musculoskeletal

system. (C-1)

1-4.4Describe the components and function of the nervous system. (C-1)

**Affective Objectives**

***No affective objectives identified.***

**Psychomotor Objectives**

***No psychomotor objectives identified.***

**Preparation**

**Motivation:**

To perform an adequate patient assessment, the First Responder must be familiar with the normal anatomy of the human body and topographical terminology. This information will provide a solid cornerstone on which the First Responder can build the essentials of quality patient assessment and management.

**Prerequisites:**

None

**Materials**

**AV Equipment:**

Utilize various audio-visual materials relating to emergency medical care. The continuous development of new audio-visual materials relating to EMS requires careful review to determine which best meet the needs of the program. Materials should be edited to ensure that the objectives of the curriculum are met.

**EMS Equipment:**

Anatomy models (skeleton, respiratory system, airway, heart)

**Personnel**

**Primary Instructor:**

One First Responder instructor knowledgeable in human body systems and topographical terminology.

**Assistant Instructor:**

None required.

**Recommended Minimum Time to Complete:**

One hour

**Presentation**

**Declarative (What)**1.Body Systems

A.The Musculoskeletal system

1.The Skeletal System

a.Function

(1)Gives the body shape

(2)Protects vital internal organs

b.Components

(1)Skull - houses and protects the brain

(2)Face

(3)Spinal Column

(4)Thorax

(a)Ribs

(b)Breastbone (sternum)

i)Xiphoid process - lowest portion of the sternum

ii)Landmark for determining hand position for chest compressions

(5)Pelvis

(6)Lower extremities

(a)Thigh (femur)

(b)Knee cap (patella)

(c)Shin (tibia and fibula)

(d)Ankle

(e)Feet

(f)Toes

(7)Upper extremities

(a)Shoulder (collar bone and shoulder blade)

(b)Upper arm (humerus)

(c)Forearm (radius and ulna)

(d)Wrist

(e)Hand

(f)Fingers

(8)Joints - where bones connect to other bones

2.The Muscular System

a.Function

(1)Give the body shape.

(2)Protect internal organs.

(3)Provide for movement.

b.Components

(1)Voluntary (skeletal)

(a)Attached to the bones.

(b)Under control of the nervous system and brain. Can be contracted and relaxed by the will of the individual.

(c)Responsible for movement.

(2)Involuntary (smooth)

(a)Found in the walls of the tubular structures of the gastrointestinal tract and urinary system.

(b)Also in the blood vessels and bronchi.

(3)Cardiac

(a)Found only in the heart.

(b)Can tolerate interruption of blood supply for only very short periods.

B.The Respiratory system

1.Function

a.Deliver oxygen to the body

b.Remove carbon dioxide from the body

2.Components/anatomy

a.Nose and mouth

b.Pharynx

(1)Oropharynx

(2)Nasopharynx

c.Epiglottis - a leafshaped structure that prevents food and liquid from entering the trachea during swallowing.

d.Windpipe (trachea)

e.Voice box (larynx)

f.Lungs

g.Diaphragm

3.Physiology

a.Diaphragm moves down, chest moves out, drawing air into the lungs (inhalation)

b.Exchange of oxygen and carbon dioxide in the lungs

c.Diaphragm moves up causing air to exit the lungs (exhalation)

4.Infant and child anatomy and physiology considerations

a.All structures are smaller and more easily obstructed than in adults.

b.Infants' and children's tongues take up proportionally more space in the mouth than adults.

c.The trachea is more flexible in infants and children.

d.The primary cause of cardiac arrest in infants and children is an uncorrected respiratory problem.

C.The Circulatory system

1.Function

a.Deliver oxygen and nutrients to the tissues

b.Remove waste products from the tissues

2.Components/Anatomy

a.Heart

(1)Atrium

(a)Right - receives blood from the veins of the body

(b)Left - receives blood from the lungs

(2)Ventricle

(a)Right - pumps blood to the lungs.

(b)Left - pumps blood to the body.

(c)Valves prevent back flow of blood.

b.Arteries

(1)Carry blood away from the heart to the rest of the body.

(2)Major arteries

(a)Carotid

i)Major artery of the neck.

ii)Pulsations can be palpated on either side of the neck.

(b)Femoral

i)The major artery of the thigh.

ii)Pulsations can be palpated in the groin area (the crease between the abdomen and thigh).

(c)Radial

i)Major artery of the lower arm.

ii)Pulsations can be palpated at palm side of the wrist thumb-side.

(d)Brachial

i)An artery of the upper arm.

ii)Pulsations can be palpated on the inside of the arm between the elbow and the shoulder.

c.Capillaries

(1)Tiny blood vessels that connect arteries to veins

(2)Found in all parts of the body

(3)Allow for the exchange of oxygen and carbon dioxide

d.Veins - vessels that carry blood back to the heart

e.Blood

(1)Fluid of the circulatory system

(2)Carries oxygen and carbon dioxide

3.Physiology

a.Left ventricle contracts, sending a wave of blood through the arteries.

b.Pulse can be felt anywhere an artery passes near the skin surface and over a bone.

(1)Carotid

(2)Femoral

(3)Radial

(4)Brachial

D.The Nervous system

1.Function

a.Controls the voluntary and involuntary activity of the body.

b.Provides for higher mental function (thought, emotion)

2.Components/Anatomy

a.Central nervous system

(1)Brain - located within the cranium.

(2)Spinal cord - located within the spinal column

b.Peripheral nervous system

(1)Sensory - carries information from the body to the brain and spinal cord.

(2)Motor - carries information from the brain and spinal cord to the body.

E.Skin

1.Function

a.Protects the body from the environment, bacteria and other organisms.

b.Helps regulate the temperature of the body.

c.Prevents dehydration

d.Senses heat, cold, touch, pressure and pain; transmits this information to the brain and spinal cord.

**Application**

**Procedural (How)**

None identified for this lesson.

**Contextual (When, Where, Why)**

It is of utmost importance that the First Responder have a basic level of knowledge concerning the human body. To accurately communicate to other health professionals, the First Responder must be able to identify topographic anatomy.

The First Responder must also understand the basic components of the body systems. Knowledge obtained in this lesson will be extremely beneficial in other modules throughout this curriculum.

**Student Activities**

**Auditory (Hearing)**

1.The student should hear the instructor describe the various components of the human body.

**Visual (Seeing)**

1.The students should see models of the human body.

2.The students should see diagrams of the human body.

3.The students should see a skeleton of the human body.

**Kinesthetic (Doing)**

1.The students should identify various structures of the human body.

2.The students should demonstrate their ability to identify topographic anatomy.

**Instructor Activities**

Facilitate discussion and supervise practice.

Reinforce student progress in cognitive, affective, and psychomotor domains.

Redirect students having difficulty with content. (Complete remediation form.)

**Evaluation**

**Written:**

Develop evaluation instruments, e.g., quizzes, oral reviews, and handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

**Practical:**

Evaluate the actions of the First Responder students during role play, practice or other skill stations to determine their compliance with the cognitive and affective objectives and their mastery of the psychomotor objectives of this lesson.

**Remediation**

Identify students or groups of students who are having difficulty with this subject content. Complete remediation sheet from the instructor's course guide.

**Enrichment**

What is unique in the local area concerning this topic? Complete enrichment sheets from instructor's course guide and attach with lesson plan.

**Lesson 1-5**

**Lifting and Moving Patients**

**Objectives**

**Objectives Legend**

C=Cognitive P=Psychomotor A=Affective

1 =Knowledge level

2 = Application level

3 = Problem-solving level

**Cognitive Objectives**

At the completion of this lesson, the First Responder student will be able to:

1-5.1Define body mechanics. (C-1)

1-5.2Discuss the guidelines and safety precautions that need to be followed when lifting a patient. (C-1)

1-5.3Describe the indications for an emergency move. (C-1)

1-5.4Describe the indications for assisting in non-emergency moves. (C-1)

1-5.5Discuss the various devices associated with moving a patient in the out-of-hospital arena. (C-1)

**Affective Objectives**

At the completion of this lesson, the First Responder student will be able to:

1-5.6Explain the rationale for properly lifting and moving patients. (A3)

1-5.7Explain the rationale for an emergency move. (A-3)

**Psychomotor Objectives**

1-5.8Demonstrate an emergency move. (P-1,2)

1-5.9Demonstrate a non-emergency move. (P-1,2)

1-5.10Demonstrate the use of equipment utilized to move patient's in the out-of-hospital arena. (P-1,2)

**Preparation**

**Motivation:**

Many First Responders are injured every year because they attempt to lift or move patients improperly.

**Prerequisites:**

None

**Materials**

**AV Equipment:**

Utilize various audio-visual materials relating to emergency medical care. The continuous development of new audio-visual materials relating to EMS requires careful review to determine which best meet the needs of the program. Materials should be edited to ensure that the objectives of the curriculum are met.

**EMS Equipment:**

None required.

**Personnel**

**Primary Instructor:**

One First Responder instructor knowledgeable in the principles and techniques of lifting and moving patients.

**Assistant Instructor:**

The instructor-to-student ratio should be 1:6 for psychomotor skills practice. Individuals used as assistant instructors should be knowledgeable about lifting and moving patients.

**Recommended Minimum Time to Complete:**

One hour

**Presentation**

**Declarative (What)**

I.Role of the First Responder

A.Moving patients that are in immediate danger

B.Position patients to prevent further injury

C.Assist other EMS responders in lifting and moving

II.Body Mechanics/Lifting Techniques

A.Safety precautions

1.Use legs, not back, to lift.

2.Keep weight as close to body as possible.

B.Guidelines for lifting

1.Consider weight of patient and the need for help.

2.Know physical ability and limitations.

3.Lift without twisting.

4.Have feet positioned properly.

5.Communicate clearly and frequently with partner and other EMS providers.

C.Work with the EMS system in your area to practice the guidelines and use of equipment.

III. Principles of Moving Patients

A.General considerations

1. In general, a patient should be moved immediately (emergency move) only when:

a.There is an immediate danger to the patient if not moved.

(1)Fire or danger of fire.

(2)Explosives or danger of explosion

(3)Inability to protect the patient from other hazards at the scene.

(4)Inability to gain access to other patients in a vehicle who need life-saving care.

b.Life-saving care cannot be given because of the patient's location or position, e.g., a cardiac arrest patient sitting in a chair or lying on a bed.

2.If there is no threat to life, the patient when ready for transportation should be moved by the EMS crew.

B. Emergency moves

1.The greatest danger in moving a patient quickly is the possibility of aggravating a spine injury.

2.In an emergency, every effort should be made to pull the patient in the direction of the long axis of the body to provide as much protection to the spine as possible.

3.It is impossible to remove a patient from a vehicle quickly and at the same time provide much protection to the spine.

4.If the patient is on the floor or ground, he can be moved by:

a.Pulling on the patient's clothing in the neck and shoulder area.

b.Putting the patient on a blanket and dragging the blanket.

c.Putting the First Responder's hands under the patient's armpits (from the back), grasping the patient's forearms and dragging the patient.

d.Never pull the patient's head away from the neck and shoulders.

C.Non-urgent moves - performed with other responders

1.Direct ground lift (no suspected spine injury)

a.Two or three rescuers line up on one side of the patient.

b.Rescuers kneel on one knee (preferably the same for all rescuers).

c.The patient's arms are placed on his/her chest if possible.

d.The rescuer at the head places one arm under the patient's neck and shoulder and cradles the patient's head. The rescuer places his/her other arm under the patient's lower back.

e.The second rescuer places one arm under the patient's knees and one arm above the buttocks.

f.If a third rescuer is available, he should place both arms under the waist and the other two rescuers slide their arms either up to the mid-back or down to the buttocks as appropriate.

g.On signal, the rescuers lift the patient to their knees and roll the patient in toward their chests.

h.On signal, the rescuers stand and move the patient to the stretcher.

i.To lower the patient, the steps are reversed.

2. Extremity lift (no suspected extremity injuries)

a.One rescuer kneels at the patient's head and one kneels at the patient's side by the knees.

b.The rescuer at the head places one hand under each of the patient's shoulders while the rescuer at the foot grasps the patient's wrists.

c.The rescuer at the head slips his/her hands under the patient's arms and grasps the patient's wrists.

d.The rescuer at the patient's foot slips his/her hands under the patient's knees.

e.Both rescuers move up to a crouching position.

f.The rescuers stand up simultaneously and move with the patient to a stretcher.

3.Transfer of supine patient from bed to stretcher

a.Direct carry

(1)Position cot perpendicular to bed with head end of cot at foot of bed.

(2)Prepare cot by unbuckling straps and removing other items.

(3)Both rescuers stand between bed and stretcher, facing patient.

(4)First rescuer slides arm under patient's neck and cups patient's shoulder.

(5)Second rescuer slides hand under hip and lifts slightly.

(6)First rescuer slides other arm under patient's back.

(7)Second rescuer places arms underneath hips and calves.

(8)Rescuers slide patient to edge of bed.

(9)Patient is lifted/curled toward the rescuers' chests.

(10)Rescuers rotate and place patient gently onto cot.

b.Draw sheet method

(1)Loosen bottom sheet of bed.

(2)Position cot next to bed.

(3)Prepare cot: Adjust height, lower rails, unbuckle straps.

(4)Reach across cot and grasp sheet firmly at patient's head, chest, hips and knees.

(5)Slide patient gently onto cot.

D.Patient positioning

1.An unresponsive patient without trauma should be moved into the recovery position by rolling the patient onto his/her side (preferably the left).

2.A patient with trauma should not be moved until additional EMS resources can evaluate and stabilize the patient.

3.A patient experiencing pain or discomfort or difficulty breathing should be allowed to assume a position of comfort.

4.A patient who is nauseated or vomiting should be allowed to remain in a position of comfort; however, the First Responder should be positioned appropriately to manage the airway.

IV.Equipment familiarity

A.The First Responder should be familiar with equipment used in the local EMS system

B.Typical equipment used in EMS Systems

1.Stretchers/cots

2.Portable stretcher

3.Stair chair

4.Backboards

a.Long

b.Short

5.Scoop or orthopedic stretcher

**Application**

**Procedural (How)**

1.Show examples of situations where emergency moves are appropriate.

2.Demonstrate emergency moves.

3.Demonstrate positioning patients with different conditions.

A.Unresponsiveness

B.Chest pain/discomfort or difficulty breathing

C.Patients who are vomiting or nauseated

**Contextual (When, Where, Why)**

When to move a patient is determined by both the patient's condition and the environment in which he/she is found. The determination of how to move the patient is made by considering the complaint, the severity of the condition and the location.

**Student Activities**

**Auditory (Hearing)**

1.The student should hear instructor explanations of body mechanics.

2.The student should hear the principles of lifting and moving.

3.The student should hear the indications for emergency moves.

**Visual (Seeing)**

1.The student should see situations where emergency moves are appropriate.

2.The student should see emergency moves.

3.The student should see non-emergency moves.

4.The student should see various lifting and moving devices.

5.The student should see patients with different conditions positioned properly.

A.Unresponsiveness

B.Chest pain/discomfort or difficulty breathing

C.Patients who are vomiting or nauseated

6.Students should see patients moved with various lifting and moving devices.

**Kinesthetic (Doing)**

1.The student should practice determining whether emergency, urgent, or non-emergency moves are appropriate.

2.The student should practice emergency moves.

3.The student should practice non-emergency moves.

4.The student should practice positioning patients with different conditions.

A. Unresponsiveness

B Chest pain/discomfort or difficulty breathing

CPatients who are vomiting or nauseated

5.The student should practice using equipment for lifting and moving patients.

**Instructor Activities**

Facilitate discussion and supervise practice.

Reinforce student progress in cognitive, affective, and psychomotor domains.

Redirect students having difficulty with content (complete remediation form)

**Evaluation**

**Written:**

Develop evaluation instruments, e.g., quizzes, oral reviews, and handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

**Practical:**

Evaluate the actions of the First Responder students during role play, practice or other skill stations to determine their compliance with the cognitive and affective objectives and their mastery of the psychomotor objectives of this lesson.

**Remediation**

Identify students or groups of students who are having difficulty with this subject content. Complete remediation sheet from the instructor's course guide.

**Enrichment**

What is unique in the local area concerning this topic? Complete enrichment sheets from instructor's course guide and attach with lesson plan.

**Lesson 1-6**

**Evaluation: Preparatory**

**Objectives**

**Objectives Legend**

**C=Cognitive P=Psychomotor A=Affective**

1 = Knowledge level

2 = Application level

3 = Problem solving level

**Cognitive Objectives**

At the completion of this lesson, the First Responder student will be able to:

Demonstrate competence in the cognitive objectives of Lesson 1-1: Introduction to EMS System.

Demonstrate competence in the cognitive objectives of Lesson 1-2: WellBeing of the First Responder.

Demonstrate competence in the cognitive objectives of Lesson 1-3: Legal and Ethical Issues.

Demonstrate competence in the cognitive objectives of Lesson 1-4: The Human Body.

Demonstrate competence in the cognitive objectives of Lesson 1-5: Lifting and Moving Patients.

**Affective Objectives**

At the completion of this lesson, the First Responder student will be able to:

Demonstrate competence in the affective objectives of Lesson 1-1: Introduction to EMS System.

Demonstrate competence in the affective objectives of Lesson 1-2: WellBeing of the First Responder.

Demonstrate competence in the affective objectives of Lesson 1-3: Legal and Ethical Issues.

Demonstrate competence in the affective objectives of Lesson 1-4: The Human Body.

Demonstrate competence in the affective objectives of Lesson 1-5: Lifting and Moving Patients.

**Psychomotor Objectives**

At the completion of this lesson, the First Responder student will be able to:

Demonstrate competence in the psychomotor objectives of Lesson 1-1: Introduction to EMS System.

Demonstrate competence in the psychomotor objectives of Lesson 1-2: WellBeing of the First Responder.

Demonstrate competence in the psychomotor objectives of Lesson 1-3: Legal and Ethical Issues.

Demonstrate competence in the psychomotor objectives of Lesson 1-4: The Human Body.

Demonstrate competence in the psychomotor objectives of Lesson 1-5: Lifting and Moving Patients.

**Preparation**

**Motivation:**

Evaluation of the student's attainment of the cognitive and affective knowledge and psychomotor skills is an essential component of the First Responder's educational process. The modules are presented in a "building block" format. Once the students have demonstrated their knowledge and proficiency, the next lesson can be built upon that knowledge. This evaluation will help to identify students or groups of students having difficulty with a particular area. This is an opportunity for the instructor to evaluate their performance and make appropriate modifications to delivery of the material.

**Prerequisites:**

Completion of Lessons 1-1 through 1-5.

**Materials**

**AV Equipment:**

Typically none required.

**EMS Equipment:**

The EMS equipment used in the Lessons of Module 1.

**Personnel**

**Primary Instructor:**

One proctor for the written evaluation.

**Assistant Instructor:**

One practical skills examiner for each 6 students.

**Recommended Minimum Time to Complete:**

One hour

**Presentation**

**Declarative (What)**

I.Purpose of the evaluation

II.Items to be evaluated

III.Feedback from evaluation

**Application**

**Procedural (How)**

1.Written evaluation based on the cognitive and affective objectives of Lessons 1-1 > 1-5.

2.Practical evaluation stations based on the psychomotor objectives of Lessons 1-1 > 1-5.

**Contextual (When, Where and Why)**

The evaluation is the final lesson in this module and is designed to bring closure to the module and to assure that students are prepared to proceed to the next module.

This modular evaluation is done to determine the effectiveness of the presentation of materials and how well students have retained the material. This is an opportunity for the students to make necessary adjustments in study habits or for the instructor to adjust the manner in which material is presented.

**Instructor Activities**

Supervise student evaluation.

Reinforce student progress in cognitive, affective, and psychomotor domains.

Redirect students having difficulty with content. (Complete remediation forms.)

**Remediation**

Identify students and/or groups of students who are having difficulty with this subject content. Complete a remediation sheet from the instructor's course guide. If students continue to have difficulty demonstrating knowledge of the cognitive and affective objectives, or demonstrating proficiency in psychomotor skills, the students should be counseled, remediated and re-evaluated. If improvements in cognitive, affective or psychomotor skills are not achieved, consideration regarding the ability of the student to progress in the program should be taken into account.

**Module 2: Airway**

**Lesson 2-1 Airway**

**Objectives**

**Objectives Legend**

C=Cognitive P=Psychomotor A=Affective

1 =Knowledge level

2 = Application level

3 = Problem-solving level

**Cognitive Objectives**

At the completion of this lesson, the First Responder student will be able to:

2-1.1Name and label the major structures of the respiratory system on a diagram. (C-1)

2-1.2List the signs of inadequate breathing. (C-1)

2-1.3Describe the steps in the head-tilt chin-lift. (C-1)

2-1.4Relate mechanism of injury to opening the airway. (C-3)

2-1.5Describe the steps in the jaw thrust. (C-1)

2-1.6State the importance of having a suction unit ready for immediate use when providing emergency medical care. (C-1)

2-1.7Describe the techniques of suctioning. (C-1)

2-1.8Describe how to ventilate a patient with a resuscitation mask or barrier device. (C1)

2-1.9Describe how ventilating an infant or child is different from an adult. (C-1)

2-1.10List the steps in providing mouthto-mouth and mouth-to-stoma ventilation. (C-1)

2-1.11Describe how to measure and insert an oropharyngeal (oral) airway. (C1)

2-1.12Describe how to measure and insert a nasopharyngeal (nasal) airway. (C-1)

2-1.13Describe how to clear a foreign body airway obstruction in a responsive adult. (C-1)

2-1.14Describe how to clear a foreign body airway obstruction in a responsive child with complete obstruction or partial airway obstruction and poor air exchange. (C-1)

2-1.15Describe how to clear a foreign body airway obstruction in a responsive infant with complete obstruction or partial airway obstruction and poor air exchange. (C-1)

2-1.16Describe how to clear a foreign body airway obstruction in a unresponsive adult. (C-1)

2-1.17Describe how to clear a foreign body airway obstruction in a unresponsive child. (C-1)

2-1.18Describe how to clear a foreign body airway obstruction in a unresponsive infant. (C-1)

**Affective Objectives**

At the completion of this lesson, the First Responder student will be able to:

2-1.19Explain why basic life support ventilation and airway protective skills take priority over most other basic life support skills. (A-3)

2-1.20Demonstrate a caring attitude towards patients with airway problems who request emergency medical services. (A-3)

2-1.21Place the interests of the patient with airway problems as the foremost consideration when making any and all patient care decisions. (A-3)

2-1.22Communicate with empathy to patients with airway problems, as well as with family members and friends of the patient. (A-3)

**Psychomotor Objectives**

At the completion of this lesson, the First Responder student will be able to:

2-1.23Demonstrate the steps in the head-tilt chin-lift. (P1,2)

2-1.24Demonstrate the steps in the jaw thrust. (P-1,2)

2-1.25Demonstrate the techniques of suctioning. (P-1,2)

2-1.26Demonstrate the steps in mouth-to-mouth ventilation with body substance isolation (barrier shields). (P1,2)

2-1.27Demonstrate how to use a resuscitation mask to ventilate a patient. (P-1,2)

2-1.28Demonstrate how to ventilate a patient with a stoma. (P1,2)

2-1.29Demonstrate how to measure and insert an oropharyngeal (oral) airway. (P1,2)

2-1.30Demonstrate how to measure and insert a nasopharyngeal (nasal) airway. (P1,2)

2-1.31Demonstrate how to ventilate infant and child patients. (P-1,2)

2-1.32Demonstrate how to clear a foreign body airway obstruction in a responsive adult. (C-1)

2-1.33Demonstrate how to clear a foreign body airway obstruction in a responsive child. (C-1)

2-1.34Demonstrate how to clear a foreign body airway obstruction in a responsive infant. (C-1)

2-1.35Demonstrate how to clear a foreign body airway obstruction in an unresponsive adult. (C-1)

2-1.36Demonstrate how to clear a foreign body airway obstruction in an unresponsive child. (C-1)

2-1.37Demonstrate how to clear a foreign body airway obstruction in an unresponsive infant. (C-1)

**Preparation**

**Motivation:**

A patient without an airway has no chance of survival. It is important for the First Responder to be able to manage an airway with and without airway adjuncts.

**Prerequisites:**

Preparatory

**Materials**

**AV Equipment:**

Utilize various audio-visual materials relating to emergency medical care. The continuous development of new audio-visual materials relating to EMS requires careful review to determine which best meet the needs of the program. Materials should be edited to ensure that the objectives of the curriculum are met.

**EMS Equipment:**

Resuscitation mask, barrier devices, oral airways, nasal airways, suction units (manual and battery powered), suction catheters, tongue blade, and lubricant.

**Personnel**

**Primary Instructor:**

One First Responder instructor knowledgeable in airway management.

**Assistant Instructor:**

The instructor-to-student ratio should be 1:6 for psychomotor skill practice. Individuals used as assistant instructors should be knowledgeable in airway techniques and management.

**Recommended Minimum Time to Complete:**

Three Hours

**Presentation**

**Declarative (What)**1.The Respiratory system

A.Function

1.Deliver oxygen to the body

2.Remove carbon dioxide from the body

B.Components/anatomy

1.Nose and mouth

2.Pharynx

a.Oropharynx

b.Nasopharynx

3.Epiglottis - a leafshaped structure that prevents food and liquid from entering the trachea during swallowing.

4.Windpipe (trachea)

5.Voice box (larynx)

6.Lungs

7.Diaphragm

C.Physiology

1.Diaphragm moves down, chest moves out, drawing air into the lungs (inhalation)

2.Exchange of oxygen and carbon dioxide in the lungs

3.Diaphragm moves up causing air to exit the lungs (exhalation)

D.Infant and child anatomy and physiology considerations

1.All structures are smaller and more easily obstructed than in adults.

2.Infants' and children's tongues take up proportionally more space in the mouth than adults.

3.The trachea is more flexible in infants and children.

4.The primary cause of cardiac arrest in infants and children is an uncorrected respiratory problem.

I.Opening the Airway

A.One of the most important actions that the first responder can perform is opening the airway of an unresponsive patient.

1.An unresponsive patient looses muscle tone, and the soft tissue and base of the tongue may occlude the airway.

2.The tongue is the most common cause of airway obstruction in an unresponsive patient.

3.Since the tongue is attached to the lower jaw, forward displacement of the jaw will lift the tongue away from the back of the throat.

B.Head-tilt chin-lift

1.The method of choice for opening the airway in uninjured patients

2.Research has indicated that the head-tilt chin-lift consistently provides the optimal airway.

3.Used for uninjured, unresponsive patients

4.Technique

a.Place your hand that is closer to the patient's head on his/her forehead, apply firm backward pressure to tilt the head back.

b.Place the fingers of your hand that is closer to the patient's feet on the bony part of his/her chin.

c.Lift the chin forward and support the jaw, helping to tilt the head back.

5.Precautions

a.Finger must not press deeply into the soft tissues of the chin as this may lead to airway obstruction.

b.The thumb should not be used for lifting the chin.

c.The mouth must not be closed.

C.Jaw thrust without head tilt

1.This technique is an alternative method of opening the airway.

2.Effective but fatiguing and technically difficult

3.This is the safest approach to opening the airway in the patient with a suspected spinal injury.

4.Indications

a.Used for trauma patients

b.Used for unresponsive patients

5.Technique

a.Grasp the angles of the patient's lower jaw.

b.Lift with both hands displacing the mandible forward.

c.If the lips close, open the lower lip with your gloved thumb.

II.Inspect the Airway

A.An unresponsive patient may have fluid or solids in the airway that may compromise the airway.

B.Responsive patients who cannot protect their airway should also have their airways inspected.

C.Indications

1.All unresponsive patients

2.Responsive patients who may not be able to protect their own airways.

D.Technique

1.Open the patient's mouth with a gloved hand.

2.Look inside the airway.

a.Clear (patent)

b.Blocked

(1)Fluid

(2)Solids

(3)Teeth, including dentures

III.Airway Adjuncts

A.Oropharyngeal (oral) airways

1. Oropharyngeal (OP) airways may be used to assist in maintaining an open airway in an unresponsive patient without a gag reflex.

2.Patients with a gag reflex may vomit when this airway is placed.

3.Technique

a.Select the proper size: Measure from the corner of the patient's lips to the tip of the earlobe or angle of jaw.

b.Open the patient's mouth.

c.Insert the airway upside down, with the tip facing toward the roof of the patient's mouth.

d.Advance the airway gently until resistance is encountered.

e.Turn the airway 180 degrees so that it comes to rest with the flange on the patient's teeth.

4.Alternate technique - For use with infants and children

a.Select the proper size: Measure from the corner of the patient's lips to the bottom of the earlobe or angle of jaw.

b.Open the patient's mouth.

c.Use a tongue blade to press tongue down and away.

d.Insert airway in upright (anatomic) position.

B.Nasopharyngeal (nasal) airways

1. Nasopharyngeal (NP) airways are less likely to stimulate vomiting.

2.May be used on patients who are responsive but need assistance keeping the tongue from obstructing the airway.

3.Even though the tube is lubricated, this is a painful stimulus.

4.Technique

a. Select the proper size: Measure from the tip of the nose to the tip of the patient's ear.

b.Also consider diameter of airway in the nostril. NP airways should not be so large that it causes blanching of the nostril.

c. Lubricate the airway with a water soluble lubricant.

d. Insert it posteriorly. Bevel should be toward the base of the nostril or toward the septum.

e. If the airway cannot be inserted into one nostril, try the other nostril.

f.Do not force this airway.

IV.Clearing the Compromised Airway and Maintaining the Open Airway

A.There are three ways that First Responders can clear or maintain an airway.

B.These techniques are not sequential; the situation will dictate which technique is most appropriate.

C.There are three methods of clearing the airway.

1.The Recovery Position

a.The first step in maintaining an open airway

b.Uses gravity to keep the airway clear.

c.The airway is likely to remain open in this position.

d.Unrecognized airway obstructions are less likely to occur.

e.Monitor the patient until additional EMS resources arrive and assume care.

f.Allows fluids to drain from the mouth and not into the airway.

g.Used in unresponsive, uninjured patient, breathing adequately

h.Technique

(1)Raise the patient's left arm above his/her head and cross the patient's right leg over the left.

(2)Support the face and grasp the patient's right shoulder.

(3)Roll the patient toward you onto his or her left side.

(4)Place the patient's right hand under the side of his/her face.

(5)The patient's head, torso, and shoulders should move simultaneously without twisting.

(6)The head should be in as close to a midline position as possible.

2.Finger sweeps

a.Uses your fingers to remove solid objects from the airway.

b.Use body substance isolation.

c.If foreign material or vomit is visible in the mouth, it should be removed.

d.Do this quickly.

e.Blind finger sweeps should not be performed in infants or children.

f.Technique

(1)If uninjured, roll the patient to their side

(2)Liquids or semi-liquids should be wiped out with the index and middle fingers covered with a cloth.

(3)Solid objects should be removed with a hooked index finger.

3.Suctioning

a.Uses negative pressure to keep the airway clear.

b.A patient needs to be suctioned immediately when a gurgling sound is heard during breathing or ventilation.

c.Suction is only indicated if the recovery position and finger sweeps are ineffective in draining the airway or trauma is suspected and the patient cannot be placed in the recovery position.

d.Purpose is to remove blood, other liquids, and food particles from the airway.

e. Most suction units are inadequate for removing solid objects like teeth, foreign bodies, and food

f.Portable suction equipment is available and may be manually or electrically operated.

g.Principles

(1)Observe body substance isolation.

(2)A hard or rigid "tonsil sucker" or "tonsil tip" is preferred to suction the mouth of an unresponsive patient.

(3)The tip of the suction catheter should not be inserted deeper than the base of the tongue.

(4)Because air and oxygen are removed during suction, it is recommended that you suction for no more than 15 seconds.

(a)Decrease the time in infants and children.

(b)Infants 5 seconds

(c)Children 10 seconds

(5)Watch for decreased heart rate in infants.

(6)If a decrease in heart rate is noted, stop suctioning and provide ventilation..

V.Determining Presence of Breathing

A.Immediately after opening the airway, check for breathing

B.As you determine the presence of breathing, look at the effort or work of breathing.

1.Breathing should be effortless.

2.Observe the chest for adequate rise and fall.

3.Look for accessory muscle use.

C.Techniques

1.Responsive patients

a.Ask: "Can you speak?", "Are you choking?"

b.The ability to talk or make vocal sounds indicates that air is moving past the vocal cords

2.Unresponsive patients

a.Maintain an open airway

b.Place your ear close to the patients mouth and nose

c.Assess for three to five seconds.

(1)Look for the rise and fall of the chest

(2)Listen for air escaping during exhalation

(3)Feel for air coming from the mouth and nose

d.The first responder may observe the rise and fall of the chest even if an airway obstruction is present, but will not hear or feel air movement

e.Some reflex gasping (agonal respirations) may be present just after cardiac arrest. This should not be confused for breathing.

D.Inadequate breathing is characterized by the following:

1.Rate

a.Less than 8 in adults

b.Less than 10 in children

c.Less than 20 in infants

2.Inadequate chest wall motion

3.Cyanosis

4.Mental status changes

5.Increased effort

6.Gasping

7.Grunting

8.Slow heart rate associated with slow respirations

VI.Ventilation

A.Once the airway has been assured, and breathing is assessed, breathing for the patient may be necessary.

B.If the patient is not breathing they only have the oxygen in their lungs and their bloodstream remaining.

C.In order to prevent death, the First Responder must ventilate the patient.

D.There are many techniques for ventilation--the first responder must be competent in the following three techniques of ventilation

VII.Techniques of Ventilation

A.The techniques of ventilation in order of preference are

1.Mouth to mask

2.Mouth to barrier device

3.Mouth to mouth

B.Mouth to mask ventilation

1.Most effective First Responder technique

2.Most masks have a one way valve to divert the patient's exhalations.

3.Masks should be transparent so that vomiting can be recognized.

4.Mouth to mask ventilation is very effective since you use two hands to seal around the mask.

5.Technique

a.Place the mask around the patient's mouth and nose using the bridge of the nose as a guide for correct position. Mask position is critical since the wrong size mask will leak.

b.Seal the mask by placing the heal and thumb of each hand along the border of the mask and compressing firmly around the margin.

c.Place your index fingers on the portion of the mask that covers the chin.

d.Place your other fingers along the bony margin of the jaw and lift the jaw while performing a head tilt.

e.Give one slow (1-2 second) breath of sufficient volume to make the chest rise (usually 800-1200 ml in the average adult).

f.Too great a volume of air and too fast an inspiratory time are likely to allow air to enter the stomach.

g.Adequate ventilation is determined by:

(1)Observing the chest rise and fall

(2)Hearing and feeling the air escape during exhalation

h.Continue at the proper rate

(1)10-12 breaths per minute for adults with 1 - 2 second ventilation time

(2)20 breaths per minute for children and infants with 1 - 1 second inspiratory time.

(3)40 breaths per minute for newborns with 1 to 1 second inspiratory time.

i.If the ventilation cannot be delivered, consider the possibility of an airway obstruction.

C.Mouth-to-barrier device

1.A barrier device should be used if available.

2.Some rescuers may prefer to use a barrier device during ventilation.

3.Barrier devices have no exhalation valve and air often leaks around the shield.

4.Barrier devices should have low resistance to delivered ventilation.

5.Technique

a.If ventilation is necessary, position the device over the patient's mouth and nose ensuring an adequate seal.

b.Keep the airway open by the head tilt-chin lift or jaw thrust maneuver.

c.Give one slow (1-2 second) breath of sufficient volume to make the chest rise (usually 800-1200 ml in the average adult).

d.Too great a volume of air and too fast an inspiratory time are likely to allow air to enter the stomach.

e.Adequate ventilation is determined by:

(1)Observing the chest rise and fall

(2)Hearing and feeling the air escape during exhalation

f.Continue at the proper rate

(1)10-12 breaths per minute for adults, with 1 - 2 second inspiratory time.

(2)20 breaths per minute for children and infants, with 1-1 second inspiratory time.

(3)40 breaths per minute for newborns, with 1 to 1 second inspiratory time.

g.If the ventilation cannot be delivered, consider the possibility of an airway obstruction

D.Mouth to mouth

1.The First Responder must be aware of the risks of performing mouth to mouth ventilatiNetwork Working Group T. Berners-LeeRequest for Comments: 3986 W3C/MITSTD: 66 R. FieldingUpdates: 1738 Day SoftwareObsoletes: 2732, 2396, 1808 L. MasinterCategory: Standards Track Adobe Systems January 2005 Uniform Resource Identifier (URI): Generic SyntaxStatus of This Memo This document specifies an Internet standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "Internet Official Protocol Standards" (STD 1) for the standardization state and status of this protocol. Distribution of this memo is unlimited.Copyright Notice Copyright (C) The Internet Society (2005).Abstract A Uniform Resource Identifier (URI) is a compact sequence of characters that identifies an abstract or physical resource. This specification defines the generic URI syntax and a process for resolving URI references that might be in relative form, along with guidelines and security considerations for the use of URIs on the Internet. The URI syntax defines a grammar that is a superset of all valid URIs, allowing an implementation to parse the common components of a URI reference without knowing the scheme-specific requirements of every possible identifier. This specification does not define a generative grammar for URIs; that task is performed by the individual specifications of each URI scheme.Berners-Lee, et al. Standards Track [Page 1]RFC 3986 URI Generic Syntax January 2005Table of Contents 1. Introduction . . . . . . . . . . . . . . . . . . . . . . . . . 4 1.1. Overview of URIs . . . . . . . . . . . . . . . . . . . . 4 1.1.1. Generic Syntax . . . . . . . . . . . . . . . . . 6 1.1.2. Examples . . . . . . . . . . . . . . . . . . . . 7 1.1.3. URI, URL, and URN . . . . . . . . . . . . . . . 7 1.2. 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Collected ABNF for URI . . . . . . . . . . . . . . . . . . . . 49 B. Parsing a URI Reference with a Regular Expression . . . . . . 50 C. Delimiting a URI in Context . . . . . . . . . . . . . . . . . 51 D. Changes from RFC 2396 . . . . . . . . . . . . . . . . . . . . 53 D.1. Additions . . . . . . . . . . . . . . . . . . . . . . . 53 D.2. Modifications . . . . . . . . . . . . . . . . . . . . . 53 Index . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 56 Authors' Addresses . . . . . . . . . . . . . . . . . . . . . . . . 60 Full Copyright Statement . . . . . . . . . . . . . . . . . . . . . 61Berners-Lee, et al. Standards Track [Page 3]RFC 3986 URI Generic Syntax January 20051. Introduction A Uniform Resource Identifier (URI) provides a simple and extensible means for identifying a resource. This specification of URI syntax and semantics is derived from concepts introduced by the World Wide Web global information initiative, whose use of these identifiers dates from 1990 and is described in "Universal Resource Identifiers in WWW" [RFC1630]. The syntax is designed to meet the recommendations laid out in "Functional Recommendations for Internet Resource Locators" [RFC1736] and "Functional Requirements for Uniform Resource Names" [RFC1737]. This document obsoletes [RFC2396], which merged "Uniform Resource Locators" [RFC1738] and "Relative Uniform Resource Locators" [RFC1808] in order to define a single, generic syntax for all URIs. It obsoletes [RFC2732], which introduced syntax for an IPv6 address. It excludes portions of RFC 1738 that defined the specific syntax of individual URI schemes; those portions will be updated as separate documents. The process for registration of new URI schemes is defined separately by [BCP35]. Advice for designers of new URI schemes can be found in [RFC2718]. All significant changes from RFC 2396 are noted in Appendix D. This specification uses the terms "character" and "coded character set" in accordance with the definitions provided in [BCP19], and "character encoding" in place of what [BCP19] refers to as a "charset".1.1. Overview of URIs URIs are characterized as follows: Uniform Uniformity provides several benefits. It allows different types of resource identifiers to be used in the same context, even when the mechanisms used to access those resources may differ. It allows uniform semantic interpretation of common syntactic conventions across different types of resource identifiers. It allows introduction of new types of resource identifiers without interfering with the way that existing identifiers are used. It allows the identifiers to be reused in many different contexts, thus permitting new applications or protocols to leverage a pre- existing, large, and widely used set of resource identifiers.Berners-Lee, et al. Standards Track [Page 4]RFC 3986 URI Generic Syntax January 2005 Resource This specification does not limit the scope of what might be a resource; rather, the term "resource" is used in a general sense for whatever might be identified by a URI. Familiar examples include an electronic document, an image, a source of information with a consistent purpose (e.g., "today's weather report for Los Angeles"), a service (e.g., an HTTP-to-SMS gateway), and a collection of other resources. A resource is not necessarily accessible via the Internet; e.g., human beings, corporations, and bound books in a library can also be resources. Likewise, abstract concepts can be resources, such as the operators and operands of a mathematical equation, the types of a relationship (e.g., "parent" or "employee"), or numeric values (e.g., zero, one, and infinity). Identifier An identifier embodies the information required to distinguish what is being identified from all other things within its scope of identification. Our use of the terms "identify" and "identifying" refer to this purpose of distinguishing one resource from all other resources, regardless of how that purpose is accomplished (e.g., by name, address, or context). These terms should not be mistaken as an assumption that an identifier defines or embodies the identity of what is referenced, though that may be the case for some identifiers. Nor should it be assumed that a system using URIs will access the resource identified: in many cases, URIs are used to denote resources without any intention that they be accessed. Likewise, the "one" resource identified might not be singular in nature (e.g., a resource might be a named set or a mapping that varies over time). A URI is an identifier consisting of a sequence of characters matching the syntax rule named <URI> in Section 3. It enables uniform identification of resources via a separately defined extensible set of naming schemes (Section 3.1). How that identification is accomplished, assigned, or enabled is delegated to each scheme specification. This specification does not place any limits on the nature of a resource, the reasons why an application might seek to refer to a resource, or the kinds of systems that might use URIs for the sake of identifying resources. This specification does not require that a URI persists in identifying the same resource over time, though that is a common goal of all URI schemes. Nevertheless, nothing in thisBerners-Lee, et al. Standards Track [Page 5]RFC 3986 URI Generic Syntax January 2005 specification prevents an application from limiting itself to particular types of resources, or to a subset of URIs that maintains characteristics desired by that application. URIs have a global scope and are interpreted consistently regardless of context, though the result of that interpretation may be in relation to the end-user's context. For example, "http://localhost/" has the same interpretation for every user of that reference, even though the network interface corresponding to "localhost" may be different for each end-user: interpretation is independent of access. However, an action made on the basis of that reference will take place in relation to the end-user's context, which implies that an action intended to refer to a globally unique thing must use a URI that distinguishes that resource from all other things. URIs that identify in relation to the end-user's local context should only be used when the context itself is a defining aspect of the resource, such as when an on-line help manual refers to a file on the end- user's file system (e.g., "file:///etc/hosts").1.1.1. Generic Syntax Each URI begins with a scheme name, as defined in Section 3.1, that refers to a specification for assigning identifiers within that scheme. As such, the URI syntax is a federated and extensible naming system wherein each scheme's specification may further restrict the syntax and semantics of identifiers using that scheme. This specification defines those elements of the URI syntax that are required of all URI schemes or are common to many URI schemes. It thus defines the syntax and semantics needed to implement a scheme- independent parsing mechanism for URI references, by which the scheme-dependent handling of a URI can be postponed until the scheme-dependent semantics are needed. Likewise, protocols and data formats that make use of URI references can refer to this specification as a definition for the range of syntax allowed for all URIs, including those schemes that have yet to be defined. This decouples the evolution of identification schemes from the evolution of protocols, data formats, and implementations that make use of URIs. A parser of the generic URI syntax can parse any URI reference into its major components. Once the scheme is determined, further scheme-specific parsing can be performed on the components. In other words, the URI generic syntax is a superset of the syntax of all URI schemes.Berners-Lee, et al. Standards Track [Page 6]RFC 3986 URI Generic Syntax January 20051.1.2. Examples The following example URIs illustrate several URI schemes and variations in their common syntax components: ftp://ftp.is.co.za/rfc/rfc1808.txt http://www.ietf.org/rfc/rfc2396.txt ldap://[2001:db8::7]/c=GB?objectClass?one mailto:John.Doe@example.com news:comp.infosystems.www.servers.unix tel:+1-816-555-1212 telnet://192.0.2.16:80/ urn:oasis:names:specification:docbook:dtd:xml:4.1.21.1.3. URI, URL, and URN A URI can be further classified as a locator, a name, or both. The term "Uniform Resource Locator" (URL) refers to the subset of URIs that, in addition to identifying a resource, provide a means of locating the resource by describing its primary access mechanism (e.g., its network "location"). The term "Uniform Resource Name" (URN) has been used historically to refer to both URIs under the "urn" scheme [RFC2141], which are required to remain globally unique and persistent even when the resource ceases to exist or becomes unavailable, and to any other URI with the properties of a name. An individual scheme does not have to be classified as being just one of "name" or "locator". Instances of URIs from any given scheme may have the characteristics of names or locators or both, often depending on the persistence and care in the assignment of identifiers by the naming authority, rather than on any quality of the scheme. Future specifications and related documentation should use the general term "URI" rather than the more restrictive terms "URL" and "URN" [RFC3305].Berners-Lee, et al. Standards Track [Page 7]RFC 3986 URI Generic Syntax January 20051.2. Design Considerations1.2.1. Transcription The URI syntax has been designed with global transcription as one of its main considerations. A URI is a sequence of characters from a very limited set: the letters of the basic Latin alphabet, digits, and a few special characters. A URI may be represented in a variety of ways; e.g., ink on paper, pixels on a screen, or a sequence of character encoding octets. The interpretation of a URI depends only on the characters used and not on how those characters are represented in a network protocol. The goal of transcription can be described by a simple scenario. Imagine two colleagues, Sam and Kim, sitting in a pub at an international conference and exchanging research ideas. Sam asks Kim for a location to get more information, so Kim writes the URI for the research site on a napkin. Upon returning home, Sam takes out the napkin and types the URI into a computer, which then retrieves the information to which Kim referred. There are several design considerations revealed by the scenario: o A URI is a sequence of characters that is not always represented as a sequence of octets. o A URI might be transcribed from a non-network source and thus should consist of characters that are most likely able to be entered into a computer, within the constraints imposed by keyboards (and related input devices) across languages and locales. o A URI often has to be remembered by people, and it is easier for people to remember a URI when it consists of meaningful or familiar components. These design considerations are not always in alignment. For example, it is often the case that the most meaningful name for a URI component would require characters that cannot be typed into some systems. The ability to transcribe a resource identifier from one medium to another has been considered more important than having a URI consist of the most meaningful of components. In local or regional contexts and with improving technology, users might benefit from being able to use a wider range of characters; such use is not defined by this specification. Percent-encoded octets (Section 2.1) may be used within a URI to represent characters outside the range of the US-ASCII coded character set if thisBerners-Lee, et al. Standards Track [Page 8]RFC 3986 URI Generic Syntax January 2005 representation is allowed by the scheme or by the protocol element in which the URI is referenced. Such a definition should specify the character encoding used to map those characters to octets prior to being percent-encoded for the URI.1.2.2. Separating Identification from Interaction A common misunderstanding of URIs is that they are only used to refer to accessible resources. The URI itself only provides identification; access to the resource is neither guaranteed nor implied by the presence of a URI. Instead, any operation associated with a URI reference is defined by the protocol element, data format attribute, or natural language text in which it appears. Given a URI, a system may attempt to perform a variety of operations on the resource, as might be characterized by words such as "access", "update", "replace", or "find attributes". Such operations are defined by the protocols that make use of URIs, not by this specification. However, we do use a few general terms for describing common operations on URIs. URI "resolution" is the process of determining an access mechanism and the appropriate parameters necessary to dereference a URI; this resolution may require several iterations. To use that access mechanism to perform an action on the URI's resource is to "dereference" the URI. When URIs are used within information retrieval systems to identify sources of information, the most common form of URI dereference is "retrieval": making use of a URI in order to retrieve a representation of its associated resource. A "representation" is a sequence of octets, along with representation metadata describing those octets, that constitutes a record of the state of the resource at the time when the representation is generated. Retrieval is achieved by a process that might include using the URI as a cache key to check for a locally cached representation, resolution of the URI to determine an appropriate access mechanism (if any), and dereference of the URI for the sake of applying a retrieval operation. Depending on the protocols used to perform the retrieval, additional information might be supplied about the resource (resource metadata) and its relation to other resources. URI references in information retrieval systems are designed to be late-binding: the result of an access is generally determined when it is accessed and may vary over time or due to other aspects of the interaction. These references are created in order to be used in the future: what is being identified is not some specific result that was obtained in the past, but rather some characteristic that is expected to be true for future results. In such cases, the resource referred to by the URI is actually a sameness of characteristics as observedBerners-Lee, et al. Standards Track [Page 9]RFC 3986 URI Generic Syntax January 2005 over time, perhaps elucidated by additional comments or assertions made by the resource provider. Although many URI schemes are named after protocols, this does not imply that use of these URIs will result in access to the resource via the named protocol. URIs are often used simply for the sake of identification. Even when a URI is used to retrieve a representation of a resource, that access might be through gateways, proxies, caches, and name resolution services that are independent of the protocol associated with the scheme name. The resolution of some URIs may require the use of more than one protocol (e.g., both DNS and HTTP are typically used to access an "http" URI's origin server when a representation isn't found in a local cache).1.2.3. Hierarchical Identifiers The URI syntax is organized hierarchically, with components listed in order of decreasing significance from left to right. For some URI schemes, the visible hierarchy is limited to the scheme itself: everything after the scheme component delimiter (":") is considered opaque to URI processing. Other URI schemes make the hierarchy explicit and visible to generic parsing algorithms. The generic syntax uses the slash ("/"), question mark ("?"), and number sign ("#") characters to delimit components that are significant to the generic parser's hierarchical interpretation of an identifier. In addition to aiding the readability of such identifiers through the consistent use of familiar syntax, this uniform representation of hierarchy across naming schemes allows scheme-independent references to be made relative to that hierarchy. It is often the case that a group or "tree" of documents has been constructed to serve a common purpose, wherein the vast majority of URI references in these documents point to resources within the tree rather than outside it. Similarly, documents located at a particular site are much more likely to refer to other resources at that site than to resources at remote sites. Relative referencing of URIs allows document trees to be partially independent of their location and access scheme. For instance, it is possible for a single set of hypertext documents to be simultaneously accessible and traversable via each of the "file", "http", and "ftp" schemes if the documents refer to each other with relative references. Furthermore, such document trees can be moved, as a whole, without changing any of the relative references. A relative reference (Section 4.2) refers to a resource by describing the difference within a hierarchical name space between the reference context and the target URI. The reference resolution algorithm,Berners-Lee, et al. Standards Track [Page 10]RFC 3986 URI Generic Syntax January 2005 presented in Section 5, defines how such a reference is transformed to the target URI. As relative references can only be used within the context of a hierarchical URI, designers of new URI schemes should use a syntax consistent with the generic syntax's hierarchical components unless there are compelling reasons to forbid relative referencing within that scheme. NOTE: Previous specifications used the terms "partial URI" and "relative URI" to denote a relative reference to a URI. As some readers misunderstood those terms to mean that relative URIs are a subset of URIs rather than a method of referencing URIs, this specification simply refers to them as relative references. All URI references are parsed by generic syntax parsers when used. However, because hierarchical processing has no effect on an absolute URI used in a reference unless it contains one or more dot-segments (complete path segments of "." or "..", as described in Section 3.3), URI scheme specifications can define opaque identifiers by disallowing use of slash characters, question mark characters, and the URIs "scheme:." and "scheme:..".1.3. Syntax Notation This specification uses the Augmented Backus-Naur Form (ABNF) notation of [RFC2234], including the following core ABNF syntax rules defined by that specification: ALPHA (letters), CR (carriage return), DIGIT (decimal digits), DQUOTE (double quote), HEXDIG (hexadecimal digits), LF (line feed), and SP (space). The complete URI syntax is collected in Appendix A.2. Characters The URI syntax provides a method of encoding data, presumably for the sake of identifying a resource, as a sequence of characters. The URI characters are, in turn, frequently encoded as octets for transport or presentation. This specification does not mandate any particular character encoding for mapping between URI characters and the octets used to store or transmit those characters. When a URI appears in a protocol element, the character encoding is defined by that protocol; without such a definition, a URI is assumed to be in the same character encoding as the surrounding text. The ABNF notation defines its terminal values to be non-negative integers (codepoints) based on the US-ASCII coded character set [ASCII]. Because a URI is a sequence of characters, we must invert that relation in order to understand the URI syntax. Therefore, theBerners-Lee, et al. Standards Track [Page 11]RFC 3986 URI Generic Syntax January 2005 integer values used by the ABNF must be mapped back to their corresponding characters via US-ASCII in order to complete the syntax rules. A URI is composed from a limited set of characters consisting of digits, letters, and a few graphic symbols. A reserved subset of those characters may be used to delimit syntax components within a URI while the remaining characters, including both the unreserved set and those reserved characters not acting as delimiters, define each component's identifying data.2.1. Percent-Encoding A percent-encoding mechanism is used to represent a data octet in a component when that octet's corresponding character is outside the allowed set or is being used as a delimiter of, or within, the component. A percent-encoded octet is encoded as a character triplet, consisting of the percent character "%" followed by the two hexadecimal digits representing that octet's numeric value. For example, "%20" is the percent-encoding for the binary octet "00100000" (ABNF: %x20), which in US-ASCII corresponds to the space character (SP). Section 2.4 describes when percent-encoding and decoding is applied. pct-encoded = "%" HEXDIG HEXDIG The uppercase hexadecimal digits 'A' through 'F' are equivalent to the lowercase digits 'a' through 'f', respectively. If two URIs differ only in the case of hexadecimal digits used in percent-encoded octets, they are equivalent. For consistency, URI producers and normalizers should use uppercase hexadecimal digits for all percent- encodings.2.2. Reserved Characters URIs include components and subcomponents that are delimited by characters in the "reserved" set. These characters are called "reserved" because they may (or may not) be defined as delimiters by the generic syntax, by each scheme-specific syntax, or by the implementation-specific syntax of a URI's dereferencing algorithm. If data for a URI component would conflict with a reserved character's purpose as a delimiter, then the conflicting data must be percent-encoded before the URI is formed.Berners-Lee, et al. Standards Track [Page 12]RFC 3986 URI Generic Syntax January 2005 reserved = gen-delims / sub-delims gen-delims = ":" / "/" / "?" / "#" / "[" / "]" / "@" sub-delims = "!" / "$" / "&" / "'" / "(" / ")" / "\*" / "+" / "," / ";" / "=" The purpose of reserved characters is to provide a set of delimiting characters that are distinguishable from other data within a URI. URIs that differ in the replacement of a reserved character with its corresponding percent-encoded octet are not equivalent. Percent- encoding a reserved character, or decoding a percent-encoded octet that corresponds to a reserved character, will change how the URI is interpreted by most applications. Thus, characters in the reserved set are protected from normalization and are therefore safe to be used by scheme-specific and producer-specific algorithms for delimiting data subcomponents within a URI. A subset of the reserved characters (gen-delims) is used as delimiters of the generic URI components described in Section 3. A component's ABNF syntax rule will not use the reserved or gen-delims rule names directly; instead, each syntax rule lists the characters allowed within that component (i.e., not delimiting it), and any of those characters that are also in the reserved set are "reserved" for use as subcomponent delimiters within the component. Only the most common subcomponents are defined by this specification; other subcomponents may be defined by a URI scheme's specification, or by the implementation-specific syntax of a URI's dereferencing algorithm, provided that such subcomponents are delimited by characters in the reserved set allowed within that component. URI producing applications should percent-encode data octets that correspond to characters in the reserved set unless these characters are specifically allowed by the URI scheme to represent data in that component. If a reserved character is found in a URI component and no delimiting role is known for that character, then it must be interpreted as representing the data octet corresponding to that character's encoding in US-ASCII.2.3. Unreserved Characters Characters that are allowed in a URI but do not have a reserved purpose are called unreserved. These include uppercase and lowercase letters, decimal digits, hyphen, period, underscore, and tilde. unreserved = ALPHA / DIGIT / "-" / "." / "\_" / "~"Berners-Lee, et al. Standards Track [Page 13]RFC 3986 URI Generic Syntax January 2005 URIs that differ in the replacement of an unreserved character with its corresponding percent-encoded US-ASCII octet are equivalent: they identify the same resource. However, URI comparison implementations do not always perform normalization prior to comparison (see Section 6). For consistency, percent-encoded octets in the ranges of ALPHA (%41-%5A and %61-%7A), DIGIT (%30-%39), hyphen (%2D), period (%2E), underscore (%5F), or tilde (%7E) should not be created by URI producers and, when found in a URI, should be decoded to their corresponding unreserved characters by URI normalizers.2.4. When to Encode or Decode Under normal circumstances, the only time when octets within a URI are percent-encoded is during the process of producing the URI from its component parts. This is when an implementation determines which of the reserved characters are to be used as subcomponent delimiters and which can be safely used as data. Once produced, a URI is always in its percent-encoded form. When a URI is dereferenced, the components and subcomponents significant to the scheme-specific dereferencing process (if any) must be parsed and separated before the percent-encoded octets within those components can be safely decoded, as otherwise the data may be mistaken for component delimiters. The only exception is for percent-encoded octets corresponding to characters in the unreserved set, which can be decoded at any time. For example, the octet corresponding to the tilde ("~") character is often encoded as "%7E" by older URI processing implementations; the "%7E" can be replaced by "~" without changing its interpretation. Because the percent ("%") character seon.

2.Quick, effective method of delivering oxygen to the non-breathing patient

3.Ventilating a patient with your exhaled breath while making mouth to mouth contact

4.The rescuer's exhaled air contains enough oxygen to support life.

5.Barrier devices and face masks with one way valves are available for use during ventilation.

6.First Responders should always use these devices rather than the mouth to mouth technique.

7.Mouth to mask/barrier device does not replace training in mouth to mouth ventilation.

8.The decision to perform mouth to mouth ventilation by First Responders is a personal choice. Whenever possible, a barrier device or mouth to mask should be used.

9.Technique

a.Keep the airway open by the head tilt-chin lift or jaw thrust maneuver.

b.Gently squeeze the patient's nostrils closed with the thumb and index finger of your hand on the patient's forehead.

c.When ventilating an infants, cover the infants mouth and nose.

d.Take a deep breath and seal your lips to the patient's mouth, creating an airtight seal.

e.Give one slow (1-2 second) breath of sufficient volume to make the chest rise.

(1)Too great a volume of air and too fast an inspiratory time are likely to allow air to enter the stomach.

(2)Adequate ventilation is determined by:

(a)Observing the chest rise and fall

(b)Hearing and feeling the air escape during exhalation

f.Continue at the proper rate

(1)12 breaths per minute for adults

(2)20 breaths per minute for children and infants

(3)40 breaths per minute for newborns

g.If the ventilation cannot be delivered, consider the possibility of an airway obstruction

VIII.Foreign Body Airway Obstructions (FBAO) in the Adult

A.Can be the cause of cardiac arrest

1.Choking/food

2.Bleeding into the airway

3.Vomit

B.Can be the result of cardiac arrest

1.Vomiting

2.Dentures

3.Trauma

4.Tongue

C.Types of airway obstructions

1.Partial

a.Good air exchange

(1)Patient remains responsive

(2)May be able to speak

(3)Can cough forcefully

(4)May be wheezing between coughs

b.Poor air exchange

(1)Weak ineffective cough

(2)High-pitched noise on inhalation

(3)Increased respiratory difficulty

(4)Possibly cyanotic

2.Complete

a.No air can be exchanged.

b.Patient will be unable to speak, breathe, or cough.

c.Patient may clutch the neck with thumb and fingers--the universal distress signal.

d.Death will follow rapidly if prompt action is not taken.

D.Management of the Obstructed Airway

**Refer to the American He**