CALIFORNIA COMMISSION ON PEACE OFFICER STANDARDS AND TRAINING

Basic Course Workbook Series

Student Materials

Learning Domain 34
First Aid, CPR, and AED
Version 6.1

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THE ACADEMY TRAINING MISSION

The primary mission of basic training is to prepare students mentally, morally, and physically to advance into a field training program, assume the responsibilities, and execute the duties of a peace officer in society.

FOREWORD

The California Commission on Peace Officer Standards and Training sincerely appreciates the efforts of the many curriculum consultants, academy instructors, directors and coordinators who contributed to the development of this workbook. We must also thank the California law enforcement agency executives who allowed their personnel to participate in the development of these training materials.

This student workbook is part of the POST Basic Course Training System. The workbook component of this system provides a self-study document for every learning domain in the Basic Course. Each workbook is intended to be a supplement to, not a substitute for, classroom instruction. The objective of the system is to improve academy student learning and information retention and ultimately contribute to you becoming a peace officer committed to safety, and to the communities you will serve.

The content of each workbook is organized into sequenced learning modules to meet requirements as prescribed both by California law and the POST Training and Testing Specifications for the Basic Course.

It is our hope that the collective wisdom and experience of all who contributed to this workbook will help you, the student, to successfully complete the Basic Course and to enjoy a safe and rewarding career as a peace officer.

MANUEL ALVAREZ, Jr.
Executive Director

LD 34: First Aid & CPR

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How to Use the Student Workbook

Introduction

This workbook provides an introduction to the training requirements for this Learning Domain. It is intended to be used in several ways: for initial learning prior to classroom attendance, for test preparation, and for remedial training.

Workbook format

To use the workbook most effectively, follow the steps listed below.

Step	Action
1	Begin by reading the: Preface and How to Use the Workbook, which provide an overview of how the workbook fits into the POST Instructional System and how it should be used
2	Refer to the Chapter Synopsis section at the end of each chapter to review the key points that support the chapter objective
3	Read the text
4	Complete the Workbook Learning Activities at the end of each chapter. These activities reinforce the material taught in the chapter
5	Refer to the Glossary section for a definition of important terms. The terms appear throughout the text and are bolded and underlined the first time they appear (e.g., **term**)

Preface

Introduction

Student workbooks

The student workbooks are part of the POST Basic Course Instructional System. This system is designed to provide students with a self-study document to be used in preparation for classroom training.

Regular Basic Course training requirement

Completion of the Regular Basic Course is required, prior to exercising peace officer powers, as recognized in the California Penal Code and where the POST-required standard is the POST Regular Basic Course.

Student workbook elements

The following elements are included in each workbook:

- chapter contents, including a synopsis of key points
- supplementary material
- a glossary of terms used in this workbook

Chapter 1

Law Enforcement and Emergency Medical Services

Overview

Learning need

Peace officers must recognize they have a responsibility to act in good faith and to provide emergency medical services (EMS) to the best of their abilities and within the scope of their training.

Learning objectives

The following table identifies the student learning objectives for this chapter:

After completing study of this chapter, the student will be able to:	Objective ID
• Discuss the components of the EMS system including: – EMS access - Interaction with other EMS personnel - Local EMS and trauma systems	34.01.01
• Identify the primary responsibilities of peace officers as EMS first responders at an emergency including: - Safety Exposure to chemical, biological, radiological, or nuclear (CBRN) substances and scene safety - Scene size-up Law enforcement actions - Assessment and care of victims	34.01.02
• Identify the links of the chain of transmission of infectious pathogens	34.01.03

Continued on next page

Learning objectives (continued)

After completing study of this chapter, the student will be able to:	Objective ID
• Recognize first aid equipment and precautions peace officers may utilize to treat others and to ensure their own personal safety when responding to an emergency including: - Types and levels of Personal Protective Equipment (PPE) used to accomplish Body Substance Isolation (BSI) - Removal of contaminated gloves - Decontamination considerations	34.01.04
• Identify conditions under which a peace officer is protected from liability when providing emergency medical services	34.01.05

In this chapter

This chapter focuses on the peace officer's role within the EMS system. Refer to the following table for specific topics:

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Emergency Medical Services (EMS) System

Introduction

Law enforcement officers are part of the **Emergency Medical Services (EMS)** System. The EMS System is a coordinated response by public safety, public health, and health care providers to provide emergency medical care.

EMS Access

The public accesses EMS by utilizing the 9-1-1 system. These calls are handled by a dispatcher at a Public Safety Answering Point (PSAP). Law enforcement officers who encounter a medical or traumatic emergency should render aid and request additional EMS resources as appropriate.

The Components of the EMS System include:

Dispatcher: Coordinates type and level of EMS response and dispatches the appropriate agencies. An Emergency Medical Dispatcher (EMD) may give medical instructions to the public.

First Responder: Entry level medically trained person

Emergency Medical Technician (EMT): Provides basic life support (BLS)

Paramedic: Provides advanced life support (ALS)

Receiving facility: The medical treatment facility that provides emergency care.

Interaction with other EMS Personnel

As first responders, peace officers are part of the EMS system and should provide information to other responders. Sharing information, providing assistance, and team work are essential to the EMS system.

Local EMS and Trauma Systems

Ill or injured individuals may be transported to a receiving facility. Some facilities are designated to specialize in the provision of emergency, **stroke**, trauma, or cardiac care.

Peace Officer Roles and Responsibilities

Introduction

The first person at the scene of an emergency situation is often a peace officer. When the situation involves a medical emergency, peace officers assume the role of EMS first responder.

Primary responsibilities

As first responder**s**, peace officers should assume the primary responsibility for:

- ensuring peace officer safety as well as the safety of ill or injured individuals and the public
- evaluating the emergency situation (scene size-up)
- initiating actions regarding the well-being and care of ill or injured persons
- taking necessary enforcement actions related to the incident

En route to the scene

The primary objective of all peace officers responding to any emergency call should be to get to the location as *quickly and safely as possible.*

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Scene size-up

At the scene peace officers should evaluate the nature of the incident and communicate critical information to dispatch and other involved units as soon as possible. The following table identifies a number of factors that may be considered when evaluating the scene:

Factor	Related Information/Examples
Location	• Exact address or location of the incident • Conditions present at the scene (e.g., large number of bystanders, heavy vehicle traffic in the area, remote location, etc.) • Potential hazards related to the incident or the area (e.g., fire, gas/chemical leak, presence of hazardous materials, power lines, etc.)
Type of Emergency	• Conditions related to the actual emergency such as, but not limited to: - a vehicle collision involving injuries - an individual complaining of severe chest pain - a person injured as a result of criminal action (e.g., shot during a robbery), etc.
Nature of Ill/Injured Person(s)	• Number of victims • Apparent age of the victim(s) (i.e., adult, adolescent, child, infant) • Whether victim(s) is conscious or unconscious • Appearance of injury (e.g., heavy bleeding, exposed **bone**, location of wound, etc.)

Continued on next page

Scene size-up (continued)

Factor	Related Information/Examples
Need for Additional Resources	• Fire department • Additional law enforcement units • Medical emergency services (e.g., ambulance, EMTs) • Public utility services • Other specialty units (e.g., search and rescue, HAZMAT, etc.)
Urgent Enforcement Actions Required	• Protection of victim(s) from aggressor(s) • Control of suspect(s) and/or bystanders • Immediate protection of a crime scene

Safety

Peace officers are responsible for taking action to protect their own safety as well as the safety of other EMS personnel, the ill or injured person, the public, and to control the scene.

When determining appropriate safety precautions to take, peace officers should consider possible dangers from:

- exposure to biological hazards (e.g., body fluids such as blood, saliva, etc.)
- armed suspects, angry bystanders, etc.
- unsafe scene conditions (e.g., unstable buildings, nearby vehicle traffic, etc.)
- environmental hazards (e.g., fire, chance of explosion, etc.)
- exposure to chemical, biological, radiological, or nuclear (CBRN) substances
- explosives and explosive devices
- animals (e.g., pets, wild animals)

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Peace Officer Roles and Responsibilities, Continued

Assessment and care of victim

Based on this initial assessment, peace officers may need to provide basic care for victim(s). Such care may include providing basic emergency medical care until relieved by other personnel with equal or higher levels of training.

Law enforcement actions

If the care and well-being of the victim has been turned over to other EMS personnel, peace officers may be required to continue additional enforcement actions including:

- documenting their initial observations and actions when first arriving at the scene
- maintaining control of the scene to protect potential evidence
- identifying and isolating witnesses and involved parties
- recording statements or information provided by the victims, witnesses, etc.
- noting whether items were moved in order to render medical emergency services (e.g., recording what was touched and by whom)
- document medical care provided
- any other investigative actions required

Peace Officer Welfare and Safety

Introduction

Peace officers and all others within the EMS system must take appropriate precautions at all times when in direct contact with blood, bodily fluids, or other potential infectious materials.

Pathogens

Infection and disease are caused by **pathogens** that are spread through the air or by contact with another person's blood or bodily fluids.

Bacteria are microscopic organisms that can live in water, soil, or organic material, or within the bodies of plants, animals, and humans. The human body contains a number of both beneficial and harmful bacteria. Only when a bacteria is harmful would it be considered a pathogen.

A **virus** is a submicroscopic agent that is capable of infecting living cells. Once inside the cells of plants, animals, or humans, viruses can reproduce and cause various types of illness or disease.

Transfer of pathogens

There are two primary means by which pathogens can be transferred from one human being to another.

Airborne pathogens are spread by tiny droplets sprayed during breathing, coughing, or sneezing. Airborne pathogens can be absorbed through the mucous membranes (e.g., eyes, mouth) or when contaminated particles are inhaled.

Blood borne pathogens may be spread when the blood or other body fluids (e.g., semen, phlegm, mucus, etc.) of one person comes into contact with an **open wound** or sore of another.

Continued on next page

Peace Officer Welfare and Safety, Continued

Chain of transmission

Chain of transmission is how pathogens are spread such as:

- infectious agent (bacteria, viruses, fungi, and parasites)
- reservoir/source
- portal of exit
- means of transmission
- portal of entry
- susceptible host

Exposure

Because of the nature of their occupation, peace officers are at a high risk of being exposed to both airborne and blood borne pathogens.

NOTE: Exposure does not necessarily mean an individual will contract the illness.

Personal protective equipment

By using personal protective equipment (PPE), peace officers using body substance isolation (BSI) can break the chain of transmission and prevent possible exposure and infection. For equipment to be effective, it must be used and cared for properly.

Continued on next page

Personal protective equipment (continued)

The following table identifies standard PPE to which peace officers may have access to:

PPE	Examples	Additional Information
Protective Gloves	• Vinyl • Latex • Other synthetic materials	• For *single use* only • Should be: - put on *before* any contact with the victim, - changed between victims, and - disposed of properly. NOTE: • Leather gloves may not be an effective barrier to prevent contamination • Some individuals have a severe allergy to latex
Eye Protection	• Protective glasses • Goggles • Clip-on side protectors (for use with prescription glasses) • Face shields	• Used to prevent splashing, splattering, or spraying of a victim's body fluids into a person's eyes • Should provide protection from both the front and the sides • Must be cleaned and sanitized after exposure or disposed of properly

Continued on next page

Personal protective equipment (continued)

PPE	Examples	Additional Information
Masks	• Surgical-type masks • Approved particulate masks • Face shields • Particulate air respirators	• Used to prevent splashing, splattering, or spraying of a victim's bodily fluids into a person's nose or mouth • Only certain masks and respirators will filter airborne pathogens • Disposable surgical-type masks • Reusable masks, shields, and respirators should be cleaned and sanitized after exposure or contamination • N-95 masks
Gowns	• Disposable gowns	• Used to protect clothing and bare skin from spilled or splashed fluids • Should be used only once and disposed of properly
Ventilation Devices	• Portable pocket masks and one-way valve and filters	• Contain valves to control direction of airflow and filters to reduce chances of contamination • Used when applying **cardiopulmonary resuscitation (CPR)** NOTE: *Penal Code Section 13518.1* recommends that law enforcement agencies provide peace officers with appropriate portable masks and instruct officers on the mask's proper use.

Continued on next page

Personal protective equipment (continued)

PPE	Examples
General Supplies and Equipment	• Soap • Specialized cleaning solutions and disinfectants (e.g., bleach, germicide, etc.) • Prepackaged antimicrobial skin wipe towelettes • Leak proof disposable bags • Biohazard disposable bags • **Puncture** resistant disposable containers (e.g., sharps containers, evidence containers, etc.)

PPE disposal

Gloves, along with other equipment intended for single use, must be disposed of in an approved manner according to manufacturer recommendations after use or contamination. Disposal may include but not be limited to use of:

- biohazard bags
- sharps containers
- liquid proof containers

NOTE: Peace officers are responsible for being aware of and complying with their agency's policies and Occupational Safety and Health Administration (OSHA) guidelines regarding the disposal of hazardous PPE and materials.

Decontamination considerations

When performing decontamination procedures officers should follow their agency's blood borne pathogens control plan.

- Use proper cleaning procedures to disinfect and decontaminate any equipment that may have been exposed (e.g., vehicle steering wheel and interior, uniform, firearm, radio, etc.)
- Use extra caution when handling broken glass or sharp objects

NOTE: A solution of one part bleach and ten parts water can be used when disinfecting equipment.

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Peace Officer Welfare and Safety, Continued

Universal precautions

Along with using PPE, there are a number of universal precautions that peace officers as first responders in the EMS system should take.

- **Treat all body fluids as if they are contaminated!**
- If possible, wash hands thoroughly with warm water and soap before and after *each exposure, even when gloves are worn*
- Use hand sanitizer if hand washing is not available
- Use **bandages** or other cover protections when open cuts or sores exist

Personal preventive measures

Peace officers should also be aware of personal preventive measures they may take to remain healthy and support their own immune systems. Staying in good physical condition can help breach the chain of transmission of pathogens to which they may be exposed.

Documentation to exposure

If a peace officer is exposed to an infectious pathogen (or even suspects exposure), no matter how slight, that officer should report the exposure verbally and in writing as soon as possible.

NOTE: Peace officers should be aware of and comply with their agency policies or guidelines regarding reporting exposure information should be in compliance with Health Insurance Portability and Accountability Act (HIPAA) and OSHA regulations and specific actions to be taken.

Legal Protections Regarding Emergency Medical Services

Introduction

Under certain specified conditions, peace officers are afforded qualified immunity from liability when rendering emergency medical services at the scene of an emergency.

Responsibility to act

As trained professionals, peace officers have a responsibility to:

- assess emergency situations
- initiate appropriate emergency medical care within the scope of the officer's training and specific agency policy

A peace officer is *not* required to render care when reasonable danger exists (e.g., while under fire, exposure to hazardous materials, etc.).

Immunity from liability

The California Legislature has declared that **emergency rescue personnel** qualify for immunity from liability from civil damages for any injury caused by an action taken when providing emergency medical services under *certain specified conditions. (Health and Safety Code Section 1799.102)*

To be protected from liability for civil damages, emergency rescue personnel must:

- act within the ***scope of their employment***
- act in ***good faith***
- provide a standard of care that is within the ***scope of their training*** and specific ***agency policy***

Emergency rescue personnel means any person who is a peace officer, employee or member of a fire department, fire protection, or firefighting agency of the federal, state, city, or county government.

Continued on next page

Legal Protections Regarding Emergency Medical Services,
Continued

Immunity from liability (continued)

Emergency medical services include, but are not limited to, first aid and medical services, rescue procedures and transportation, or other related activities necessary to ensure the health or safety of a person in imminent peril.

Negligence

If peace officers attempt to provide emergency medical care beyond the scope of their training, or if they act in a grossly negligent manner, they *may* be held liable for any injuries they may cause.

Failure to provide care, even though the peace officer has had the appropriate level of training to do so, may also lead to the officer being liable for any injuries caused because of lack of care (e.g., fear of contagious or infectious disease).

NOTE: Peace officers are responsible for complying with their agency policies regarding providing emergency medical services.

Expressed consent

Peace officers should clearly identify themselves and ask for consent to administer emergency medical care. Consent (i.e., permission) must be obtained from the ill or injured person *before* providing emergency care.

In order to give lawful consent, the ill or injured person must be:

- conscious and **oriented**
- mentally competent enough to make rational decisions regarding their well-being
- 18 years or older, or an emancipated minor

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Legal Protections Regarding Emergency Medical Services,
Continued

Implied consent

Implied consent is a legal position that assumes that an unconscious or confused victim would consent to receiving emergency medical services if that person were able to do so.

Emergency rescue personnel have a responsibility to administer emergency medical services under *implied consent* whenever a victim is:

- unconscious
- incapable of giving consent due to a developmental, emotional, or mental disability
- in an altered mental state due to alcohol, drugs, head injury, etc.
- a juvenile, and the parent or guardian is not present

NOTE: Whenever implied consent is assumed or if medical services are provided based on the seriousness of the victim's condition, emergency rescue personnel should *carefully document* the conditions or the basis for their decision to treat the victim.

Refusal of care

A conscious and competent adult has the *right to refuse* any emergency medical services offered by emergency rescue personnel. The refusal must be honored as long as the person is mentally competent.

Depending on specific agency policy or guidelines, an individual who refuses emergency medical services may be required to sign a release form relinquishing EMS personnel of responsibility for that individual.

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Legal Protections Regarding Emergency Medical Services,
Continued

Life-threatening conditions

If it is determined that an illness or injury is such that if *left untreated* the victim's condition will degenerate to a life-threatening condition, the emergency rescue personnel may provide medical services *regardless of the victim's conscious condition.*

NOTE: Individuals who are terminally ill may have a specific advanced directive (e.g., do not resuscitate (DNR), physician orders for life sustaining treatment (POLST)). Peace officers are responsible for being aware of and complying with state and local policies and guidelines regarding following such instructions in an emergency situation.

Duty to continue

Once a peace officer initiates medical services, that officer ***must*** remain with the victim until:

- the officer is physically unable to continue ***or***
- the officer is relieved by an individual with equal or greater training and skill, ***or***
- the scene becomes unsafe for the officer to remain

Workbook Learning Activities

Introduction

To help you review and apply the material covered in this chapter, a selection of learning activities has been included. No answers are provided. However, by referring to the appropriate text, you should be able to prepare a response.

Activity questions

1. A peace officer responding to the scene of a vehicle collision finds the driver of one vehicle unconscious and slumped over the steering wheel. The driver of the second vehicle runs up to meet the officer and explain his side of the story. The cars are blocking a major intersection. As a component of the EMS system, what should the officer do first? What are the officer's responsibilities to the two drivers? To others at the scene? What factors should the responding officer evaluate regarding the nature of the incident? What information should be relayed to dispatch?

2. Why should peace officers consider covering something as simple as a paper cut with a bandage prior to the start of their shift?

Continued on next page

Activity questions (continued)

3. Name three controllable factors that could decrease a peace officer's risk of contracting the HIV pathogen. What other general precautions can an officer take that may help prevent infections when exposed to common pathogens such as influenza (i.e., flu)?

4. In your own words, define implied consent. Give an example of a situation where a peace officer as a first responder would assume implied consent.

Continued on next page

Student notes

Chapter 2

Victim Assessment

Overview

Learning need

Peace officers must be able to assess the immediate condition of adult and pediatric victims, a fellow officer, or themselves prior to beginning any form of medical care.

Learning objectives

The following table identifies the student learning objectives for this chapter:

After completing study of this chapter, the student will be able to:	Objective ID
• Demonstrate appropriate actions to take during a primary assessment for assessing both conscious and unconscious victims: - Responsiveness - Airway - Breathing - Circulation	 34.02.01 34.02.02 34.02.03 34.02.04
• Demonstrate appropriate actions to take during a secondary assessment for both conscious and unconscious victims: - Vital Signs - Head to toe assessment - Patient history	34.02.05
• Identify assessment criteria for establishing priorities when assessing multiple victims at a single scene	34.02.08

Continued on next page

Learning objectives (continued)

After completing study of this chapter, the student will be able to:	Objective ID
• Recognize conditions under which an injured victim should be moved from one location to another	34.02.09
• Recognize proper procedures for moving a victim including: - Shoulder drag - Lifts and carries which may include using: Soft litters Manual extractions including fore/aft, side-by-side, shoulder/belt	34.02.10

In this chapter

This chapter focuses on techniques for assessing the immediate condition of a victim at the scene of a medical emergency. Refer to the following table for specific topics:

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Victim Assessment (Conscious/Unconscious)	2-3
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Moving a Victim	2-12
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Victim Assessment (Conscious/Unconscious)

Introduction

Once the emergency scene has been evaluated and necessary safety precautions taken, the next step for the First Responder is to assess the victim's condition. The purpose of this two-part assessment process is to identify and immediately treat life-threatening conditions and to set priorities for further treatment.

Two part process

There are two parts to the victim assessment process: the **primary assessment** and the **secondary assessment**. The following table presents a brief description of each:

	Description	Actions	
Primary assessment	• Rapid, systematic process to detect life-threatening conditions	**1**	Check for responsiveness
		2	Check (ABC) - **Airway** - Breathing - Circulation
		3	Control major bleeding
		4	Treat for **shock**
		5	Consider **C-spine** stabilization based on mechanism of injury

Continued on next page

Victim Assessment (Conscious/Unconscious), Continued

Two part process (continued)

	Description	Actions	
Secondary assessment	• Systematic head-to-toe assessment to determine whether conditions exist	**1**	Check and document **vital signs**: - Skin Color - Temperature - Respiratory Rate - **Pulse** Rate
		2	Conduct a head-to-toe check to identify injuries
		3	Gather initial information regarding the victim and the incident including patient history

NOTE: Be prepared to advise EMS of the assessment results.

Continued on next page

Victim Assessment (Conscious/Unconscious), Continued

Respiration rate

The number of times a person inhales and exhales in a minute.

Peace officer safety

Prior to and after any contact with a victim, peace officers as first responders should take standard precautions including the use of personal protection equipment (PPE) (e.g., gloves).

Responsiveness (AVPU)

Before taking any action, the victim's level of responsiveness (mental status) should be determined. To determine responsiveness, the peace officer should speak with the victim directly, asking, "Are you okay?" If the victim does not respond, the officer should tap the victim or shout in order to elicit a response from the victim.

Depending on the level of responsiveness, a victim may be determined to be:

- **A**lert. Awake, responsive and oriented (i.e., can talk and answer questions appropriately)
- **V**erbal. Patient appears unresponsive at first but will respond to loud verbal stimulus (e.g., talking or shouting)
- **P**ainful. If the patient does not respond to verbal stimuli but may respond to painful stimuli (e.g., tapping or pinching, earlobe, or skin above collar bone rubbing)
- **U**nresponsive. Patient does not respond to verbal, nonverbal, or painful stimuli.

IF the victim is:	THEN the officer should:
unresponsive	• request additional EMS resources • check the victim's airway breathing and circulation
responsive	• control any major bleeding • treat for shock • request additional EMS resources if necessary

Continued on next page

Victim Assessment (Conscious/Unconscious), Continued

Primary assessment

The primary assessment is designed to identify the presence or absence of life-threatening conditions.

When a victim is alert and able to speak, it can be assumed that the victim has a clear airway and is able to breathe. If the victim is unable to speak or is not responsive, then appropriate steps should be taken to assess the victim's:

- Airway
- Breathing
- Circulation

Airway

The responding peace officer should determine if the victim's airway is open.

IF the victim's airway is not open and has:	**THEN the officer should open the airway using the appropriate technique:**
***no* suspected C-spine injury**	• Head-tilt/chin-lift
suspected c-spine injury	• Jaw thrust maneuver

NOTE: If you are unable to establish an airway using the jaw thrust maneuver use the head-tilt/chin-lift technique.

Victim Assessment (Conscious/Unconscious), Continued

Breathing

The responding peace officer should determine if the victim is breathing.

IF the victim is:	THEN the officer should:
not **breathing with pulse**	• begin **rescue breathing**
not **breathing with *no* pulse**	• **begin CPR**
breathing	• complete primary assessment

Circulation (pulse)

The presence of a pulse is an indication that the victim's heart is functioning.

IF the victim has:	THEN the officer should:
no **pulse**	• begin cardiopulmonary resuscitation (CPR)
a pulse but is *not* breathing	• begin rescue breathing

Continued on next page

Circulation (pulse) (continued)

IF the victim has:	THEN the officer should:
a pulse, is breathing, but *unconscious*	• check for indications of life-threatening conditions (e.g., major bleeding, shock, etc.) • place the victim in the **recovery position** (on the side with the head supported by the lower forearm), if appropriate, to aid breathing and allow fluids or vomit to drain from the mouth
a pulse, is breathing, and *conscious*	• check for indications of life-threatening conditions (e.g., major bleeding, shock, etc.)

NOTE: Techniques for performing CPR and rescue breathing are noted in a later chapter of this workbook.

Life-threatening conditions

Once it is determined that the victim is breathing and has a pulse, the peace officer must control any major bleeding and treat the victim for shock. Such conditions must be treated first before any further assessment of the victim takes place.

NOTE: Techniques for administering emergency first aid measures for controlling bleeding, treatment for shock, and other conditions are noted in later chapters of this workbook.

Victim Assessment (Conscious/Unconscious), Continued

Secondary Assessment (DOTS)

The purpose of a secondary assessment is to:

- check vital signs
- include a detailed head-to-toe assessment
  - **D**eformities –differences in natural body
  - **O**pen Injuries – indicated by visible blood
  - **T**enderness – to gentle touch
  - **S**welling – of the tissue around an affected area
- care for a patient's specific injuries or medical problems
- obtain a patient history and include any information relating to the current complaint or condition as well as past medical problems that could be related

Multiple Victim Assessment

Introduction

In some emergency situations, there will be more than one victim. In such situations, it is the peace officer's responsibility as first responders to classify the victims for treatment. By doing so, treatment will be rendered first to those victims needing immediate attention for life-threatening conditions.

Classification categories

Peace officers should move from one victim to another, making a quick (less than one minute) assessment of each victim's condition and classifying each victim into a category. First responders utilize a standardized **triage** system that includes specific terms and colors to readily identify patient treatment priorities.

The following table identifies the classification categories and colors associated with each:

Category	Color	Action
DECEASED	• Black	• No respiration after opening the airway
IMMEDIATE	• Red	• Receives treatment first, once all victims are classified
DELAYED	• Yellow	• Receives treatment once all victims classified as ***IMMEDIATE*** have been treated
MINOR	• Green	• Direct to a safe area away from other victims and possible scene safety hazards

Continued on next page

Multiple Victim Assessment, Continued

Assessment criteria

Classification categories should be based on assessment of the victim's breathing, circulation, and mental status.

The following table describes the order of the assessment process and criteria for classifying each victim:

	Actions	IF:	THEN:
Breathing	• Clear airway if necessary • Measure **<u>respiration rate</u>**	*no* respiration	• classify victim as **DECEASED**
		over 30 cycles/min.	• classify victim as **IMMEDIATE**
		below 30 cycles/min.	• continue assessment by checking the victim's circulation
Circulation (pulse)	• **<u>Capillary refill</u>** on extremities	more than two seconds	• classify victim as **IMMEDIATE**
		less than two seconds	• continue assessment by checking the victim's mental status
Mental Status	• Give simple commands such as "Open your eyes," or "Close your eyes."	*unable* to follow commands	• classify victim as **IMMEDIATE**
		follows commands	• classify victim as **DELAYED** or **MINOR**

Begin treatment

After completing the assessment and classification of all victims, treatment of victims classified as **IMMEDIATE** can begin.

Moving a Victim

Introduction

As a first responder, one of the most difficult decisions a peace officer may need to make at an emergency scene is whether or not to move a victim.

Do not move

More harm can be done to a victim by moving them than by the original injury. This is especially true if a spinal cord injury is suspected.

DO NOT MOVE any injured victim unless it is absolutely necessary for scene safety, patient safety or officer safety.

An *unconscious*, suspected trauma victim should be treated as though the victim has a spinal injury and therefore should *not be moved* unless it is absolutely necessary.

Spinal stabilization

Traumatic injury to the head and/or neck can result in damage to the spinal cord. Recognize the need for potential spinal immobilization precautions that are needed in order to prevent the possibility of further injury.

Conditions for moving a victim

A victim should be moved **only** when the victim or officer is in a **life-threatening situation**.

Life-threatening situations including but not limited to:		
Imminent danger	• When the danger outweighs the risk of further injury from being moved	• Fire or threat of fire or explosion • Toxic gases or radiation • Electrical hazards (e.g., downed power lines) • Uncontrolled moving traffic

Continued on next page

Conditions for moving a victim (continued)

Life-threatening situations including but not limited to:		
Unable to assess	• When it is not possible to do a primary assessment of the victim's condition • When the victim's condition or an officer's ability to provide basic life-saving procedures is not possible due to the victim's position	• Slumped over a steering wheel • When CPR is required

General guidelines

If an injured person must be moved, peace officers should consider the following guidelines.

	General Guidelines
Plan Ahead	• Identify a safe location before attempting to move the victim • Move only as far as is absolutely necessary
Reassure Victim	• Tell the victim(s) what is going on and why the victim is going to be moved • Keep the victim as calm as possible

Continued on next page

General guidelines (continued)

	General Guidelines
Victim Stability	• Keep victim in a straight line during the movement • Keep victim lying down • Move the victim rapidly but also as *carefully* and *gently* as possible • Be careful not to bump the victim's head during movement NOTE: If an infant is fastened in an infant seat, *do not* remove the infant. Move infant and the seat together.

The lifts and carries described herein should not be considered the only methods for patient movement. The steps used to describe the lifts and carries may not necessarily be performed in the direct order and are dependent on the totality of the circumstances facing the rescuer. All lifts and carries must involve assessing the patient injuries, need for movement and officer safety.

Shoulder drag

A number of different techniques may be used to move an injured victim. One maneuver that may be used is the shoulder drag technique.

To avoid straining their backs when dragging a victim, peace officers should:

- bend their knees
- keep their backs straight
- let their leg muscles do most of the work

Continued on next page

Moving a Victim, Continued

Shoulder drag (continued)

The basic steps for the shoulder drag technique are noted in the following table:

Step	Action
1	Use hands and grasp the victim under the armpits.
2	Stabilize the victim's head and neck to reduce the risk of injury.
3	Carefully lift the victim keeping the head and shoulders as close to the ground as possible.
4	Drag the victim so that the head, torso, and legs remain in a straight line. DO NOT pull sideways.
5	Gently place the victim in the new location. Assess the victim's condition.

Lifts and Carries

There are several methods for moving victims which may be employed depending on specific circumstances.

Soft litters

The basic steps for the soft litter technique are:

Step	Action
1	Place litter to side of victim.
2	Maintaining spinal immobilization, roll victim towards rescuer.
3	Position litter under victim.
4	Maintaining spinal immobilization, roll victim onto litter.
5	Secure victim to the litter as appropriate.

Moving a Victim, Continued

Manual extractions

The following techniques are completed with at least two rescuers.

Fore/aft sometimes called the "Trunk-Leg" lift and carry

The basic steps for the fore/aft technique are noted in the following table:

Step	Action
1	Place victim in a seated position.
2	Rescuer one squats behind victims back. Places arms under victim's armpits grasping the victim's wrists in the center of the victim's chest.
3	Rescuer two squats facing away from victim grasping the legs under the victim's knees.
4	Rescuers coordinate their movement to lift victim.
5	Gently place the victim in the new location. Assess the victim's condition.

Side-by-side sometimes called two handed seat

The basic steps for the side-by-side technique are noted in the following table:

Step	Action
1	Pick up the victim by having both rescuers squat down on either side of the victim.
2	Reach under the victim's shoulders and under their knees.
3	Grasp the other rescuer's wrists.
4	From the squat, with good lifting technique, stand.
5	Move in the direction that the victim is facing.
6	Gently place the victim in the new location. Assess the victim's condition.

Shoulder/belt

The basic steps for the techniques are noted in the following table:

Step	Action
1	Rescuers lift victim to seated position with victim's arms over rescuers' shoulders. Rescuers grab belt (or top of pants) at victim's mid back.
2	Rescuers lift/carry/drag the victim.
3	Gently place the victim in the new location. Assess the victim's condition.

Workbook Learning Activities

Introduction

To help you review and apply the material covered in this chapter, a selection of learning activities has been included. No answers are provided. However, by referring to the appropriate text, you should be able to prepare a response.

Activity questions

1. What are standard precautions? Describe three situations when peace officers should use these measures when in contact with a person with an injury or illness.

Continued on next page

Activity questions (continued)

2. Peace officers on patrol are flagged down by a woman who saw her husband collapse as they were painting the front of their house. When officers reach the man, they find him lying on his side on the grass. His wife tells officers that the victim fell from the fourth rung of the ladder. Describe, in a step-by-step fashion, how officers, as first responders, should conduct an primary assessment of the victim. What, if any, precautions should they take, presuming the victim does not appear to have any external bleeding?

3. During multiple victim assessment (four victims and one officer), under what, if any, circumstances might a victim who has no respiration be classified as deceased? Should an officer attempt rescue breathing or CPR (as appropriate) before moving on to assess the next victim?

Continued on next page

Activity questions (continued)

4. Peace officers respond to the scene of a drive by shooting. After the officers render the scene safe, they discover a woman sitting on the sidewalk, leaning her head on the shoulder of a teenaged boy. The woman has an apparent bullet wound to the shoulder. The primary assessment shows that she is conscious and appears pale, cool, and moist with rapid respirations. Describe how officers, as first responders, should proceed. What actions should the officers take if the woman loses consciousness?

5. Approximately ten people are injured in a fight outside of a dance club. As a first responder, explain how you would proceed after the scene has been secured and is safe to enter. What indications are present that a victim should be classified as needing immediate attention?

Continued on next page

Activity questions (continued)

6. A peace officer responded to the scene of a collision and car fire. The officer pulled an injured driver out just before flames engulfed the passenger compartment. It was later determined that the driver had suffered a spinal injury as a result of the collision, and that moving the victim may have worsened the condition, leading to the victim being partially paralyzed.

   - Is the officer liable?

   - How would this change if there was no immediate danger?

Classroom Demonstrations

Introduction

During class, the instructor will discuss and demonstrate specific techniques for conducting assessments on an injured victim. Students will have the opportunity to practice each technique and develop their own levels of skill.

Chapter 3

Basic Life Support

Overview

Learning need

Peace officers may be required to provide basic life support for a victim, fellow officer, or themselves until additional medical services become available.

Learning objectives

The following table identifies the student learning objectives for this chapter:

After completing study of this chapter, the student will be able to:	Objective ID
• Identify the components of the Chain of Survival	34.03.25
• Demonstrate Cardiopulmonary Resuscitation (CPR) for adults, children, and infants, following current American Heart Association (AHA) Guidelines for CPR and Emergency Cardiovascular Care (ECC) at the Healthcare provider level including: - Ventilation duration - Pulse location - Compression depth - Compression rate - Compression-to-ventilation ratio (one-person CPR) - Compression-to-ventilation ratio (two-person CPR) - Automated External Defibrillator (AED)	 34.03.08 34.03.09 34.03.10 34.03.11 34.03.12 34.03.13 34.03.26
• Discuss Basic Automated External Defibrillator (AED) operation including: - Special considerations - Troubleshooting	34.03.27
• Recognize circumstances under which a victim's airway should be opened by using a: - Head-tilt/chin-lift maneuver - Jaw-thrust maneuver	 34.03.01 34.03.02

Continued on next page

Learning objectives (continued)

After completing study of this chapter, the student will be able to:	Objective ID
• Identify the difference between a mild and a severe airway obstruction	34.03.03
• Demonstrate procedures for clearing an obstruction from the airway of both a conscious and an unconscious: - Adult - Child - Infant - Pregnant or obese individual	34.03.21 34.03.22 34.03.23 34.03.24
• Discuss rescue breathing techniques including: - Mouth-to-mouth - Pocket mask or other barrier devices - Bag valve mask	34.03.07
• Discuss the recovery position	34.03.28
• Discuss bleeding control techniques to including: - Direct pressure/pressure dressings - Tourniquet - Types of hemostatic dressings and packing the wound	34.03.15
• Demonstrate the general guidelines for controlling bleeding from an open wound	34.03.16
• Recognize the first aid treatment for traumatic injuries including: - Impaled objects - Amputations	34.03.29 34.03.30
• Recognize the signs and symptoms of shock	34.03.19
• Discuss first aid measures to treat shock including the importance of maintaining normal body temperature	34.03.31
• Demonstrate first aid measures to treat shock	34.03.20

Continued on next page

Overview, Continued

In this chapter

This chapter focuses on techniques for performing basic emergency and life support maneuvers. Refer to the following table for specific topics:

Topic	See Page
Cardiopulmonary Resuscitation (CPR)	3-4
Airway Obstructions	3-23
Rescue Breathing	3-34
Bleeding Control	3-39
Shock	3-45
Workbook Learning Activities	3-48
Classroom Demonstration	3-52

Cardiopulmonary Resuscitation (CPR)

Introduction

If a victim is unresponsive, not breathing or inadequately breathing, and has no definite **carotid pulse** to indicate circulation, then the victim is in a state of **cardiac arrest**.

Chain of Survival

The 5 links in the adult Chain of Survival are

• Immediate **recognition** of cardiac arrest and **activation** of the emergency response system

• Early **cardiopulmonary resuscitation (CPR)** with an emphasis on chest compressions

• Rapid **defibrillation**

• Effective **advanced life support**

• Integrated **post-cardiac arrest care**

A strong Chain of Survival can improve the chances of survival and recovery for victims of **heart attack**, stroke and other emergencies.

NOTE: American Heart Association (AHA)

CPR

Cardiopulmonary Resuscitation (CPR) is a method of artificially restoring and maintaining a victim's breathing and circulation. Early CPR is a key element of basic life support and the Chain of Survival.

CPR sequence

In order to survive, oxygenated blood must circulate through the body and reach the victim's brain. In order to ensure that this process takes place, a peace officer/first responder must:

- provide external **chest compressions** to circulate the victim's blood
- maintain an open **airway**
- provide rescue **breaths**

With the exception of newborns, the sequence for CPR is chest compressions, airway, and breathing (C-A-B).

Continued on next page

Cardiopulmonary Resuscitation (CPR), Continued

Clinical and biological death

A victim is clinically dead the moment breathing and circulation stop. **Clinical death** may be *reversible* if basic life support techniques such as CPR are initiated immediately.

When a victim's breathing and circulation stop *and* brain cells die due to lack of oxygen, *irreversible* changes begin to take place, and vital organs begin to deteriorate. At this point, a victim is biologically dead. **Biological death** usually takes place within four to six minutes after breathing and circulation stop.

NOTE: If any doubt exists as to whether or not the victim is alive, CPR should be started.

NOTE: The point at which a victim is considered to be biologically dead may be defined by specific agency guidelines and policy.

"Do not resuscitate" orders

A valid emergency medical services prehospital do not resuscitate (DNR) form, Physician Orders for Life Sustaining Treatment (POLST), or other advance health care directive are reasons for not beginning CPR on a victim. If there is doubt that the order may not be valid start CPR.

Specific agency policy

Different agencies may have specific policies and guidelines regarding performing CPR on unconscious adults, children, and infants, or DNR orders. Peace officers are responsible for knowing and complying with their agency policy.

Continued on next page

Cardiopulmonary Resuscitation (CPR), Continued

Adult CPR: one-person

Once a peace officer has confirmed the victim's responsiveness, and has determined that there is no breathing or circulation, CPR should be initiated immediately.

	Actions
Determine responsiveness	• Tap & shout • Request additional EMS resources and get an AED if available • Assess for breathing • Look for no breathing or abnormal breathing
Pulse check	• Locate the trachea, using 2 or 3 fingers • Slide these 2 or 3 fingers into the groove between the trachea and the muscles at the side of the neck, where you can feel the carotid pulse • Feel for a pulse for at least 5 but no more than 10 seconds. If you do not definitely feel a pulse, begin CPR, starting with chest compressions, airway, and breathing (C-A-B)
Chest compression	• Position yourself at the victim's side • Make sure the victim is lying face-up on a firm, flat surface. If the victim is lying face-down, carefully roll the victim face-up. If you suspect the victim has a head or neck injury, try to keep the head, neck, and torso aligned when rolling the victim to a face-up position

Continued on next page

Adult CPR: one-person (continued)

	Actions
Chest compression (continued)	• Put the heel of one hand on the center of the victim's chest on the lower half of the breastbone • Put the heel of your other hand on top of the first hand • Straighten your arms and position your shoulders directly over your hands • **Push hard and fast** – Press down at least 2 inches (5 cm) not to exceed 2.4 inches (6 cm) with each compression (this requires hard work). For each chest compression, make sure you push straight down on the victims breastbone – Deliver compressions at a rate of **100/min to 120/min** – At the end of each compression, make sure you allow the chest to recoil (re-expand) completely. Chest recoil allows blood to flow into the heart and is necessary for chest compressions to create blood flow. Incomplete chest recoil is harmful because it reduces the blood flow created by chest compressions. Chest compression and chest recoil/relaxation times should be approximately equal – Minimize interruptions
Ventilation	• Open the victim's airway using head-tilt or **jaw-thrust** maneuver • Provide ventilation • Give 2 breaths with each lasting 1 second • Victim's chest to visibly rise
Compression Cycle	• After 30 compressions, open victim's airway, give two breaths • Continue cycle of *30 compressions to 2 breaths*

Continued on next page

Cardiopulmonary Resuscitation (CPR), Continued

Adult CPR: two-persons

When performed correctly, two-person CPR is more efficient than CPR performed by one person. With two people, chest compressions are interrupted less and the individuals performing CPR do not tire as easily.

	Actions
Determine responsiveness	• Tap & shout • Request additional EMS resources and get an AED if available • Assess for breathing • Look for no breathing or abnormal breathing •
Pulse check	• Locate the trachea, using 2 or 3 fingers • Slide these 2 or 3 fingers into the groove between the trachea and the muscles at the side of the neck, where you can feel the carotid pulse • Feel for a pulse for at least 5 but no more than 10 seconds. If you do not definitely feel a pulse, begin CPR, starting with chest compressions
Chest compression	• Position yourself at the victim's side • Make sure the victim is lying face-up on a firm, flat surface. If the victim is lying face-down, carefully roll the victim face-up. If you suspect the victim has a head or neck injury, try to keep the head, neck, and torso aligned when rolling the victim to a face-up position • Put the heel of one hand on the center of the victim's chest on the lower half of the breastbone • Put the heel of your other hand on top of the first hand • Straighten your arms and position your shoulders directly over your hands

Continued on next page

Adult CPR: two-person (continued)

	Actions
Chest compression (continued)	• **Push hard and fast** – Press down at least 2 inches (5 cm) not to exceed 2.4 inches (6 cm) with each compression (this requires hard work). For each chest compression, make sure you push straight down on the victim's breastbone – Deliver compressions at a rate of **100/min to 120/min** – At the end of each compression, make sure you allow the chest to recoil (re-expand) completely. Chest recoil allows blood to flow into the heart and is necessary for chest compressions to create blood flow. Incomplete chest recoil is harmful because it reduces the blood flow created by chest compressions. Chest compression and chest recoil/relaxation times should be approximately equal – Minimize interruptions
Ventilation	• Open the victim's airway using the head-tilt/chin-lift technique or jaw-thrust maneuver • Provide ventilation • Give 2 breaths with each lasting 1 second • Victim's chest to visibly rise

Continued on next page

Adult CPR: two-person (continued)

	Actions
Compression Cycle	• After 30 compressions, open victim's airway, give two breaths • Continue cycle of 30 *compressions to 2 breaths* • Every 5 cycles or approximately every 2 minutes duties should be switched • Switching duties with the second rescuer should take less than 5 seconds

NOTE: If unsure there is a pulse, continue CPR.

NOTE: All findings, counting, etc. should be announced clearly and *out loud* to avoid confusion between the assisting peace officers.

NOTE: When performing two-person CPR, the rescuer providing chest compressions may become fatigued and reduce the effectiveness of CPR.

Continued on next page

Child CPR
One person

The technique for performing CPR on a child, (one year to puberty) is similar to that for adults, but with adjustments that take into account the child's size. The following table identifies the process for performing CPR on a child:

	Actions
Determine responsiveness	• Tap & shout • Request additional EMS resources and get an AED if available • Assess for breathing • Look for no breathing or abnormal breathing • Shout for help • If someone responds, send that person to activate the emergency response system and get the AED NOTE: If alone and child collapsed in front of you, you may leave the child to request additional EMS resources and obtain an AED. If unwitnessed perform CPR for 5 cycles (approximately 2 minutes) before requesting additional EMS resources.
Pulse check	• Check carotid pulse (no longer than 10 seconds) • Locate the trachea, using 2 or 3 fingers • Slide these 2 or 3 fingers into the groove between the trachea and the muscles at the side of the neck, where you can feel the carotid pulse • If no pulse or less than 60 beats per minute (BPM) with signs of poor **perfusion**, start compressions • If within 10 seconds you don't definitely feel a pulse or if, despite adequate oxygenation and ventilation, the heart rate is less than 60/min with signs of poor perfusion, perform cycles of compressions and breaths (30:2 ratio), starting with compressions • After 5 cycles, if someone has not already done so, activate the EMS and get the AED (or defibrillator). Use the AED as soon as it is available

Continued on next page

Child CPR: one person (continued)

	Actions
Chest Compressions	• Position yourself at the child's side • Make sure the child is lying face-up on a firm, flat surface. If the child is lying face-down, carefully roll the victim face-up. If you suspect the child has a head or neck injury, try to keep the head, neck, and torso aligned when rolling the child to a face-up position • Put the heel of one hand on the center of the child's chest on the lower half of the breastbone • Put the heel of your other hand on top of the first hand • For very small children you may use either 1 or 2 hands for chest compressions • Straighten your arms and position your shoulders directly over your hands • **Start compressions within 10 seconds** of recognition of cardiac arrest • **Push hard, push fast:** Compress at a rate of 100/min to 120/min. Chest compression should be at least 1/3 the depth of the chest or approximately 2 inches (5cm) • **Allow complete chest recoil** after each compression • **Minimize interruptions** in compressions (try to limit interruptions to less than 10 seconds) • **Give effective breaths** that make the chest rise • **Avoid excessive ventilation**

Continued on next page

Child CPR: one person (continued)

	Actions
Ventilation	• Open the victim's airway using head-tilt or jaw-thrust maneuver • Provide ventilation • Give 2 breaths with each lasting 1 second • Victim's chest to visibly rise
Compression Cycle	• After 30 compressions, open victim's airway, give two breaths • Continue cycle of *30 compressions to 2 breaths* NOTE: After 5 cycles, if someone has not already activated the EMS system or obtained an AED leave the victim to do this.

Continued on next page

Child CPR two-persons

As with one person CPR on a child, adjustments must take into account the child's size.

	Actions
Determine responsiveness	• Tap & shout • Request additional EMS resources and get an AED if available • Assess for breathing • Look for no breathing or abnormal breathing • Shout for help • If someone responds, send that person to activate the emergency response system and get the AED NOTE: If alone and child collapsed in front of you, you may leave the child to request additional EMS resources and obtain an AED. If unwitnessed perform CPR for 5 cycles (approximately 2 minutes) before requesting additional EMS resources.
Pulse check	• Check carotid pulse (no longer than 10 seconds) • Locate the trachea, using 2 or 3 fingers • Slide these 2 or 3 fingers into the groove between the trachea and the muscles at the side of the neck, where you can feel the carotid pulse • If no pulse or less than 60 beats per minute (BPM) with poor perfusion, start compressions • If within 10 seconds you don't definitely feel a pulse or if, despite adequate oxygenation and ventilation, the heart rate is less than 60/min with signs of poor perfusion, begin CPR, starting with chest compressions • After 5 cycles, if someone has not already done so, activate EMS and get the AED (or defibrillator). Use the AED as soon as it is available

Continued on next page

Child CPR: two person (continued)

	Actions
Chest Compressions	• Position yourself at the child's side • Make sure the child is lying face-up on a firm, flat surface. If the child is lying face-down, carefully roll him face-up. If you suspect the child has a head or neck injury, try to keep the head, neck, and torso in a line when rolling the child to a face-up position • Put the heel of one hand on the center of the child's chest on the lower half of the breastbone • Put the heel of your other hand on top of the first hand • For very small children you may use either 1 or 2 hands for chest compressions • Straighten your arms and position your shoulders directly over your hands • **Start compressions within 10 seconds** of recognition of cardiac arrest • **Push hard, push fast:** Compress at a rate of 100/min to 120/min. Chest compression should be at least 1/3 the depth of the chest or approximately 2 inches (5cm) • **Allow complete chest recoil** after each compression • **Minimize interruptions** in compressions (try to limit interruptions to less than 10 seconds) • **Give effective breaths** that make the chest rise • **Avoid excessive ventilation**
Ventilation	• Open the victim's airway using head-tilt or jaw-thrust maneuver • Provide ventilation • Give 2 breaths with each lasting 1 second • Victim's chest to visibly rise
Compression Cycle	• Use a compression-to-breaths ratio of 15:2 for children per current American Heart Association (AHA) Guidelines for CPR and Emergency Cardiovascular Care (ECC) at the Healthcare provider level.

Continued on next page

Infant CPR
One person

The technique for performing CPR on an infant, (under one year of age) is similar to that for a child, but with adjustments that take into account the infant's size. The following table identifies the process for performing CPR on an infant:

	Actions
Determine responsiveness	• Tap & shout • Request additional EMS resources and get an AED if available • Assess for breathing • Look for no breathing or abnormal breathing
Pulse check	• Check brachial pulse (no longer than 10 seconds) • Place 2 or 3 fingers on the inside of the upper arm, between the infant's elbow and shoulder • Press the index and middle fingers gently on the inside of the upper arm for at least 5 but no more than 10 seconds when attempting to feel the pulse • If no pulse or less than 60 beats per minute (BPM) with signs of poor perfusion, perform cycles of compressions and breaths (30:2 ratio), starting with compressions • After 5 cycles, if someone has not already done so, activate EMS and get the AED (or defibrillator)

Continued on next page

Infant CPR: one person (continued)

	Actions
Chest compression	• Place the infant on a firm, flat surface • Place 2 fingers in the center of the infant's chest just below the nipple line. Do not press on the bottom of the breastbone • To give chest compressions, press the infant's breastbone down at least one third the depth of the chest (approximately 1 ½ inches (4cm)). Deliver compressions at a rate of 100/min to 120/min • At the end of each compression, make sure you allow the chest to recoil (re-expand) completely. Chest recoil allows blood to flow into the heart and is necessary to create blood flow during chest compressions. Chest compression and chest recoil/relaxation times should be approximately equal • Minimize interruptions in chest compressions
Ventilation	• Open the victim's airway using head-tilt or jaw-thrust maneuver • Provide ventilation • Give 2 breaths with each lasting 1 second • Victim's chest to visibly rise
Compression Cycle	• After 30 compressions, open victim's airway, give two breaths • Continue cycle of 30 compressions to 2 breaths NOTE: After 5 cycles, if someone has not already activated the EMS system or obtained an AED leave the victim to do this.

Continued on next page

Infant CPR two-persons

As with one person CPR on an infant, adjustments must take into account the infant's size.

	Actions
Determine responsiveness	• Tap & shout • Assess for breathing • No breathing or only gasping • Send second rescuer to request additional EMS resources and get AED (or defibrillator)
Pulse check	• Check brachial pulse (no longer than 10 seconds) • Place 2 or 3 fingers on the inside of the upper arm, between the infant's elbow and shoulder • Press the index and middle fingers gently on the inside of the upper arm for at least 5 but no more than 10 seconds when attempting to feel the pulse • If no pulse or less than 60 beats per minute (BPM) with signs of poor perfusion, perform cycles of compressions and breaths (15:2 ratio), starting with compressions

Continued on next page

Infant CPR: two person (continued)

	Actions
Chest compression	• Place both thumbs side by side in the center of the infant's chest on the lower half of the breastbone. The thumbs may overlap in very small infants • Encircle the infant's chest and support the infant's back with the fingers of both hands • With your hands encircling the chest, use both thumbs to depress the breastbone approximately one third the depth of the infant's chest (approximately 1½ inches (4cm)) • Deliver compressions at a rate of 100/min to 120/min • After each compression, completely release the pressure on the breastbone and allow the chest to recoil completely • After every 15 compressions, pause briefly for the second rescuer to open the airway with a head-tilt/chin-lift and give 2 breaths. The chest should rise with each breath • Continue compressions and breaths in a ratio of 15:2 (for 2 rescuers), switching roles every 2 minutes to avoid rescuer fatigue

Continued on next page

Infant CPR: two person (continued)

Ventilation	• Check the victim for a response and for breathing • If there is no response and no breathing or only gasping, send the second rescuer to activate the emergency response system and get the AED (or defibrillator) • Check the infant's brachial pulse (take at least 5 but no more than 10 seconds) • If there is no pulse or if, despite adequate oxygenation and ventilation, the heart rate (pulse) is <60/min with signs of poor perfusion, perform cycles of compressions and breaths (30:2 ratio), starting with compressions. When the second rescuer arrives and can perform CPR, use compression-ventilation ratio of 15:2 • Use the AED (or defibrillator) as soon as it is available
Compression Cycle	• Use a compression-to-breaths ratio of 15:2 for infants per American Heart Association guidelines for CPR and ECC.

Pausing CPR

Minimize interruptions in compressions to 10 seconds or less.

Stopping of CPR

CPR must be continued until:

- the victim's breathing resumes
- the officer is relieved by an equally or higher medically trained person
- the officer is too exhausted to continue
- environmental hazards endanger the rescuer (e.g., gun shots)

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Automated external defibrillators (AED)

The best treatment for most cases of sudden cardiac arrest is immediate treatment with a defibrillator, a device that shocks the heart out of fatal rhythm, in hopes that the heart will resume a normal perfusion rhythm. **Automated External Defibrillators (AED)** are placed in many public places. Peace officers will become familiar with the operation and location of these devices.

The AED protocol has seven basic steps:

- Check for responsiveness and breathing
- Render aid and request additional EMS resources if unresponsive
- Get the AED if readily available
- Check for pulse. A second rescuer should continue CPR until the AED is attached
- Attach the AED electrode pads
- Allow the AED to analyze the heart rhythm. Make sure no one is touching the victim
- If a shock is indicated verbalize "all clear" prior to pressing the "shock" button. Follow the voice prompts from the AED
- Current AHA guidelines recommend that an AED should be used as soon as available.

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Special considerations

AEDs are designed to be used for adults, children and infants.

- AEDs are safe in all weather conditions (on dry skin)
- Never place AED electrode pads directly on top of medication patches. Remove patches first and wipe the skin dry
- If the victim has a pacemaker or an internal defibrillator with a battery pack (visible as a lump under the skin, approximately two inches long) avoid placing pads directly on top of the implant
- If the victim is lying on a metal surface (e.g. bleachers) avoid contact of the electrodes with the metal surface

NOTE: Remove any jewelry from the patient's chest.

NOTE: Persons with excessive chest hair may need to be shaved prior to application of the AED electrodes.

Troubleshooting

Issue	Cause
Inadequate electrode connections	• Improper connection to AED device • Dry or damaged electrodes
Electrodes do not adhere to skin	• Wet/contaminated/excessive hair on chest surface
AED fails to perform analysis	• Excessive movement of patient • Ventilating during analysis • Radio Frequency interference • Vehicle motion

Although all AED brands operate similarly, review the manufacturer's manual to determine if additional troubleshooting measures exists.

Airway Obstructions

Introduction

Respiratory failure is the inability to intake oxygen, to the point where life cannot be sustained. When breathing stops completely, the victim is in **respiratory arrest** which can quickly lead to cardiac arrest if action is not taken. Because of this, establishing and maintaining an open airway is of the highest priority.

NOTE: Whenever a peace officer encounters an airway obstruction they should render aid and request additional resources as appropriate.

Spinal cord injury

Prior to any attempt to open a victim's airway, peace officers must consider whether or not the victim may have suffered any type of spinal injury. If head, neck, or spinal cord injury is suspected, the victim's head and neck may need to be protected by providing as much manual stabilization as possible.

Indications of head, neck, or spinal injury may include, but not be limited to:

- the mechanism of injury (e.g., falling from a high position, vehicle collision, etc.)
- information provided by bystanders/witnesses

NOTE: Whenever a victim is found unconscious, responding officers should suspect a spinal cord injury and act accordingly.

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Opening an airway

There are two maneuvers that peace officers/First Responders can use to open a victim's airway: **head-tilt/chin-lift**, and jaw-thrust. The following table provides information regarding each maneuver:

	Use	Step	Technique
Head-Tilt/ Chin-Lift	• Provides maximum airway opening	**1**	• Place one hand on the victim's forehead • Place the fingers of the other hand under the bony area at the center of the victim's lower jaw
		2	• Tilt the victim's head back by: - pressing backward on the forehead - lifting the chin with the fingers
		3	• Move the jaw forward to a point where the lower teeth are almost touching the upper teeth • If necessary, use the thumb of the hand supporting the chin to pull open the victim's mouth

NOTE: **Do not** compress the soft tissues under the lower jaw. This may obstruct the victim's airway.

NOTE: **Do not** place thumb or finger(s) inside the victim's mouth.

Continued on next page

Opening an airway (continued)

	Use	Step	Technique
Jaw-Thrust	• When head, neck, or spinal injury is suspected • To open airway on an unconscious victim • Allows airway to be opened without moving the victim's head or neck	**1**	• Take a position at the top of the victim's head
		2	• Gently place one hand on each side of the victim's head • Place your fingers under the angles of the victim's lower jaw and lift with both hands, displacing the jaw forward • Place thumbs on the victim's cheeks • Stabilize the victim's head
		3	• Using the fingers, gently push the victim's jaw forward • If necessary, use thumb to pull open the victim's lips

NOTE: If you are unable to perform the jaw thrust maneuver you shall use the head-tilt/chin-lift technique.

Continued on next page

Airway Obstructions, Continued

Special consideration

The following table identifies a number of special considerations when attempting to open a victim's airway:

Consideration	Additional Information
Infants and Children	• Trachea ("windpipe") is narrower, softer, and more flexible than in adults • Over extension of an infant's/child's neck may occlude the trachea • Tongue takes up more space in the mouth than adults • Airways are smaller and easily obstructed
Facial Injuries	• Severe swelling and bleeding may block airway
Dental Appliances	• Normally, full/partial dentures should be left in • Remove only if they have become dislodged during the emergency and endanger the victim's airway

Primary assessment

A primary assessment of the victim should take place. The initial assessment should include determining the victim's responsiveness and breathing

- Breathing to determine if the victim is breathing adequately
- Circulation to identify if the victim has a pulse

If it is determined that the victim is not responsive and not breathing or not breathing adequately chest compressions should be started.

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Airway Obstructions, Continued

Ventilation

After 30 compressions attempt to ventilate. If the breath does not go in, the victim should be repositioned using the head-tilt/chin-lift maneuver and ventilation should be reattempted. If the breaths still do not go in the rescuer should give 30 compressions.

Airway obstructions

An airway obstruction can be either mild or severe. They are caused by a number of different materials blocking the person's air passages. Examples include, but are not limited to the following:

- Victim's tongue
- Vomit or blood
- Broken teeth or dentures
- Foreign objects such as toys, ice, food

Mild airway obstruction

If the victim indicates an airway problem (i.e., choking) but is able to speak or cough, the victim is experiencing a **mild airway obstruction**. With a mild airway obstruction, it may be assumed that there is adequate air exchange to prevent respiratory failure.

A victim who is conscious with a mild airway obstruction should be encouraged to cough forcefully to dislodge and expel the object.

Do not interfere with the victim's attempts to cough (e.g., pound on the victim's back). This could lodge the obstruction even further, causing a **severe airway obstruction**. If the obstruction cannot be removed by coughing and the victim has labored breathing, is making unusual breathing sounds, or is turning blue/grey, the victim should be treated as if there is a severe airway obstruction.

NOTE: Grabbing the throat with one or both hands, indicating the victim is unable to breathe, is considered the universal sign of choking.

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Airway Obstructions, Continued

Severe obstruction

The victim may be experiencing a severe airway obstruction if:

- unconscious and unable to be ventilated after the airway has been opened
- conscious but unable to speak, cough, or breathe

Under such conditions, additional measures may be required to free the victim's airway from a severe obstruction. The two primary maneuvers used are the **abdominal thrust** (if conscious) and chest compressions/attempt to ventilate (if unconscious).

Tongue obstruction

A large number of severe airway obstructions leading to respiratory failure are caused by the victim's own tongue.

In the unconscious victim, the muscles of the lower jaw relax and the tongue can lose muscle tone. When this happens, the tongue may block the victim's airway.

Removing obstruction

If any object causing the obstruction can be seen it might be removed by using a **finger sweep**.

To conduct a finger sweep:

- open the victim's mouth by grasping both the tongue and lower jaw between the thumb and fingers
- insert the index finger of the other hand down along the cheek and then gently into the throat in a "hooking" motion
- if the object can be felt, grasp it and remove it

NOTE: The finger sweep maneuver should be done with care so that the object is not forced further into the victim's throat.

NOTE: **Do not** use a blind finger sweep. Objects should be removed from the victim's mouths only if the objects can be *seen clearly*.

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Abdominal thrusts

The abdominal thrust (also referred to as the Heimlich maneuver) is one method used to force obstructions from a victim's airway that cannot be removed with a finger sweep. Abdominal thrusts force air out of the lungs, expelling the obstruction, and clearing the victim's airway.

The following table identifies techniques for performing an abdominal thrust on conscious victims:

Conscious **Choking Adult or Child**	**1**	• Ask the victim, "Are you choking?", "Can I help you?" • Determine that the victim is choking (i.e., unable to speak, cough, or breathe) • Inform the victim before taking action
	2	• Stand or kneel behind the victim and wrap your arms around the victim's waist
	3	• Make a fist with one hand
	4	• Place the thumb side of the fist against the victim's abdomen, in the midline slightly above the navel and well below the breastbone
	5	• Grasp your fist with your other hand and press your fist into the victim's abdomen with a quick, forceful upward thrust
	6	• Give each new thrust with a separate, distinct movement to relieve the obstruction

Continued on next page

Abdominal thrusts (continued)

When a conscious victim becomes unconscious:

	Step	Action
Unconscious **Adult or Child**	**1**	• Request additional EMS resources • Place victim in a **supine** position NOTE: When the victim is a child, officers should have a second person (if available) request additional EMS resources, while the peace officers/first responders begin the abdominal thrust immediately.
	2	• Open the victim's airway • Look inside the victim's mouth • Conduct a finger sweep of the victim's mouth, only if you see the object (**Do not** use a blind finger sweep.) • Attempt to ventilate victim's lungs • If airway remains obstructed, reposition the victim's head and attempt to ventilate again • If airway remains obstructed, perform 30 chest compressions, look in the airway, remove any visible debris, attempt to ventilate • Repeat this procedure until chest rise is achieved during an attempted ventilation

NOTE: Abdominal thrusts ***should not*** be used on infants, pregnant women or obese patients. Instead use **chest thrusts**.

NOTE: Prior to each ventilation, look in mouth for obstruction.

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Chest thrusts

The chest thrust is another maneuver that can be used to force obstructions from a victim's airway. Chest thrusts are used in place of abdominal thrusts when the victim is:

- pregnant
- obese

The following table identifies techniques for performing a chest thrust on a conscious victim who is pregnant or obese.

	Step	Action
Conscious **Choking Adult**	**1**	• Ask the victim, "Are you choking?", "Can I help you?" • Determine that the victim is choking (i.e., unable to speak, cough, or breathe) • Inform the victim before taking action
	2	• Take a position behind the victim who is standing or sitting • Slide arms under the victim's armpits and encircle the victim's chest
	3	• Form a fist with one hand • Place the thumb side of fist on the midline of the victim's sternum, level with the armpits • Grasp the fist with the free hand
	4	• Direct thrusts *straight back* toward the victim's spine • Use care not to direct thrusts up, down, or to either side
	5	• Repeat thrusts until object is expelled or victim loses consciousness

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Infants

A combination of back blows and chest compressions may be used to clear a foreign body from an infant's airway. The following table identifies techniques for chest thrusts on both conscious and unconscious infants:

	Step	Action
Conscious **Choking Infant**	**1**	• Kneel or sit with the infant in your lap
	2	• If it is easy to do, remove clothing from the infant's chest
	3	• Deliver up to 5 back slaps forcefully between the infant's shoulder blades, using the heel of your hand. Deliver each slap with sufficient force to attempt to dislodge the foreign body
	4	• After delivering up to 5 back slaps, place your free hand on the infant's back, supporting the back of the infant's head with the palm of your hand. The infant will be adequately cradled between your 2 forearms, with the palm of one hand supporting the face and jaw while the palm of the other hand supports the back of the infant's head
	5	• Turn the infant as a unit while carefully supporting the head and neck. Hold the infant face-up, with your forearm resting on your thigh. Keep the infant's head lower than the trunk
	6	• Provide up to 5 quick downward chest thrusts in the middle of the chest over the lower half of the breastbone (same as for chest compressions during CPR). Deliver chest thrusts at a rate of about 1 per second, each with the intention of creating enough force to dislodge the foreign body
	7	• Repeat the sequence of up to 5 back slaps and up to 5 chest thrusts until the object is removed or the infant becomes unresponsive

Continued on next page

Infants (continued)

	Step	Action
Conscious Infant becomes Unconscious	**1**	• Request additional EMS resources • If a second person is available, send that person to activate the emergency response system. • Place the infant on a firm, flat surface
	2	• Begin CPR (starting with compressions) with 1 extra step: each time you open the airway, look for the obstructing object in the back of the throat. If you see an object and can easily remove it, remove it
	3	• After approximately 2 minutes of CPR (C-A-B sequence), activate the emergency response system (if no one has done so)

NOTE: Do not perform blind finger sweeps in infants and children because sweeps may push the foreign body back into the airway, causing further obstruction or injury.

If the infant victim becomes unresponsive, stop giving back slaps and begin CPR.

NOTE: Repeat steps 3 through 5 until obstruction is cleared.

Rescue Breathing

Introduction

If the victim has a pulse, but is not breathing, the peace officer may attempt rescue breathing.

Rescue breathing

Rescue breathing is the process of using one's own breaths to artificially breathe for a victim. The rescue breathing process continues until the victim is able to breathe without assistance or other breathing support is provided by EMS personnel.

Scene safety

Ensure scene safety and use PPE by taking standard precautions.

	Actions
Responsiveness	• Establish that the victim is unresponsive and is not breathing or not breathing adequately i.e., shallow, gasping breaths • Request additional EMS resources and request an Automated External Defibrillator (AED). (If a second person is available, have that individual request additional EMS resources and get the AED)

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Rescue Breathing, Continued

Rescue breathing rates and duration

Rescue breathing duration and rate will vary depending on the victim's age.

	Adult (Puberty and above)	Children (newborn to puberty)
Rate	Give 1 breath every 5-6 seconds (about 10 to 12 breaths per minute).	Give 1 breath every 3-5 seconds (about 12 to 20 breaths per minute).
• Give each breath in 1 second • Each breath should result in visible chest rise • Check the pulse about every 2 minutes		

NOTE: Peace officers should use their best judgment when estimating the age of a child or infant.

NOTE: Signs of puberty include chest or underarm hair on males and any breast development in females.

Rescue breathing technique

The following table identifies the techniques for rescue breathing:

Step	Action
1	• Open the victim's airway using the head-tilt/chin-tilt or jaw-thrust maneuver (whichever is most appropriate for the situation)
2	• Take a position at the top of the victim's head • Place portable pocket mask on the victim so the top of the mask is over the victim's nose while the base of the mask is between the lower lip and chin

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Rescue breathing technique (continued)

The following table identifies the techniques for rescue breathing:

Step	Action
3	• Take a breath and exhale directly into the victim's mouth or through the one-way valve of the mask (one second) • Use only enough air to create a visible chest rise • Do not over inflate the lungs
4	• If breaths do not enter the victim's lungs: - reposition the victim's head to open the airway - attempt to breathe into the victim's lungs again
5	• Continue rescue breathing until: - victim begins to breathe without assistance - officer is relieved by an equally or higher medically trained person - officer becomes too exhausted to continue - unable to detect a pulse after 2 minutes of rescue breathing, (begin CPR) - victim is declared dead by an authority

NOTE: If the victim begins to breathe without assistance, continue to assess the victim's condition. Place in the recovery position, and provide care for shock.

Continued on next page

Rescue Breathing, Continued

Other conditions

If the victim's mouth is injured and cannot be used for rescue breathing, the peace officer should use a *mask-to-nose* position.

If the victim has a laryngectomy, a surgical procedure that implants an artificial airway (stoma) in the neck, the peace officer should use a *mask-to-stoma* position.

For both positions, the same methods should be used as with mouth-to-mouth/face mask techniques for rescue breathing.

Breathing/ pulse checks

The victim's pulse and breathing should be checked approximately every two minutes.

If the victim is:

- *not breathing* but has a pulse, continue rescue breathing
- *not breathing* and has *no pulse*, begin Cardiopulmonary Resuscitation (CPR)

Recovery position

If the victim resumes adequate breathing and there are no indications of major bleeding or spinal injury, then the victim can be placed in the *recovery position*. This position allows for drainage from the mouth and prevents the victim's tongue from blocking the airway.

To place a victim in the recovery position:

- roll the victim onto their left side toward the rescuer
- keep the victim's body in one unit with the spine as straight as possible
- move the victim's lower arm up and bend at the elbow
- move the victim's top leg toward the victim's chest, continue monitoring the victim's breathing

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Rescue Breathing, Continued

Gastric distention

Rescue breathing can force some air into the victim's stomach as well as lungs, causing the stomach to become distended. This condition is referred to as **gastric distention**.

NOTE: If gastric distention is observed, reposition the airway and give smaller, slower breaths.

Vomiting

If a victim vomits, the vomit may enter the lungs and cause further life-threatening complications.

If vomiting should occur:

- quickly turn the victim onto their side *(not just the head)* as one unit to keep the spine straight.
- wipe the vomit from the victim's mouth
- return the victim to the supine position
- open the airway
- continue rescue breathing

This process should take less than 10 seconds to complete.

Bleeding Control

Introduction

Large or deep wounds or injuries can lead to uncontrolled bleeding, which in turn can lead to shock and eventually death.

Circulatory system

The three components to the human circulatory system are the:

- heart
- blood vessels
- blood

If any one component does not function properly, oxygen and nutrients will not reach the body's major organs in sufficient enough supply to support life.

Bleeding control techniques

There are two techniques that may be used to control or limit bleeding at the scene of a medical emergency.

	Description	Additional Information
Direct pressure	• Direct pressure applied to the bleeding site until bleeding is controlled	• Most common and effective technique • Should be used first before other bleeding control options • May be done by firmly applying direct pressure over the bleeding site using a clean **dressing** and/or a pressure bandage

NOTE: A dressing is any material applied to a wound to control bleeding and prevent contamination. A bandage is any material used to hold a dressing in place.

NOTE: If clean dressing is not available, a gloved hand or other clean material may be used.

Continued on next page

Bleeding Control, Continued

Bleeding control techniques (continued)

	Description	Additional Information
Tourniquet	• Use of a device to close off all blood flow to and from a limb • Should **only** be used for **life-threatening** conditions when direct pressure has **failed**	• Can be made of any material wide enough (at least 2 inches) so as to not cut into the victim's skin (e.g., flat belt, stocking, necktie, etc.) • Apply close to the wound, between the wound and the victim's heart (but not over a **joint**) • Wrap material around limb and draw tightly to the point where the bleeding is stopped and ***no further bleeding*** occurs • Note the time the tourniquet is placed; report to EMTs • If victim is covered, leave the area where the tourniquet is located exposed for EMTs to see NOTE: An improperly applied tourniquet may be removed and reapplied.
Hemostatic dressings		• Pack the wound with hemostatic gauze • Tightly pack the wound space • Apply direct pressure for three to five minutes • Apply pressure bandage • Wrap for transportation

NOTE: Direct pressure and/or tourniquet should be used as the primary bleeding control technique; however, peace officer/first responder's may use elevation or pressure points.

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Open wounds

An open wound is any injury where the skin has been broken, exposing the tissue underneath. **Abrasions**, **incisions**, **lacerations**, punctures, **avulsions**, and **amputations** are all examples of open wounds requiring attention to control bleeding.

The following table identifies types of open wounds:

	Description/Cause	Examples
Abrasion	• A scraping away of only outer portion of the skin	• Rug burns • Road burns • Skinned elbows/ knees
Incision	• Smooth, straight cut • Caused by sharp objects	• Paper cuts • Razors • Edged weapons
Laceration	• Jagged-edged wound • Caused by objects tearing or ripping the skin	• Broken glass • Jagged metal • Saws • Severe blow or impact with blunt object
Puncture (penetrating)	• Deep wound through the skin and other tissue	• Arrows • Knives • Nails • Bullets • Impaled objects

Continued on next page

Open wounds (continued)

	Description/Cause	Examples
Avulsion	• A part or structure of the body that has been forcibly torn or cut away	• Tip of nose that is cut off • External portion of ear torn away • Eye pulled from its socket
Amputation	• Surgical or traumatic removal of a body *extremity* • Jagged skin and bone edges may be exposed • May involve massive bleeding	• Accidents involving chain saws, industrial equipment, etc.

Continued on next page

Care for open wounds

Care of open wounds will require an initial assessment and then action to stop bleeding and prevention of shock. The following table identifies the appropriate steps to be taken when caring for open wounds:

	General Guidelines	
Assessment	• Expose the injury site before applying bleeding control (e.g., remove, loosen, or cut away clothing covering the wound) • Assess for possible **fractures** associated with open wound	
Immediate care	**Control Bleeding**	• Apply direct pressure to stop bleeding • Apply a pressure bandage • Apply a tourniquet • Apply bandages snugly but not so tight as to impair circulation to portions of the body distal (farther away)
	Impaled Objects	• ***Do not*** attempt to remove the object (Any movement of the object could cause further damage or increased bleeding.) • Control bleeding by applying pressure on both sides of the object • ***Do not*** put pressure on the object itself • Stabilize object in place by use of absorbent material

NOTE: If initial bandaging does not stop the blood flow, add additional bandaging. (Do not remove initial bandaging)

Continued on next page

Care for open wounds (continued)

	General Guidelines	
Immediate care	**Avulsions/ Amputations**	• Place partially separated skin or tissue back in proper position before applying dressing and bandage or tourniquet as needed • Attempt to locate any avulsed part or amputated extremity • Keep separated part/extremity dry, cool, and protected • ***Do not*** *immerse, pack in ice, or freeze separated part/extremity* • Transport separated part/extremity with victim for possible surgical replacement
Circulation	• Monitor pulse below the injury site • Check capillary circulation by pinching fingertips or toes (Color should return within two seconds to pinched area.)	
Continued care	• If necessary, immobilize the injury site • Keep the victim lying still • Maintain bleeding control • Monitor the victim • Reassure the victim (Fear and anxiety can increase a victim's heart rate and circulation.) • Treat for shock	

Shock

Introduction

Shock is a life-threatening condition. If not immediately cared for, the victim can die. Perfusion is the continued flow of blood through the capillaries supplying the body's tissues and organs with oxygen and removing waste products. Inadequate perfusion leads to shock.

Signs and symptoms

The following table identifies a number of possible signs and symptoms of shock:

Signs and Symptoms	Cause
• Altered mental status such as: - confusion - anxiety - restlessness - combativeness - sudden unconsciousness	Oxygen deficiency to the brain
• Pale, cool, moist skin • Profuse sweating • Thirst, nausea, vomiting • Blue/grey lips, nail beds, tongue, ears (i.e., cyanosis) • Dull eyes, dilated pupils	Diversion of blood to the vital organs
• Rapid pulse rate • Weak pulse	Heart's attempt to pump more blood
• Abnormal respiration rate • Shallow, labored breathing	Body's attempt to get more oxygen

Continued on next page

Shock, Continued

Severity of injury

There may be no relationship between severity of an injury and the onset of shock. Victims may appear to have no major injury but still show signs of restlessness or anxiety, which are early stages of shock.

For this reason, ***all victims*** *of traumatic or medical emergencies* should be treated for shock upon initial contact.

NOTE: Injuries that might appear be minor or the absence of obvious internal injury can cause a person to go into irreversible shock causing death.

Fainting

Fainting is a form of shock characterized by sudden unconsciousness. It is caused by dilation of blood vessels resulting in reduced flow of oxygenated blood to the brain.

Treating shock

All victims should be monitored for shock and treated accordingly. When providing care to treat shock, peace officers/first responders should:

- control all external bleeding and treat other injuries
- be alert for vomiting
- maintain the victim's body temperature
- place the victim in a position to help maintain blood flow
- reassure the victim
- continue to monitor the victim and be prepared to take action if necessary (e.g., rescue breathing, CPR)

Continued on next page

Thirst

Even though the victim may be thirsty, *do not give anything to drink*. Shock can cause the gastrointestinal system to shut down. Fluids given orally may lead to vomiting.

Positioning victim

During treatment for shock, the position in which the victim is placed is dependent upon the nature of the injury or illness. The following table identifies the positions commonly used:

The victim:	**THEN:**
• may have spinal or head injuries	• do not elevate legs • consider spinal immobilize
• may have experienced a stroke	• elevate the victim's head and shoulders
• is having difficulty breathing	• place the victim in a semi-sitting position • a position of comfort
• has fracture(s) of the lower limbs	• do not elevate legs • a position of comfort
• has any other injuries or conditions	• place the victim in a *supine position* • *elevate legs* approximately 6-12 inches

Workbook Learning Activities

Introduction

To help you review and apply the material covered in this chapter, a selection of learning activities has been included. No answers are provided. However, by referring to appropriate text, you should be able to prepare a response.

Activity questions

1. As a peace officer/first responder, you respond to a playground where a one-year-old child has stopped breathing and lost consciousness. Explain step-by-step how you would proceed.

2. If the child in question one does not spontaneously resume breathing when the obstruction is cleared, what action(s) should you take?

Continued on next page

Activity questions (continued)

3. A peace officer is called to the scene of a shop accident where the victim's arm has been severely cut. The victim is still conscious. What options do you have to stop the bleeding?

4. Describe how the position of rescuer's hands might differ when conducting CPR on an adult victim, five-year-old child, and a one-month-old infant. How would you locate the compression site of each? How deep would you compress?

Continued on next page

Activity questions (continued)

5. What is gastric distention and how is it caused?

6. When should a jaw-thrust maneuver be used to open a victim's airway instead of a head-tilt/chin-lift procedure?

Continued on next page

Activity questions (continued)

7. Peace officers respond to the scene of a street fight in which an 18-year-old male has been stabbed. When officers arrive, five individuals flee the scene leaving the victim on the sidewalk with what appears to be a knife protruding from his abdomen. Bright red blood is spurting from the wound. What does this indicate? How should officers proceed? In addition to treating the wound itself, what other precautions should officers take at the scene?

8. What is recovery position? Under what circumstances is it appropriate to place a victim in this position? When should it not be used?

Classroom Demonstrations

Introduction

During class, the instructor will discuss and demonstrate specific techniques for opening an airway, rescue breathing, CPR, controlling bleeding, and treating for shock. Students will have the opportunity to practice each technique and develop their own levels of skill.

Chapter 4

Traumatic Injuries

Overview

Learning need

Peace officers are often first to respond to the scene of a traumatic incident. They must be capable of activating the EMS system, and providing appropriate first aid to victims, a fellow officer, or themselves of traumatic injuries.

Learning objectives

The following table identifies the student learning objectives for this chapter:

After completing study of this chapter, the student will be able to:	Objective ID
• Recognize indicators of a possible head injury	34.04.01
• Recognize the appropriate first aid measures for treating facial injuries to include: - Objects in the eye - Chemicals in the eye - Dental emergency - Nose bleed	34.04.02
• Recognize appropriate first aid measures for treating open and closed injuries to the: - Chest Chest seals and dressings - Abdomen	34.04.10 34.04.11
• Recognize appropriate first aid measures for internal bleeding	34.04.18
• Identify the appropriate first aid measures for treating injuries or wounds to the bones, muscles, soft tissues, or joints	34.04.12
• Recognize appropriate first aid measures for treating injuries to the head, neck, and back including: Spinal immobilization	34.04.19

Continued on next page

Learning objectives (continued)

After completing study of this chapter, the student will be able to:	Objective ID
• Recognize appropriate first aid measures for treating: - Thermal burns - Chemical burns - Electrical burns - Radiation burns	 34.04.14 34.04.15 34.04.16 34.04.17
• Discuss tactical and rescue first aid principles when responding to violent circumstances (e.g. active shooter) - Movement to threat versus casualty care - Integration with EMS - Tactical casualty care	34.04.20

Continued on next page

Overview, Continued

In this chapter

This chapter will focus on basic first aid measures for a number of specific types of traumatic injuries peace officers, acting as first responders, may encounter. Refer to the following table for specific topics:

Topic	See Page
Head, Neck and Back Injuries	4-4
Chest and Abdominal Injuries	4-11
Bone, Joint, Soft Tissue and Muscle Injuries	4-18
Burns	4-22
Workbook Learning Activities	4-32
Classroom Demonstrations	4-36

Head, Neck and Back Injuries

Introduction

Any person who has suffered a traumatic injury may also be subject to a possible brain or spinal cord injury.

Indications of head injury

Head injuries can involve injuries to the skull, scalp, brain, blood vessels and fluid around the brain, and/or neck. They may vary from those involving minor bleeding to those leading to life-threatening conditions and spinal cord injury.

The following table presents general indicators of a possible head injury:

	Indications of Possible Head Injury
Mechanism of Injury	• Striking a vehicle's windshield or dashboard • Blow to the head • Falls
Mental Status	• Agitated or confused • Combative • Decreased level of consciousness (e.g., appears "groggy") • Loss of short term memory • Loss of consciousness (even for a short period of time)
Vital Signs	• Abnormal breathing patterns (e.g., snoring respirations) • Decreased pulse • General deterioration of vital signs

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Indications of head injury (continued)

	Indications of Possible Head Injury
Visible Injury	• Deformity of head/skull (e.g., depressions, swelling, bruising, etc.) • Visible bone fragments
Appearance	• Clear or bloody fluid from ears and/or nose • Unequal pupils • Bruises behind ears (i.e., "Battle's sign") • Bruising around eyes (i.e., "raccoon eyes") • Paralysis • **Priapism** in the presence of a traumatic C-spine injury (i.e., penile erection)
Other	• Blurred vision • Projectile vomiting

Spinal immobilization

All victims who have suspected spinal injury should be appropriately immobilized. Officers should establish early manual stabilization of the neck and head and maintain manual stabilization until the victim receives additional treatment. These precautions are important to protect the spinal cord from any further damage during care and transport.

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Head, Neck and Back Injuries, Continued

Head injuries

The extent of a head injury may not always be obvious. Whenever a victim has suffered a traumatic head or neck injury, brain and spinal cord damage should **always be assumed**. First aid measures are noted in the following table:

	First Aid Measures for Head Injuries
Position	• ***Do not move*** the victim's head or neck • Have the victim remain in the position in which found
Assessment	• Determine level of consciousness • Conduct a primary and secondary assessment • If unable to establish an open airway using the jaw-thrust technique, the head-tilt/chin-lift method may be used

Continued on next page

Head injuries (continued)

	First Aid Measures for Head Injuries
Treatment	• Request additional EMS resources • Control bleeding if necessary • Be alert for the presence of cerebrospinal fluid in ears or nose. If present, bandage loosely so as not to restrict the flow • ***Do not*** apply direct pressure to any head/skull deformity • Be prepared for sudden and forceful projectile vomiting • Treat for shock • ***Do not*** elevate the victim's legs • Reassure the victim • Continue to monitor victim

Continued on next page

Indications of Neck injury

	Indications of Possible Neck Injury
Visible Injury	• Deformity of neck (e.g., depressions, swelling, bruising, etc.) • Visible bone fragments
Signs and symptoms	• Paralysis • Breathing difficulty • Numbness and tingling

NOTE: When appropriate maintain head in neutral, in-line position

Facial injuries

The extent of a facial injury may not always be obvious. Whenever a victim has suffered a traumatic head or neck injury, a potential facial injury should always be assessed

Impaled objects

Unlike treatment for other situations involving impaled objects, any object (e.g., knives, arrows, screw drivers, etc.) that is impaled into a victim's cheek or face and causes an airway obstruction should be removed.

If there is no airway obstruction, ***do not*** attempt to remove the object.

If the impaled object is obstructing the victim's airway:

- carefully pull the object out from the direction it entered
- place dressings on both the inside and outside of the cheek to control bleeding
- position the victim to protect the airway

If the object resists coming out, ***stop***. ***Do not pull any farther***. Place a protective device around it to stabilize the object (e.g., paper cup) and secure the device with a bandage.

Continued on next page

Objects in the eye

	First Aid Measures for Objects in the eye
Treatment	• Request additional EMS resources • Stabilize the impaled object by placing a protective device around it (e.g., paper cup). Secure the device with a bandage • Cover the second eye with a bandage to limit eye movement. • ***Do not*** apply direct pressure • Do not remove any impaled object • Reassure the victim • Continue to monitor victim

Chemicals in the eye

	First Aid Measures for Chemicals in the eye
Treatment	• Request additional EMS resources • Flush the affected eye with copious amount of water making certain to flush away from the non-affected eye. • Have the patient remove contact lenses • ***Do not*** rub the eye or allow the patient to rub the eye • If possible identify the chemical and contact **poison** control. • Reassure the victim • Continue to monitor victim

Continued on next page

Dental Emergency

	First Aid Measures for Dental Emergencies
Treatment	• Request additional EMS resources • Ensure that the airway is clear and unobstructed • Visually inspect the oral cavity to ensure that there are no teeth or fragments • Control bleeding as necessary • ***Do not*** attempt to replace the tooth or dental apparatus • You may transport the tooth in a variety of solutions (e.g., saline, whole milk, or victim's saliva) • Reassure the victim • Continue to monitor victim

Nose Bleeds

	First Aid Measures for Nose Bleeds
Treatment	• Assume a seated position • Lean slightly forward • Pinch the nose midway at the point where the bone and **cartilage** meet • Maintain the position until bleeding stops • ***Do not*** pack the victims nostrils • ***If the victim is unconscious:*** - place the victim in the recovery position - maintain an open airway - continue to monitor victim

Chest and Abdominal Injuries

Introduction

Traumatic injuries to the chest or abdomen are potentially serious because of possible damage to the lungs and vital organs.

Types of chest and abdominal injuries

Traumatic injury to the chest and/or abdomen can lead to bleeding (external and internal) as well as damage to the lungs, heart, and other vital organs.

The chest and/or abdomen may be injured in a number of ways. Three of the most common are identified in the following table:

Cause	Additional Information
Blunt Trauma	Blow to the chest and/or abdomen causing: • fractured bones and cartilage • bleeding • damage to the lungs, heart, great blood vessels (aorta, vena cava), or other vital organs
Penetrating Object	Caused by bullets, knives, metal or glass, etc., can lead to: • blood loss • impaired breathing or vital organ damage
Compression	Blunt trauma along with rapid chest and/or abdomen compression (e.g., striking a steering wheel) can lead to: • blood loss • heart and vital organ damage • fractured bones and cartilage • ruptured lungs, spleen, or other organs

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Closed chest wound

Although there may not appear to be any serious injury to the chest, blunt trauma or compression can commonly lead to closed chest wounds. The following table presents the indicators and first aid measures for closed chest wounds:

Indicators	First Aid Measures
• **Paradoxical breathing** (when both sides of the chest do not move in a synchronized manner • Painful and shallow breathing	• Activate EMS system • Place victim in a - recovery position, if appropriate, on the injured side with support for the victim's back - supine position with a soft object acting as a splint for the affected area (e.g., blanket secured firmly over the injured area) • Both methods will: - apply pressure to the injured area - reduce pain - help the victim breathe easier - keep the broken section of the chest in line with the rest of the chest • Treat for shock • Continue to monitor the victim

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Open chest wound

All open wounds to the chest should be considered life-threatening.

For respiration to take place properly, the chest must function as a vacuum. With an open chest wound, air may enter the chest area causing a lung to collapse (e.g., sucking chest wound with a punctured lung). Under such conditions, the victim's ability to breathe, and the victim's heart function can be greatly impaired.

To prevent air from entering the chest cavity, an **occlusive dressing** should be applied to the wound as quickly as possible.

Chest Seal (Occlusive dressing)

An occlusive dressing:

- is a nonporous dressing (e.g., plastic bag)
- used to cover the wound
- creates an air-tight seal

NOTE: As the victim inhales, the dressing is sucked tight to the skin, providing a seal over the wound. If the dressing is placed properly, respiration should partially stabilize.

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Applying an occlusive dressing chest seal

The following table identifies a technique that can be used to apply an occlusive dressing to an open chest wound:

Step	Action
1	Place a gloved hand over the wound to "seal" the wound
2	Wipe excess bleeding/fluids from the wound site NOTE: The dressing should be at least two inches wider than the wound itself.
3	Upon exhalation apply the **chest seal** directly over the wound
4	Provide care to prevent shock. Continue to monitor the victim
5	If indications of increased respiratory distress are present, peel up the edge of the seal to "burp" the seal and immediately reapply (**tension pneumothorax**).

NOTE: If the chest has both entrance and exit wounds, occlusive (airtight) dressings should be placed on both wounds. The physically higher wound should be vented.

Continued on next page

Closed abdominal wound

A victim with a closed abdominal wound will have no external bleeding but may have *internal bleeding* that can be severe and potentially life-threatening.

If a closed abdominal wound is suspected, peace officers should initiate the following first aid measures.

Indicators	First Aid Measures
• Victim found lying in a fetal position (with legs pulled up to chest) • Rapid shallow breathing • Rapid pulse • Rigid or tender abdomen with or without swelling • Pain or tenderness to the touch during secondary assessment	• Activate EMS system • If no spinal injury suspected, place victim in a comfortable position (e.g., supine with knees bent up) • Treat for shock • Continue to monitor the victim • Be prepared for the victim to vomit

Continued on next page

Open abdominal wounds

An open abdominal wound can be caused by lacerations or **penetrating trauma** to the abdomen. Blood loss and the potential for infection should be of concern when dealing with an open wound to the abdomen.

If an open abdominal wound is identified, peace officers should initiate the following first aid measures.

First Aid Measures for Penetrating Object	
Assessment	• Determine the victim's state of consciousness • Conduct primary and secondary assessment
Treatment	• Activate EMS system • If no spinal injury is suspected, place the victim in a supine position with the knees up • Apply sterile dressing over the wound to control bleeding • Treat for shock • Continue to monitor the victim

Protruding organs

If any organs or portion of an organ protrude from the abdominal wound, ***do not*** attempt to touch, move, or replace them

First Aid Measures for Exposed Organs	
Assessment	• Determine the victim's state of consciousness • Conduct primary and secondary assessment

Continued on next page

Protruding organs (continued)

First Aid Measures for Exposed Organs	
Treatment	• Activate EMS system • If no spinal injury is suspected, place the victim in a supine position with the knees up • Cover with moist sterile dressing, if available • Seal with airtight bandage • Treat for shock • Continue to monitor the victim

Bone, Joint, Soft Tissue, and Muscle Injuries

Introduction

Musculoskeletal injuries may have a grotesque appearance. Peace officers should not be distracted by the injury's appearance or begin first aid measures until an assessment is completed and treatment for other life-threatening measures are taken.

Musculo-skeletal system

The musculoskeletal system is the system of bones, muscles, and other tissue that support and protect the body and permit movement. The components of the musculoskeletal system include bones, joints, **skeletal muscles**, cartilage, **tendons**, and **ligaments**. The following table further describes each component:

	Description
Bone	• Hard yet flexible tissue • Provides support for the body as well as protection of the vital organs
Joint	• Place where bones fit together • Proper function critical in order for the body to move
Skeletal Muscle	• Soft fibrous tissue • Controls all conscious or deliberate movement of bones and joints
Cartilage	• Connective tissue that covers the outside of the ends of bones • Firm but less rigid than bone • Helps form certain flexible structures of the body (e.g., external ear, connections between the ribs and sternum, etc.) • Allows for smooth movement of bones at joints

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Musculo-skeletal system (continued)

	Description
Tendon	• Bands of connective tissue that bind muscles to bones
Ligament	• Connective tissue that attaches to the ends of bones and supports joints • Allows for a stable range of motion

Musculo-skeletal injuries

Three types of force can cause injury to the musculoskeletal system, and are identified in the following table:

Type of Force	Description	Example
Direct	• Direct blow to an area	• Being struck by an automobile
Indirect	• Force from a direct blow to one area which causes damage to another	• Landing on feet from a fall and injuring ankles, knees, etc.
Twisting	• Sudden rapid movement that stretches or tears	• Football and other sport related injuries

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Bone, Joint, Soft Tissue, and Muscle Injuries, Continued

Types of injuries

The four most common injuries are fractures, **dislocations**, **sprains**, and **strains**, identified in the following table:

	Description	Indicators
Fractures	• Complete or partial break of a bone • Includes: - **open fractures** where there is a break in the skin at the site of the fracture - **closed fractures** where there is no break in the skin at the site of the fracture	• Limb deformity (differences in size or shape) • Swelling or discoloration to the area • Tenderness and localized pain • Breaking and/or grating sound • Possible loss of function and decrease range of motion
Dislocations	• When a bone is pushed or pulled out of alignment from a joint	• Constant pain • Increased pain with movement • Joint deformity • Swelling • Loss of movement (i.e., "frozen joint")
Sprains	• Severely stretched or torn ligaments • Associated with joint injuries	• Pain • Swelling • Reduced range of motion
Strains	• Over-stretching or tearing of muscle	

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Bone, Joint, Soft Tissue, and Muscle Injuries, Continued

Bone, muscle, and joint injuries

Unless there is an obvious deformity or open wound with exposed bone, it is not possible to determine whether an injury is a fracture, dislocation, sprain, or strain without x-ray and other diagnostic procedures.

When a musculoskeletal injury is suspected and the injury is severe (e.g., fracture), peace officers should use the following first aid measures.

	First Aid Measures
Assessment	• Conduct a primary and secondary assessment to determine if there are any life-threatening injuries
Treatment	• Request additional EMS resources, if necessary • ***Do not*** attempt to manipulate or "straighten out" an injury • Expose the injury by removing clothing covering the area • Control bleeding associated with open fractures • Stabilize the injury by immobilizing the joints and bones above and below the injury • Check circulation, sensation, and function before and after the application of splint • Treat for shock • Do not elevate legs if injury is to the lower extremities

Burns

Introduction

A burn is an injury caused by heat, chemicals, or electricity. Burns can involve just the outer-most layer of the skin or go deeper into structures below the skin including muscle, bone, nerves, and blood vessels. Along with physical damage, victims with burns can also experience great pain and emotional trauma from the injury.

Victim assessment

Prior to any first aid measures, no matter how extreme the burn, a victim assessment including primary and secondary assessment should be conducted.

Only when immediate life-threatening conditions have been addressed, should the peace officer's attention be directed to first aid treatment for the burns themselves. Burns to the face, nose and mouth may be life threatening due to respiratory distress.

Severity

Burns are classified according to the depth of the burn in the tissue. Classifications include **first-degree burns**, **second-degree burns**, and **third-degree burns**. The following table presents information regarding each:

Classification	Depth of Injury	Additional Information
First-degree	• Damage *only* to the **epidermis** (outer-most layer of the skin) • Also referred to as *superficial burns*	• Skin appears red • Can be very painful • Damage usually heals without scarring • Example: mild sunburn

Continued on next page

Severity (continued)

Classification	Depth of Injury	Additional Information
Second-degree	• Damage to the epidermis and the **dermis** (second layer of the skin containing nerves, hair follicles, and sweat glands) • Also referred to as *partial thickness burns*	• Skin appears red and mottled (spotted) • Accompanied by blisters (plasma and fluid released from tissue that rises to top layer of skin) • May involve swelling • Causes intense pain • May produce slight scarring
Third-degree	• Damage to the epidermis, dermis, and into fatty layer and muscle beneath the skin • Also referred to as *full thickness burns*	• Most serious of all burns • Skin appears dry, leathery, and discolored (white, brown, or black) • May be extremely painful or the victim may experience little pain if nerve endings have been destroyed • May require skin grafting to heal • Causes dense scar formation

Continued on next page

Burns, Continued

First aid measures

The most common types of burns are **thermal burns**, **chemical burns**, and **electrical burns**. The following table provides a description along with appropriate first aid measures for each:

	Description	First Aid Measures
Thermal Burns	• Caused by direct heat • Possible causal agents include: - Radiation (exposure to sun, radioactive material) - Fire - Steam - Hot liquids - Hot objects	• Activate EMS system • Remove victim from source of heat • Stop the burning process by cooling burned area with cool water • Apply a dry sterile dressing and bandage *loosely* • Treat for shock • Monitor victim

NOTE: Over-cooling large body surface area burns may lead to **hypothermia**.

Continued on next page

First aid measures (continued)

	Description	First Aid Measures
Chemical Burns	• Caused by acids or alkalis coming into contact with the skin • Most frequently occurs in industrial settings	• Request additional EMS resources • Peace officers should wear protective gloves and eyewear during the flushing process • If chemical is a *dry powder*, brush away as much chemical as possible *before flushing* with water • Remove excess chemical, exposed clothing, or jewelry prior to the flushing process to prevent injury to other parts of the body • Flush affected area with water for 15-30 minutes • After flushing, cover burned area with dry sterile dressing • Treat for shock • Monitor victim

NOTE: Bandage should hold dressing in place and protect the area from contaminants. Bandaging too tightly may not only cause pain but also restrict swelling.

Continued on next page

First aid measures (continued)

	Description	First Aid Measures
Electrical Burns	• Occur when the body becomes a conduit for electrical current • Sources include: - alternating current - direct current - lightning • May cause extensive internal injuries to the: - heart (cardiac arrest) - central nervous system - vital organs	• Ensure that the scene is safe to enter • **DO NOT touch the victim's body until the source of the current has been turned off** • If necessary, begin CPR immediately • Examine the victim for external wounds including burns caused by - contact to thermal heat (metal), - the source of current coming into contact with the body (entrance wound), and - current leaving the body (exit wound). • Treat all wounds the same as with thermal burns • Treat for shock • Monitor victim

NOTE: Entrance and exit wounds caused by electrical current may be difficult to see initially. They will be found in different locations on the victim's body. For example, if the victim touches a live wire, current may enter the body through the hand, pass through the body, and exit through the victim's feet.

Continued on next page

First aid measures (continued)

	Description	First Aid Measures
Radiation Burns	• Radiation sickness that occurs when the body is exposed to radiation in either a single large dose or chronically	• Request additional EMS resources • Evacuate the area of exposure • Remove all exposed clothing and seal it in a plastic bag, if available • If possible, wash body and hair thoroughly with soap and water to remove any remaining radioactive material • Dry and wrap the affected areas with a towel or blanket • Monitor victim's ABC's and treat for shock

NOTE: If symptoms occur during or after medical radiation treatments, notify physician or seek medical treatment. Handle affected areas gently. Treat symptoms or illnesses as advised by physician.

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Electrical current and vehicles

If peace officers respond to calls where live power lines have fallen onto a vehicle, they should:

- *not* touch the lines or any part of the vehicle
- instruct the occupants to remain in the vehicle
- wait for the utility company to turn off the power before taking any action

Occupants should *not* be told to leave the vehicle unless life-threatening circumstances exist (e.g., vehicle fire).

Radiation sickness

Radiation sickness is illness and symptoms resulting from excessive exposure to radiation, whether that exposure is accidental or intentional (as in radiation therapy).

Radiation sickness results when humans are exposed to excessive doses of ionizing radiation. Radiation exposure can occur as a single large exposure (acute), or a series of small exposures spread over time (chronic). Radiation sickness is generally associated with acute exposure and has a characteristic set of symptoms that appear in an orderly fashion. Chronic exposure is usually associated with delayed medical problems such as cancer and premature aging, which may happen over a long period of time.

The severity of symptoms and illness depends on the type and amount of radiation, the duration of the exposure, and the body areas exposed. Symptoms of radiation sickness usually do not occur immediately following exposure.

Indicators

The indicators of radiation sickness may include:

- Nausea and vomiting
- Diarrhea
- Skin burns (radio dermatitis)
- Weakness
- Fatigue
- Loss of appetite

Continued on next page

Burns, Continued

Indicators (continued)

- Fainting
- Dehydration
- Inflammation (swelling, redness and tenderness) of tissues
- Bleeding from nose, mouth, gums and rectum
- Low red blood cell count (anemia)
- Hair loss

Acute exposure

In most cases, a large single dose of radiation can cause both immediate and delayed effects. Acute exposure, if large enough, can cause rapid development of radiation sickness that may include bone marrow damage, gastrointestinal disorders, bacterial infections, hemorrhaging, anemia and loss of body fluids.

Delayed effects can include cataracts, temporary infertility and cancer. Extremely high levels of acute radiation exposure can result in death within a few hours, days or weeks depending on the dose.

Chronic exposure

Chronic radiation exposure often produces effects that can be observed within weeks after the initial exposure. However, indicators of chronic radiation exposure may not show up until years later, or they may not develop at all.

Chronic exposure may increase your risk of cancer, precancerous lesions, benign tumors, cataracts, skin changes and congenital defects.

Violent Circumstances

Introduction

Tactical field care and rescue principles when responding to violent circumstances or criminal mass casualty incidents such as an **active shooter** differ from basic trauma care. Integration and communication with EMS personnel is critical in order to minimize loss of life, increase safety and maximize operational success.

Active Shooter

An active shooter is an individual actively engaged in killing, or attempting to kill, people in a confined or heavily populated area. In most cases, active shooters use firearms and there is often no discernible pattern or method to their selection of victims.

Active Shooter situations are tense, uncertain and rapidly evolving. Typically the immediate deployment of law enforcement is required to stop the shooting and mitigate harm to the victims. Active shooters will often continue with their attack until they are stopped by law enforcement, commit suicide or encounter some other intervention.

Tactical rescue and first aid principles

Tactical Response Principles

Movement to threat vs Casualty Care	• The primary goal is to neutralize the threat and stop the active shooter(s) as soon as possible. • **Life safety and securing the scene is the first priority of initial responding officers.** • After the threat is neutralized, or becomes static, **rescue teams** will be deployed to assess, triage and treat victims. • Victims should be triaged using the START system. • Officers will conduct a systematic search for additional suspects and threats as well as provide security for the scene and responders. NOTE: Initial responding officers will not stop to help injured persons until the threat has been neutralized and the scene made safe.

Continued on next page

Violent Circumstances, Continued

Tactical and rescue first aid principles (continued)

Tactical Response Principles

Integration with EMS	• Communication and coordination with Emergency medical personnel who arrive at the scene is critical to scene safety and the successful mitigation of the event • Officers should assist in forming rescue teams to treat and move injured persons • Rescue teams may include law enforcement, fire and ambulance personnel
Tactical Casualty Care Principles	• Threat mitigation • **Hemorrhage** control • Rapid extrication of victims to safety • Assessment by medical providers • Transport to definitive care Focus on the preventable causes of death: • Hemorrhage control • Loss of airway • Breathing
Self-Care / Buddy Care	• Applying lifesaving skills and techniques to oneself, or another injured responder, in the event of a life threatening injury before the arrival of EMS.

Workbook Learning Activities

Introduction

To help you review and apply the material covered in this chapter, a selection of learning activities has been included. No answers are provided. However, by referring to appropriate text, you should be able to prepare a response.

Activity questions

1. A peace officer on patrol through a neighborhood park responds to a mother's calls for assistance. Her five-year-old son is experiencing a severe nosebleed after accidentally being kicked in the face as he walked in front of a child playing on the swings. The child is crying and appears to be very frightened. What actions should the officer take?

2. List at least three *behavioral* indicators that may lead you to believe that a victim may have a head injury. What physical signs might help an officer confirm this suspicion?

Continued on next page

Activity questions (continued)

3. During a gang encounter a peace officer's partner is shot in the chest. The primary assessment indicates that the injured officer is responsive and breathing on his own, but breathing is severely impaired. A secondary assessment shows an entry wound in front of the chest and an exit wound on the officer's back roughly behind the entry wound, approximately two inches away from the spine. How should the assisting peace officer proceed? What further actions, if any, should the assisting officer take if the victim loses consciousness?

Continued on next page

Activity questions (continued)

4. Describe the appearance of first, second, and third degree burns. How should a peace officer treat a first degree burn on a child's legs caused by exposure to hot water?

5. Peace officers on patrol see a car pulled off the shoulder. Smoke and/or steam appear to be coming from under the hood. As they approach, they observe the driver has opened the hood and attempted to remove the radiator cap. Boiling antifreeze has sprayed onto the driver's face, causing second degree burns. Should this be treated as a chemical or a thermal burn? How should officers proceed?

Continued on next page

Activity questions (continued)

6. Peace officers respond to a call involving a collision between a bicyclist and an automobile at a busy intersection. Upon arrival the officers note that the bicyclist is conscious and rational and is having no difficulty breathing. Her right leg appears deformed and upon closer examination, the officers recognize an open fracture below the knee. Dispatch has notified the officers that EMS medical units have been delayed and are not estimated to arrive for at least 20 minutes. What actions should the officers take? Should the victim be moved out of the intersection? What first aid measures should be taken?

Classroom Demonstrations

Introduction

During class, the instructor will discuss and demonstrate specific techniques for recognizing and treating a variety of traumatic injuries that peace officers as first responders may encounter. Students will have the opportunity to practice each technique and develop their own levels of skill.

Chapter 5

Medical Emergencies

Overview

Learning need

Peace officers must be able to provide basic first aid measures for a number of medical emergencies and conditions they may encounter.

Learning objectives

The following table identifies the student learning objectives for this chapter:

After completing study of this chapter, the student will be able to:	Objective ID
• Recognize indicators of, and first aid measures for a victim experiencing: - Cardiac emergency - Respiratory emergencies including asthma and Chronic Obstructive Pulmonary Disease (COPD) - Drowning - Seizure - Stroke - Altered mental status - Severe abdominal pain - Allergic reactions and anaphylaxis Assisted epinephrine administration Accessing EMS	 34.05.01 34.05.02 34.05.14 34.05.03 34.05.04 34.05.15 34.05.16 34.05.17
• Identify signs and symptoms of psychological emergencies	34.05.18
• Differentiate between indicators and first aid measures for treating diabetic emergencies: - Low blood sugar (hypoglycemia) including assisted oral glucose administration - High blood sugar (hyperglycemia)	 34.05.05 34.05.06

Continued on next page

Learning objectives (continued)

After completing study of this chapter, the student will be able to:	Objective ID
• Recognize appropriate first aid measures for a victim experiencing signs of: - Poisons that have been ingested, inhaled, absorbed or injected - Alcohol and/or drug-related emergencies including: Assisted Naloxone administration Accessing EMS	34.05.07 34.05.19
• Differentiate between the indicators and first aid measures for treating: - Hypothermia and frostbite - Heat cramps, heat exhaustion, and heat stroke	34.05.08 34.05.09
• Recognize appropriate first aid measures for: - Insect bites and stings - Animal and human bites	34.05.13 34.05.12

Continued on next page

Overview, Continued

In this chapter

This chapter will focus on basic first aid measures for a variety of medical emergencies and conditions peace officers/first responders may encounter. Refer to the following table for specific topics:

Topic	See Page
Cardiac Emergencies	5-4
Respiratory Emergencies	5-7
Drowning	5-11
Seizures	5-12
Strokes	5-15
Altered Mental Status	5-17
Severe Abdominal Pain	5-18
Allergic Reactions and Anaphylaxis	5-19
Psychological Emergencies	5-21
Diabetic Emergencies	5-22
Poisoning and Substance Abuse	5-26
Temperature Related Emergencies	5-34
Stings and Bites	5-39
Workbook Learning Activities	5-45
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Cardiac Emergencies

Introduction

A cardiac emergency can range from a victim experiencing shortness of breath or palpitations to full cardiac arrest. Swift action is necessary on the part of peace officers to recognize cardiac emergencies and necessary actions to increase the victim's chances of survival.

Cardiac emergencies

Heart attack is a common term describing minor to severe conditions including but not limited to **coronary artery disease (CAD)** to cardiac electrical pathway problems (arrhythmias). The victim may complain of varying levels of pain or shortness of breath. If the victim does not receive appropriate care immediately, the victim's chances of survival are greatly reduced.

CAD (often referred to as coronary heart disease) is a disease where fatty deposits build up in the walls of the arteries that feed the heart's muscle. If an artery becomes blocked, the heart muscle will be deprived of blood and oxygen.

Cardiac risk factors include CAD, family history, diet and exercise, smoking, and stressful occupation.

Other causes of cardiac emergencies

Along with coronary heart disease, there are a number of other conditions that can lead to cardiac emergencies. Cardiac arrest may also be caused by:

- drowning
- electrocution
- suffocation
- choking
- drug overdose
- allergic reaction
- shock

Continued on next page

Cardiac Emergencies, Continued

Indicators

The following table identifies the most common indicators of a cardiac emergency:

	Indicators of Cardiac Emergency
Chest Pain	• Crushing, dull, or heavy persistent pain • Sensation of squeezing or pressure
Radiating Pain	• Pain, pressure, or discomfort moving: - down either arm - in the jaw, shoulder, neck, or back - down the upper abdomen
Vital Signs	• Difficulty breathing or shortness of breath • Abnormally slow or fast pulse
Mental Status	• Anxiety or feeling of impending doom • Irritability or short temper • Denial of indicators
Other	• Profuse sweating • Cool, moist, pale skin • Nausea or heartburn

NOTE: A victim may have no pain and yet could be suffering a heart attack This is a "silent" (heart attack) in which no chest or related pains are present. The victim may have shortness of breath.

Continued on next page

Cardiac Emergencies, Continued

First aid measures

Although the indicators of a cardiac emergency resemble the indicators of a number of other medical conditions (e.g., heartburn, **seizure** activity), peace officers should always *first assume that a cardiac emergency exists*, request additional EMS resources, and take appropriate first aid measures.

	First Aid Measures for Cardiac Emergencies
Assessment	• Conduct primary and secondary assessment
Treatment	• Place the victim in a comfortable position (e.g., seated, supine, etc.) • Keep the victim calm and still (even if the person denies indicators of a heart attack) • Provide care to prevent shock • Maintain victim's body temperature • Continue to monitor victim and provide reassurance until EMS personnel arrive

Medications

Some victims with existing cardiac conditions may be taking prescription medications for that condition. Unless authorized and trained, peace officers should never administer any medications, prescribed or otherwise.

If victims are oriented enough to ask for or decide they need their prescribed medication, peace officers should allow a victim to take them. Peace officers may assist the victim if required (i.e., removing medication from its container and placing it in the victim's hand).

Respiratory Emergencies

Introduction

Respiratory emergencies may range from victims who are having breathing difficulty, but nevertheless are breathing adequately, to victims who are not able to breathe at a level that will sustain life.

Adequate breathing

Normal breathing rate is determined based on the person's age.

Age	Breathing Rate
Adult (puberty and older)	12-20 breaths/minute
Child (1year to puberty)	15-30 breaths/minute
Infant (newborn to 1 year)	25-50 breaths/minute

Causes of inadequate breathing

There are numerous possible causes that could lead to inadequate breathing, and potential respiratory arrest (when breathing stops completely), including:

- existing illness (e.g., emphysema, asthma)
- allergic reaction (causing swelling of the throat)
- cardiac emergency
- drowning
- suffocation
- obstructed airway
- body positioning that restricts breathing (i.e., *positional asphyxia*)
- drug overdose
- **hyperventilation**

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Respiratory Emergencies, Continued

Chronic Obstructive Pulmonary Disease (COPD)

Chronic obstructive pulmonary disease (COPD) is a progressive lung disease that makes it hard to breathe. COPD is the third leading cause of death in the United States. COPD is a disease that involves inflammation and thickening of the airway. It also involves destruction of tissue of the lung where oxygen is exchanged. The disease reduces the flow of air in and out of the lungs. This can reduce activity because of shortness of breath.

Causes of COPD

- Smoking
- Pollution
- Irritant fumes/dust

COPD Symptoms

- Chronic cough
- Shortness of breath
- Frequent respiratory infections
- Blueness of lips
- Fatigue
- Mucus production
- Wheezing

Continued on next page

Respiratory Emergencies, Continued

Indicators

The following table identifies the most common indicators of a possible respiratory emergency:

	Indicators of Respiratory Emergency
Breathing Rate	• Abnormally fast (i.e., hyperventilation) or slow • Sporadic or irregular breaths
Labored Breathing	• Increased effort by the victim • Breathing appears shallow or very deep • Little or no air is felt at the nose or mouth • Uneven or little chest movement • Accessory muscle use (stomach breathing and tripod position)
Breathing Sounds	• Wheezing, gurgling, deep snoring sounds • No breathing sounds
Coloring	• In advanced stages, lips, nail bed, skin will appear blue-grey in color due to lack of oxygen (i.e., *cyanosis*)
Mental Status	• Anxious • Fearful • Panicky • Altered

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Respiratory Emergencies, Continued

First aid measures

If a peace officer suspects that a victim is experiencing a *respiratory emergency*, the officer should request additional EMS resources and take appropriate first aid measures.

	First Aid Measures for Respiratory Emergencies
Assessment	• Conduct primary and secondary assessment
Treatment	• Place the victim in a *position of comfort* (e.g., seated, supine, etc.) • If victim is unconscious, place in the recovery position, if appropriate • Keep the victim *calm and still* • Allow the victim to take prescribed medications (e.g., inhaler) • Loosen any restrictive clothing • Provide care to *prevent shock* • Continue to *monitor victim* and provide reassurance • Be prepared to begin rescue breathing if necessary

Drowning

Introduction

For drowning victims, treatment begins at the water's edge.

A drowning victim is likely to suffer from a lack of oxygenated blood to the brain. Resuming respiration and circulation is a priority for drowning victims.

NOTE: When responding to a drowning victim who may still be in the water, officers should consider the inherent dangers of attempting a water rescue.

First aid measures

- Request additional EMS resources
- Check for responsiveness and breathing
- Check for a pulse
  - If no pulse present, begin CPR
  - If pulse is present, begin Rescue Breathing

NOTE: Drowning victims may vomit during CPR or rescue breathing. Officers should be prepared to treat for vomiting and protect the victim's airway.

Once the victim resumes spontaneous breathing:

- Place in recovery position to protect the airway
- Control major bleeding
- Treat for shock
- Consider C-spine stabilization based on the mechanism of injury

Seizures

Introduction

A seizure is the result of a surge of energy through the brain. Instead of discharging electrical energy in a controlled manner, the brain cells continue firing, causing massive involuntary contractions of muscles and possible unconsciousness. If only part of the brain is affected, it may cloud awareness, block normal communication, and produce a variety of undirected, unorganized movements.

Indicators of a seizure

Indicators of a seizure may include:

- staring spells
- disorientation
- lethargy
- slurred speech
- staggering or impaired gait
- tic-like movements
- rhythmic movements of the head (e.g., jerking uncontrollably)
- purposeless sounds and body movements
- dropping of the head
- lack of response
- eyes rolling upward
- lip smacking, chewing, or swallowing movements
- partial or complete loss of consciousness
- picking at clothing
- bluish skin tone
- urination

Causes of seizure

There are numerous possible causes that could lead to a seizure, including:

- Medical
- Trauma
- Environmental

Continued on next page

Seizures, Continued

First aid measures

When peace officers encounter someone experiencing a seizure, the officers should contact EMS and take appropriate first aid measures.

	First Aid Measures for Seizures
Treatment	• Do not restrain them • Move objects out of the way which could harm them • Cushion the person's head • Keep uninvolved people away • Never put any object in the mouth
Post seizure assessment	• Conduct primary assessment • Consider cervical spine stabilization • Conduct secondary assessment • Continuously monitor the patient's ABCs

After the seizure has ended, individuals may experience a period of post-seizure confusion. Peace officers should remain with the individual until the individual is reoriented to the surroundings and victim is transferred to equal or higher level of care. Look for medical alert identification, place victim in the recovery position and care for any injuries that occurred during the seizure.

NOTE: Example questions to ask victim for orientation purposes are person, place, time, and event.

NOTE: **Convulsions**, confusion, and episodes of agitated behavior during an episode should not be perceived as deliberate hostility or resistance to the officer.

Medications

Depriving medications could trigger a seizure.

Peace officers should be guided by agency policy regarding the administering of prescribed medications.

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Seizures, Continued

Example

While on patrol, two peace officers were stopped by a man who stated that there was a woman on the sidewalk who seemed to be "sick or something." When the officers approached, they saw the woman on the ground. She was unconscious and jerking back and forth. One of the officers recognized that the woman was experiencing a seizure and told his partner to keep everyone else away. After a couple of minutes the woman's actions stopped. When the woman regained consciousness, the officer approached her and reassured her that it was all right. The woman appeared to be dazed and confused so the officers remained with her until EMS arrived.

Strokes

Introduction

A victim experiences a stroke (i.e., *cerebrovascular accident (CVA)*) when an artery providing blood to the brain is blocked. A stroke can also be caused by a ruptured blood vessel in the brain creating pressure on brain tissues.

Indicators

A number of possible indicators of a cerebrovascular accident (CVA) are noted in the following table:

	Indicators of Stroke
Mental Status	• Confusion • Delirium • Dizziness • Headache • Unconsciousness
Mobility	• Paralysis on one side of the body • Numbness or weakness of a limb • Convulsions • Weak or sagging facial muscles • Unusual or severe neck or facial pain • Poor balance, clumsiness
Vision	• Blurred or double vision • Unequal pupil size • Sensitivity to light
Communication	• Impaired, slurred speech • Difficulty understanding speech
Other	• Difficulty breathing and swallowing • Nausea, vomiting

Continued on next page

Strokes, Continued

First aid measures

If a peace officer suspects that a victim has experienced a stroke, the following first aid measures should be taken.

	First Aid Measures for Stroke
Assessment	• Conduct primary and secondary assessment • Request additional EMS resources
Treatment	• If *conscious*, elevate head and shoulders slightly (semi-sitting position) • If unconscious, and appropriate, place in recovery position on affected side • Continue to monitor victim • Maintain an open airway • Reassure victim • Take appropriate actions to prevent shock • Protect any numb or paralyzed areas from possible injury • ***Do not*** give victim anything by mouth

Altered Mental Status

Introduction

Altered mental status may be indicative of a wide range of medical conditions and traumatic emergencies. Throughout the assessment of a victim, officers, should be aware of the victim's mental status.

Symptoms of Altered Mental Status

Symptoms of altered mental status may include:

- Confusion
- Anxiety
- Restlessness
- Combativeness
- Sudden Unconsciousness

First Aid Measures

First aid measures for altered mental status may include:

- Calm and reassure the victim
- Change environments
- Identify possible causes
- Provide appropriate care

Severe Abdominal Pain

Introduction

Significant pain in the abdomen may be indicative of severe medical conditions including

- Appendicitis
- Gall Bladder Problems
- Kidney Stones
- Internal Bleeding
- Other Gastrointestinal Conditions

First Aid Measures

- Officers should conduct a primary assessment
- Treat for shock
- Place victim in a position of comfort
- Perform a secondary assessment to include patient history
- Monitor vital signs until EMS arrives

Allergic Reactions and Anaphylaxis

Introduction

Victims may experience mild to severe allergic reactions that may be caused by food, environment, medications, and stings or bites.

Anaphylactic shock

Anaphylaxis (i.e., anaphylactic shock) is a severe, life-threatening allergic reaction caused by exposure to certain allergens. Exposure to an allergen (via insect stings, foods, etc.,) can cause:

- blood vessels to dilate leading to a sudden drop in blood pressure
- swelling of the tissues that line the respiratory system causing an obstructed airway

Epinephrine

Epinephrine is a hormone produced by the body. When administered as a medication soon after exposure, epinephrine will constrict blood vessels and dilate the bronchioles helping to open the victim's airway.

Individuals who are subject to anaphylaxis often carry prescription epinephrine to use if such a reaction occurs.

When an officer encounters a victim who possesses an epinephrine auto-injector because of a known allergy, the officer may assist the victim with the administration of the medication but may not directly administer it unless specific training is completed.

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Allergic Reactions and Anaphylaxis, Continued

Signs and Symptoms

Indicators of allergic reaction may include:

- Itching
- Burning sensation
- Hives
- Swollen lips and tongue
- Difficulty breathing
- Respiratory failure

First Aid Measures

First aid measures for allergic reactions and anaphylaxis include:

- Assist victim in taking prescribed epinephrine
- Request additional EMS resources
- Monitor victim
- Take precautions to prevent shock
- Be prepared to use rescue breathing or CPR if necessary

Psychological Emergencies

Introduction

Victims may experience psychological emergencies due to a variety of causes.

Causes of Psychological Emergencies

Psychological emergencies may be the result of existing mental illness or medications. In addition other causes of psychological emergencies include:

- Involvement in incidents such as traffic collisions
- Being witness to or victim of violent crimes

Signs and Symptoms

Signs and symptoms of psychological emergencies include:

- Extreme agitation
- Increased heart rate
- Anxiety
- Shortness of breath
- Auditory exclusion (e.g., ignoring commands)
- Tunnel vision
- Unresponsiveness
- Extreme perspiration
- Extreme aggression or passivity

NOTE: Peace officers should recognize that there are a variety of psychological emergencies requiring a wide range of potential responses. For psychological emergencies, activation of and/or referral to the EMS system may be appropriate. Where the patient may be a danger to self or others, activation of the EMS system as well as proper officer/public safety tactics are critical.

Diabetic Emergencies

Introduction

The basic source of energy within the human cell is **glucose**. Glucose is circulated throughout the body in the bloodstream. In order for glucose to pass from the bloodstream into the body's cells, **insulin**, a hormone produced by the pancreas, must be present. An imbalance of insulin in the body and glucose in the bloodstream can lead to life-threatening conditions.

Diabetes

Diabetes is a condition brought on when the pancreas does not produce a sufficient amount of insulin, or the body is resistant to the insulin that is produced. Diabetes can occur at any age.

Low Blood Sugar and High Blood Sugar

An improper level of insulin in the body can lead to two potentially dangerous conditions: **low blood sugar** (hypoglycemia) and **high blood sugar** (hyperglycemia).

Indicators

There are a number of different indicators of a possible diabetic emergency. The following table presents a comparison of the indicators of low blood sugar and high blood sugar:

	Indicators of a Diabetic Emergency	
	Low Blood Sugar	**High Blood Sugar**
Onset	• Can come on suddenly • More common	• Usually slow onset
Skin	• Pale, cold, moist, clammy • Profuse perspiration	• Red, warm, dry

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Indicators (continued)

	Indicators of a Diabetic Emergency	
	Low blood sugar	**High blood sugar**
Breathing	• Otherwise normal breathing	• Labored breathing • Breath has sickly sweet (fruity) smell
Mental Status	• Hostile or aggressive behavior • Fainting, seizure • May appear intoxicated	• Decreased level of consciousness • Restlessness • Confusion • May appear intoxicated
Pulse	• Rapid pulse	• Weak, rapid pulse
Other	• Dizziness, headache • Excessive hunger • Drooling • Nausea or vomiting	• Dry mouth, intense thirst • Excessive hunger • Excessive urination • Abdominal pain, vomiting • Sunken eyes

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Diabetic Emergencies, Continued

Diabetic emergency vs. other conditions

There are a number of indicators of a diabetic emergency that are similar to indications of alcohol intoxication or substance abuse.

- Aggressiveness
- Combativeness
- Uncooperative behavior
- Confusion, dazed appearance
- Decreased level of consciousness
- Impaired motor skills

Peace officers should *not assume* that a person exhibiting these indicators is intoxicated without further questioning and assessment.

First aid measures

Because it can be extremely dangerous and life-threatening if left untreated, a possible diabetic emergency must be thoroughly assessed and first aid measures taken immediately.

Along with *activating the EMS system* (if not already activated) peace officers should take the following first aid measures.

	First Aid Measures for Diabetic Emergencies
Assessment	• Ask questions to determine if victim has exhibited any indications of a potential diabetic emergency • Look for medical alert jewelry or other indicators that the person may be diabetic (e.g., wallet identification card, oral medications, insulin in the refrigerator, etc.) • Conduct primary and secondary assessment

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Diabetic Emergencies, Continued

First aid measures (continued)

	First Aid Measures
Treatment	• If unconscious: - place victim in recovery position, if appropriate - ***do not*** attempt to give the victim anything by mouth • If *conscious* and alert - place victim in a position of comfort - give the victim *oral glucose* • Provide reassurance to the victim • Continue to monitor the victim • Take appropriate measures to prevent shock

NOTE: Types of oral glucose include:

- table sugar *(not a sugar substitute)* dissolved in water
- orange juice
- honey
- an approved glucose preparation

Poisoning and Substance Abuse

Introduction

A poison is any substance introduced to the body that causes damage. Children are the most common victims of poisoning. Adults may become victims of poisoning from their environment, medications, or substance abuse.

Poison identification

Peace officers/First Responders should make every effort to obtain pertinent information from the victim, family members, and bystanders as well as through their own observations.

Peace officers should attempt to determine:

- what substance or combination of substances is involved
- when was the victim exposed to the substance
- how much of the substance the victim was exposed to
- length of time the victim was exposed
- what effects the victim has experienced since the exposure
- what, if any, interventions others (e.g., family members, friends, etc.) have already taken

Peace officers should also look for indications of:

- medical and/or mental problems (e.g., bottles of medications, medical alert jewelry, etc.)
- existence of injuries
- evidence of alcohol or illegal drug use (e.g., drug paraphernalia, bottles, etc.)

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Peace officer safety

Peace officers responding to medical emergencies involving poisons should take appropriate precautions against exposing themselves to the substance as well.

Peace officers should:

- not enter any environment containing poisonous gases or fumes until the area has been well ventilated
- use care when handling hypodermic needles or other sharp objects that may be contaminated
- not take any actions that could cause them to become victims of the substance
- follow agency policies and procedures
- use appropriate PPE

Manner of exposure

Poisons can be taken into the body in various ways, either accidentally or deliberately. The following table describes each:

	Description	Examples
Ingestion	• Swallowing the substance	• Medications • Illegal drugs • Alcohol • Household or industrial chemicals • Petroleum products • Improperly prepared food
Inhalation	• Breathing in the substance in the form of gases, vapors, or fine sprays	• Carbon monoxide • Household or industrial chemicals • Petroleum products

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Manner of exposure (continued)

	Description	Examples
Absorption	• Taking in the substance through unbroken skin or membranes	• Insecticides • Agricultural chemicals • Plant materials (e.g., poison ivy)
Injection	• Through deliberate or accidental punctures to the skin	• Illegal drugs • Medications

Indicators

Specific indicators will vary greatly depending on the *poisonous substance* involved. The following table presents a number of indicators that may aid in determining the manner in which the poison was taken into the body:

	Indicators of Poisoning
Ingestion	• Possible burns around the mouth or hands • Unusual stains or colors on skin or mouth • Strong odor on victim's breath • Difficulty breathing • Sudden unexplained, severe illness • Vomiting, abdominal cramping
Inhalation	• Dizziness • Headache • Nausea, vomiting, abdominal cramping

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Indicators (continued)

	Indicators of Poisoning
Absorption	• Itching • Redness, rash, or some other form of skin reaction • Increased skin temperature • Headache • Eye irritation • Allergic reaction
Injection	• Swelling at injection site • Redness of affected skin

NOTE: Some individuals may have a systemic (i.e., whole body) reaction when exposed to certain substances. One symptom of a systemic reaction is anaphylactic shock, a condition that causes the airway to swell, making breathing difficult if not impossible.

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First aid measures

Just as the indicators vary, first aid measures for treating a poisoning victim vary based on the specific type of poison and how it was ingested. For serious medical emergencies, the peace officer should render aid and request additional EMS resources.

If a peace officer/first responder, suspects that a victim has been exposed to a poison, that officer should take the following first aid measures:

	First Aid Measures for Poisoning
Assessment	• Determine the victim's level of consciousness • Conduct primary and secondary assessments (Look for signs of swelling, redness, puncture sites, etc.) • Attempt to identify the poisonous substance
Treatment	• If necessary, remove victim from source of poison (gases, vapors, plant material, etc.), if done safely • If *victim is unconscious*, place in a recovery position, if appropriate • Contact poison control center for treatment advice • If exposure has been through absorption: - flood affected areas with water - wash affected areas with soap and water • Take precautions to prevent shock • Continue to monitor victim

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Poisoning and Substance Abuse, Continued

Alcohol and substance abuse

There are a number of indicators specific to poisonings caused by alcohol and/or substance abuse, of which peace officers should be aware. Indications of withdrawal from alcohol or drugs can include, but are not limited to:

- confusion
- hallucinations or psychotic behavior
- blackouts (e.g., loss of short term memory)
- altered mental status
- tremors or shaking
- profuse sweating
- increased pulse and breathing rates

Certain types of drug abuse can also be associated with violent outbursts and aggressive behavior. Peace officers should take necessary precautions to protect themselves and others when assisting an individual suspected of drug or alcohol abuse.

Assisted Naloxone (Narcan®) Administration

In some jurisdictions, naloxone is provided to individuals to temporarily reverse the effects of the overdose.

- Officers may assist in the administration of this medication if it is consistent with their department policy
- Prior to assisting with administering naloxone, an officer should request additional EMS resources
- Continue to monitor the victim's ABCs
- Naloxone administration may result in an immediate violent reaction by the victim. Officers should consider precautionary actions to take, which may require restraints, prior to assisting with administration of naloxone

  NOTE: Victims treated with naloxone may require additional doses so EMS follow up is essential.

Temperature Related Emergencies

Introduction

The body must generate heat in order to maintain a constant internal body temperature. Excess heat is released through the lungs and skin. If the body is not able to generate enough heat or generates too much heat, the body's systems may shut down, creating a life-threatening condition.

Cold related emergencies

Hypothermia occurs when the body's internal temperature drops to the point where body systems are affected. Hypothermia can range from mild to severe due to a number of factors:

- length of exposure to cold temperatures
- condition of victim's clothing (wet or dry)
- age of victim (elderly and very young are more susceptible)
- existence of underlying illnesses or disorders (e.g., circulatory problems, infections/fever)
- traumatic injury (e.g., head injuries, etc.)
- alcohol consumption

NOTE: Hypothermia can develop even in temperatures that are above freezing.

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Temperature Related Emergencies, Continued

Indicators

The following table identifies indicators of hypothermia:

	Indicators of Hypothermia
Mild-Moderate Hypothermia	• Violent shivering • Numbness • Fatigue • Forgetfulness • Confusion • Cold skin • Loss of motor coordination • Rapid breathing and pulse
Severe Hypothermia	• Lack of shivering • Rigid muscles and joints • Slow shallow breathing • Irregular, weak, slow pulse • Dilated pupils • Decreased level of consciousness leading to unconsciousness • Unwilling or unable to do simple activities • Slurred speech • Blue-grey skin color

NOTE: Unconscious victims with hypothermia may appear clinically dead due to stiffness and extremely low pulse and respiration rates.

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Temperature Related Emergencies, Continued

First aid measures for hypothermia

First aid measures are dependent upon whether the victim's condition is mild or severe. Request additional EMS resources (if not already activated).

	First Aid Measures for Hypothermia
Mild-Moderate Hypothermia	• Move victim to a warm environment (e.g., patrol vehicle) • Remove any wet clothing and replace with dry • Re-warm victim *slowly* • Provide care to prevent shock • Monitor the victim • If victim can swallow easily, give warm liquids (e.g., water) • **Do not** give alcoholic or caffeinated beverages, or nicotine because they can further hinder circulation • Keep the victim moving to increase circulation
Severe Hypothermia	• Determine the victim's level of consciousness • Conduct primary and secondary assessment • If victim has a pulse but is not breathing, begin rescue breathing • If victim has no pulse and is not breathing, begin CPR

NOTE: If the victim cannot be moved, take necessary measures to keep the victim from losing more body heat (e.g., wrap in blankets, etc.).

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Temperature Related Emergencies, Continued

Frostbite

Exposure to cold temperatures can also lead to cold-related injuries to parts of the body. Injuries that are the result of cold or freezing tissue include **frostnip** and **frostbite**.

Areas most commonly affected by frostbite are:

- ears
- face and nose
- hands
- feet and toes

First aid measures for frostbite

The indicators of frostbite vary depending on the extent of exposure and damage. The following table presents information regarding the different degrees of frostbite:

	Indicators	First Aid Measures
Frostnip	• Superficial freezing of skin's outer layer • Numbness • Pale skin color • Skin feels flexible to the touch • Tingling or burning sensation to the area upon warming	• Remove victim from source of cold • Remove/loosen any clothing that may restrict circulation to the area

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Temperature Related Emergencies, Continued

First aid measures for frostbite (continued)

	Indicators	First Aid Measures
Frostbite	• Freezing of tissue below the skin's surface • Skin feels stiff to the touch • Pale, grey-yellow, grey-blue, waxy, blotchy skin color • Pain or aching sensation to the area upon warming	• Immobilize and protect the area • Wrap area in dry, loose bandage - Wrap each digit separately • Allow area to rewarm slowly • Provide care to prevent shock

NOTE: ***Do not*** rub the affected area. Damage may be caused by ice crystals that have formed below the surface of the skin.

NOTE: ***Do not*** allow the frozen area to refreeze after warming. Refreezing can cause extensive tissue damage.

Heat cramps and heat exhaustion

If the body is unable to get rid of excess heat, the body's internal temperature can rise to a level that can cause pain, organ damage, or even death.

Heat cramps can strike when the body loses too much salt due to prolonged perspiration.

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Heat cramps and heat exhaustion (continued)

Heat exhaustion is a condition that is more serious than heat cramps. It is a form of shock that can occur when the body becomes dehydrated. Once a person who is exposed to heat becomes thirsty, that person may already be suffering from dehydration.

In both cases, the person will have a normal body temperature and be able to think clearly.

First aid measures for heat cramps and heat exhaustion

Heat cramps and heat exhaustion can be relatively minor illnesses if they are recognized and treated rapidly. The following table identifies the indicators as well as first aid measures for each:

	Indicators	First Aid Measures
Heat Cramps	• Painful muscle spasms usually in the legs or abdomen • Lightheadedness • Weakness	• Remove victim from source of heat • Have the victim rest • Massage cramped muscles • Provide fluids in small amounts • Do not give alcohol or caffeinated beverages
Heat Exhaustion	• Profuse sweating • Dizziness • Headache • Pale, clammy skin • Rapid pulse • Weakness • Nausea and vomiting	

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Temperature Related Emergencies, Continued

Heat stroke

If heat exhaustion is not recognized and treated promptly, **heat stroke** may set in. Heat stroke occurs when the body's internal temperature rises abnormally high. Heat stroke is a *life-threatening* condition requiring immediate attention.

The following table provides information regarding the indicators as well as first aid measures for heat stroke:

	Indicators	First Aid Measures
Heat Stroke	• Red, hot, dry skin • Rapid, irregular pulse • Shallow breathing • Confusion • Weakness • Possible seizures and/or unconsciousness	• Request additional EMS resources (if not already done) • Continue to monitor victim • Remove victim from source of heat • Loosen or remove victim's clothing • Cool victim's body as rapidly as possible by: - dousing the person with cool water - wrapping the person in a wet sheet or blanket - placing an ice pack wrapped in a towel on the person's neck, groin, or armpits • Provide care to prevent shock

NOTE: Heat stroke can affect children or the elderly who have circulatory problems, even when they are not exposed to extreme heat.

NOTE: Dry hot conditions, versus heat with high humidity, can bring on less fatigue. For this reason, individuals may remain in a dry hot environment longer and become more susceptible to heat related illnesses.

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Stings and Bites

Introduction

Insect stings, spider bites, and snake bites can all be sources of injected toxins. Certain insects, spiders, and snakes can inject toxins that cause serious consequences if not treated rapidly.

Anaphylactic shock

Anaphylaxis (i.e., anaphylactic shock) is a severe, life-threatening allergic reaction caused by exposure to certain allergens. Exposure to an allergen (via insect stings, foods, etc.,) can cause:

- blood vessels to dilate leading to a sudden drop in blood pressure
- swelling of the tissues that line the respiratory system causing an obstructed airway

First aid measures

Epinephrine is a hormone produced by the body. When administered as a medication soon after exposure, epinephrine will constrict blood vessels and dilate the bronchioles helping to open the victim's airway.

Individuals who are subject to anaphylaxis often carry prescription epinephrine to use if such a reaction occurs.

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Insect stings and bites

Insects that *sting* include wasps, hornets, bees, yellow jackets, and fire ants. Insects that *bite* include mosquitoes, lice, gnats, and ticks. In either case, most insect stings and bites are little more than an irritation to the victim; unless they produce a venom which induces anaphylaxis.

The following table identifies most common indicators and first aid measures for insect bites and stings:

	Indicators	First Aid Measures
Usual Reaction	• Local swelling • Minor pain • Itching	• Remove stinger by scraping with firm object (*Do not* attempt to *pull* out with tweezers.) • Wash area with soap and water • Apply ice to reduce swelling and slow the rate of toxin absorption
Allergic Reaction	• Itching • Burning sensation • Hives • Swollen lips and tongue • Difficulty breathing • Respiratory failure	• Assist victim in taking prescribed epinephrine • Request additional EMS resources • Monitor victim • Take precautions to prevent shock • Be prepared to use rescue breathing or CPR if necessary

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Marine life stings

Poisoning from marine life is generally caused by the stings or puncture wounds of poisonous organisms (e.g., jellyfish, sea nettle, sea anemone, coral, Portuguese Man-O-War, stingray, sea urchin, etc.). The following table presents first aid measures for treating a victim of a marine life sting:

Indicators	First Aid Measures
• Pain • Swelling • Discoloration	• Wash area with soap and water • Apply *heat* (not cold) to deactivate venom enzymes • Apply dressing to puncture wounds if necessary • Monitor the victim • If an allergic reaction (i.e., anaphylaxis) is suspected: - assist victim in taking prescribed epinephrine if they have it - request additional EMS resources - take precautions to prevent shock - be prepared to use rescue breathing or CPR if necessary

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Stings and Bites, Continued

Spider bites

Although most spiders are harmless, the venom from the Black Widow and Brown Recluse spiders can cause serious illness. The following table provides information regarding first aid measures for treating the victim of bites from these spiders:

	Description	Indicators	First Aid Measures
Black Widow	Marked by a read, hourglass shaped spot on its abdomen	• Dull pain within 15 minutes of bite • Headache • Chills • Sweating • Dizziness • Nausea and vomiting	• Wash site with soap and water • Apply ice to reduce swelling and slow the rate of venom absorption • Monitor victim • Have victim seek medical treatment • Treat for shock
Brown Recluse	Marked by a brown or purplish violin-shaped mark on its back	• Painless ulcer at site where bitten • Ulcer gradually increases in size (bull's-eye appearance) • Chills • Aches • Nausea	

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Snake bites

Bites from venomous snakes can be extremely serious but rarely fatal. The following table presents first aid measures for treatment of a snake bite victim:

Indicators	First Aid Measures
• Pain, redness, and swelling which begins quickly after bite • Fang marks • Shortness of breath • Tingling around victim's mouth • Bloody vomiting (appearance of coffee grounds) • Shock • Coma	• Keep the victim calm and quiet • Place the affected area in a neutral position • Immobilize the affected area (use splints if necessary) • ***Do not*** attempt to suck the venom from the bite • ***Do not*** cut the area • Take measures to prevent shock • Seek medical attention • Attempt to identify the snake

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Animal and human bites

Although animal and human bites do not involve toxins or venom, they can become infected if not treated properly. The victim of an animal bite may also be at risk of rabies if the bite was caused by an infected animal.

Indicators	First Aid Measures
• Pain, redness, swelling at the site • Damage can range from puncture wound of skin to severe laceration or avulsion of tissue	• Control bleeding if necessary • Wash site with soap and water • Cover with clean dry dressing • Take measures to prevent shock • Monitor victim • Seek medical attention

NOTE: If possible, an attempt should be made to identify the circumstances that led to the bite and locate the animal for rabies testing.

Workbook Learning Activities

Introduction

To help you review and apply the material covered in this chapter, a selection of learning activities has been included. No answers are provided. However, by referring to appropriate text, you should be able to prepare a response.

Activity questions

1. Peace officers respond to a call at a restaurant where a patron appears to be having a medical emergency. When they arrive, the victim's husband explains that his wife is severely allergic to peanuts and may have accidentally eaten some peanut products. The woman's lips and nail beds appear to be a bluish lavender color and her breathing is labored. She appears to be gulping air. How should officers proceed? Explain your rationale for your answers.

2. Peace officers stop a 40-year-old male who is driving erratically. As one of the officers makes contact, she notes that the driver appears dazed, continuing to stare ahead and jerks as if in surprise when asked for his license and registration. The driver begins to argue and tells the officer to leave him alone. The driver then props his head on the steering wheel and appears to begin to nod off. How should the officer proceed?

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Activity questions (continued)

3. A man runs from a residence and flags down a peace officer on patrol. The man explains that his two-year-old son may have just swallowed lemon-scented household cleaner. The man is frantic and tells the officer that this just happened a few minutes ago. What should the officer do?

Continued on next page

Activity questions (continued)

4. How do you recognize a seizure? What should you do to protect the victim during the seizure? How would your response differ if the seizure is not over after about three minutes?

Classroom Demonstrations

Introduction

During class, the instructor will discuss and demonstrate specific techniques for recognizing and treating a variety of medical emergencies that peace officers may encounter. Students will have the opportunity to practice each technique and develop their own levels of skill.

Student notes

Chapter 6

Childbirth

Overview

Learning need

Peace officers must have a basic understanding of first aid measures to assist before, during, and after child birth in an emergency situation.

Learning objectives

The following table identifies the student learning objectives for this chapter:

After completing study of this chapter, the student will be able to:	Objective ID
• Recognize the signs of imminent birth	34.06.02
• Recognize appropriate first aid measures for each of the following emergency situations that may occur in childbirth: - Excessive vaginal bleeding - Newborn fails to breathe	 34.06.07 34.06.08

Continued on next page

Overview, Continued

In this chapter

This chapter will focus on basic first aid measures for assisting a woman during childbirth. Refer to the following table for specific topics:

Topic	See Page
Normal Labor and Childbirth	6-3
Complications in Childbirth	6-5
Workbook Learning Activities	6-7

Normal Labor and Childbirth

Introduction

Only the woman herself can *deliver* her infant. If called upon to assist during normal childbirth, it is the peace officer's role to request additional EMS resources *and determine if birth is imminent.*

Stages of labor

Stage 1	Begins with the pregnant woman's body as it prepares for birth which may include contractions.
Stage 2	Begins when the vaginal opening (**cervix**) is bulging and the baby's head is **crowning,** and ends with the delivery of the infant.
Stage 3	Begins at the birth of the infant and ends with the delivery of the **placenta**.

First Responder actions

The First Responder should build a rapport by introducing themselves to the mother. First Responders should:

- use Personal Protective Equipment (PPE) properly
- prevent explosive delivery with gentle pressure on the infant's head while supporting the mother's **perineum**
- use a firm grip on the infant, as newborns are slippery
- clear the airway
- dry the infant quickly and keep the infant warm
- keep newborn at the same level as the mother
- save the placenta for transport with mother

Transport prior to birth

The assisting peace officer should ensure that EMS has been activated. EMS will determine if the patient can be safely transported. The patient can be safely transported only if she is in the *first stage of labor* (not straining, contractions are greater than 5 minutes apart, no signs of crowning).

NOTE: If it is safe to transport the patient, continue to monitor the patient's condition while waiting for EMS personnel to arrive.

Continued on next page

Imminent birth

If any of the following conditions exist, the mother is entering the second stage of labor and birth *may* be imminent.

The assisting peace officer should prepare to provide support as the woman delivers the infant. Continue to monitor the patient.

Indications that birth may be imminent include:

- contractions that are occurring ***less than two minutes apart*** (five minutes if second or subsequent birth)
- the woman feels an urgent need to bear down
- crowning is present
- the amniotic sac has ruptured and the **amniotic fluid** is released (i.e., the woman's water has broken)

Complications in Childbirth

Introduction

Although most deliveries take place without difficulty, complications may occur. At such times, it is extremely important to provide emotional support and reassurance to the woman and take appropriate first aid measures until additional EMS personnel arrive at the scene.

Excessive bleeding prior to delivery

The presence of some blood prior to the beginning of delivery is normal. If bleeding is excessive, it may be an indication of a complication. Indicators and first aid measures are noted in the following table:

Indicators	First Aid Measures
• Profuse bleeding from vagina	• Take appropriate measures to prevent shock • Absorb blood with towels or pads, apply more as necessary • Arrange for immediate transfer to a medical facility

Transportation considerations

Should any of the following conditions exist, arrange immediate transportation of the patient to the nearest medical facility.

- Limb presentation
- Breach presentation (buttocks first)
- Cord presentation

Except for delayed delivery prepare the patient for transportation, by ensuring she is in the prone knee to chest position.

Continued on next page

Newborn fails to breathe

A newborn should begin breathing on its own within 30 seconds after birth. If it fails to breathe, rubbing the infant's back or tapping the infant's feet may stimulate spontaneous respiration.

If the newborn still fails to breathe on its own, rapid first aid measures are required. The following actions should be taken:

- Check for a brachial pulse
- If there ***is a pulse***, begin rescue breathing
- If there is ***no pulse***, begin CPR immediately

NOTE: Use caution not to over extend the infant's neck. This could close the airway or damage the infant's trachea. Use reduced volume (a cheekful of air) for breaths being careful not to over-inflate the infant's lungs.

Workbook Learning Activities

Introduction

To help you review and apply the material covered in this chapter, a selection of learning activities has been included. No answers are provided. However, by referring to appropriate text, you should be able to prepare a response.

Activity questions

1. Under what conditions should the woman be transported even though her labor has progressed beyond the second stage indicated?

Continued on next page

Activity questions (continued)

2. You respond to a call regarding a disabled car in a busy intersection. The car is blocking one lane, causing congestion as other cars attempt to move by. When approaching the vehicle, you find a woman in labor. She tells you that this is the birth of her second child. The woman's partner explains that the labor pains began more than ten hours ago but since the first labor lasted over 16 hours, they had decided to delay going to the hospital. When the water broke and labor became more intense sooner than expected, they became concerned and started for the hospital. The woman's partner is not wearing a watch so he can't tell you how far apart the contractions are. The woman is very upset, screaming that she has to push. The partner, who is also upset, looks at you and asks "What are we supposed to do?"

Continued on next page

Activity questions (continued)

3. What should a peace officer do if an infant does not spontaneously begin breathing immediately at birth? How would the officer know when to begin rescue breathing or CPR on the newborn?

Workbook Learning Activities

Student notes

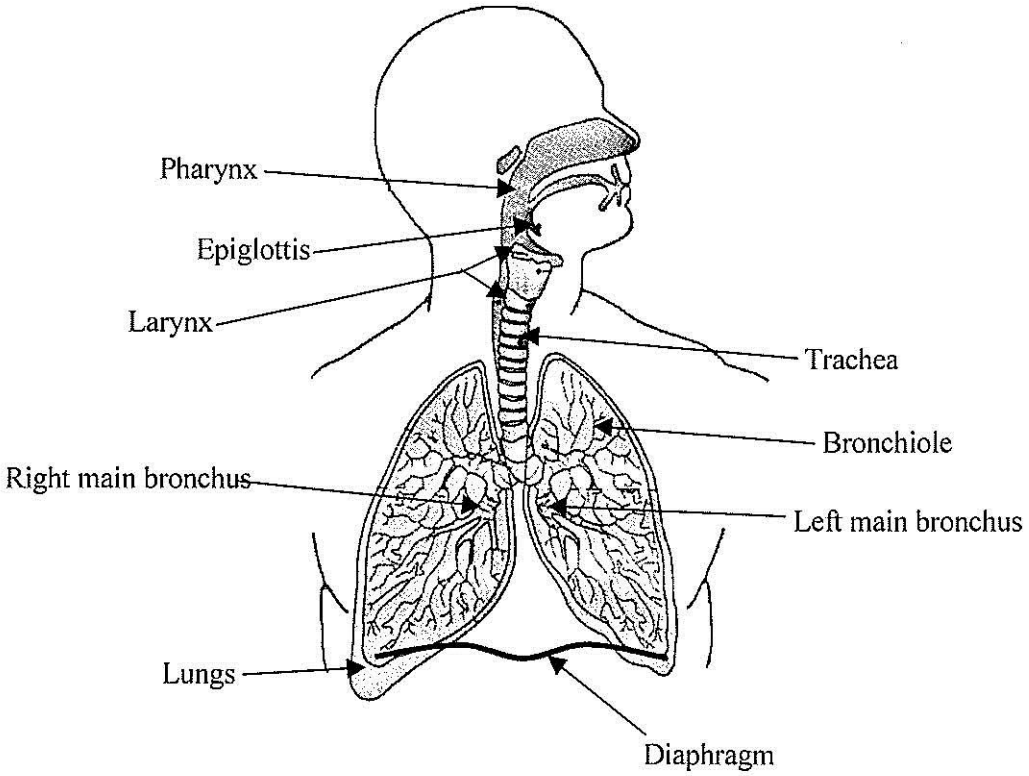
Supplementary Material

Illustrations

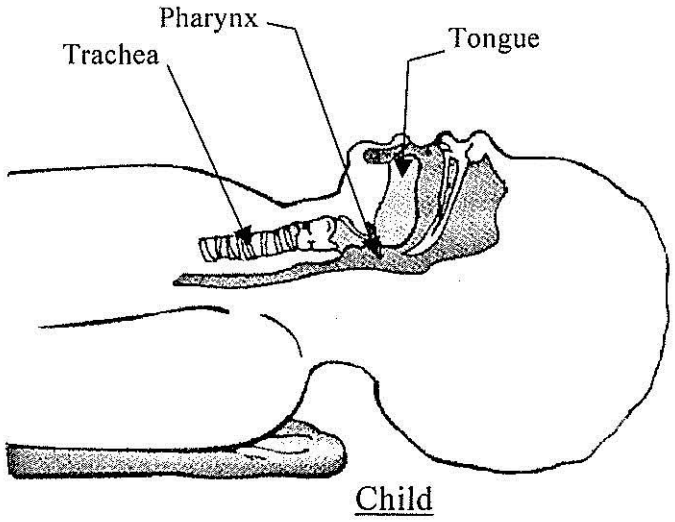
In this section Refer to the following table for specific reference documents included in this section:

Graphic Illustrations	See Page
Respiratory system	S-2
Adult and Child Airways	S-3
Abdominal Quadrants	S-4
Major Organs	S-5
CPR Compression Site	S-6
Arterial Pressure Points	S-7
Infant In Utero	S-8

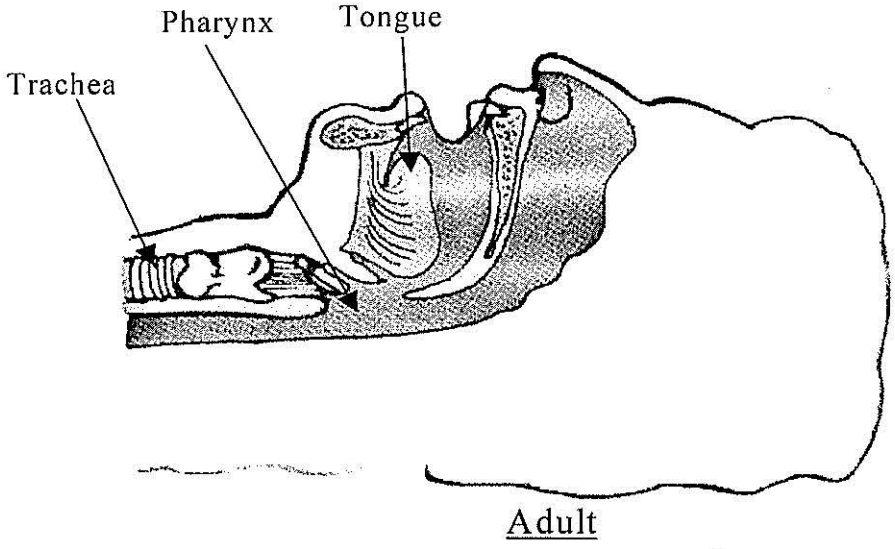
Respiratory System



Adult and Child Airways

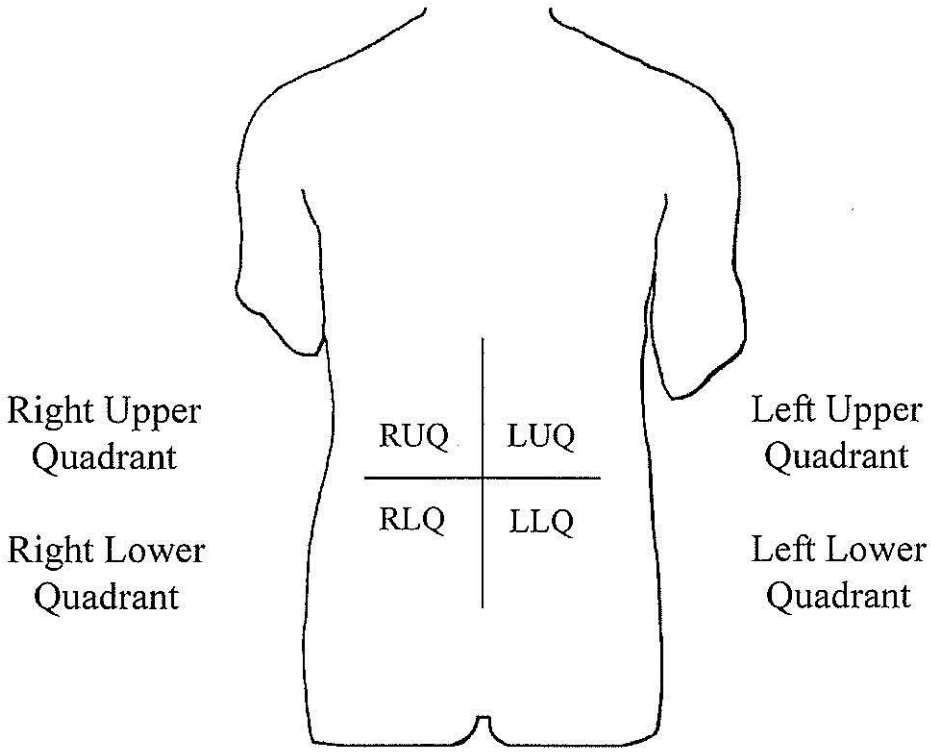


Child

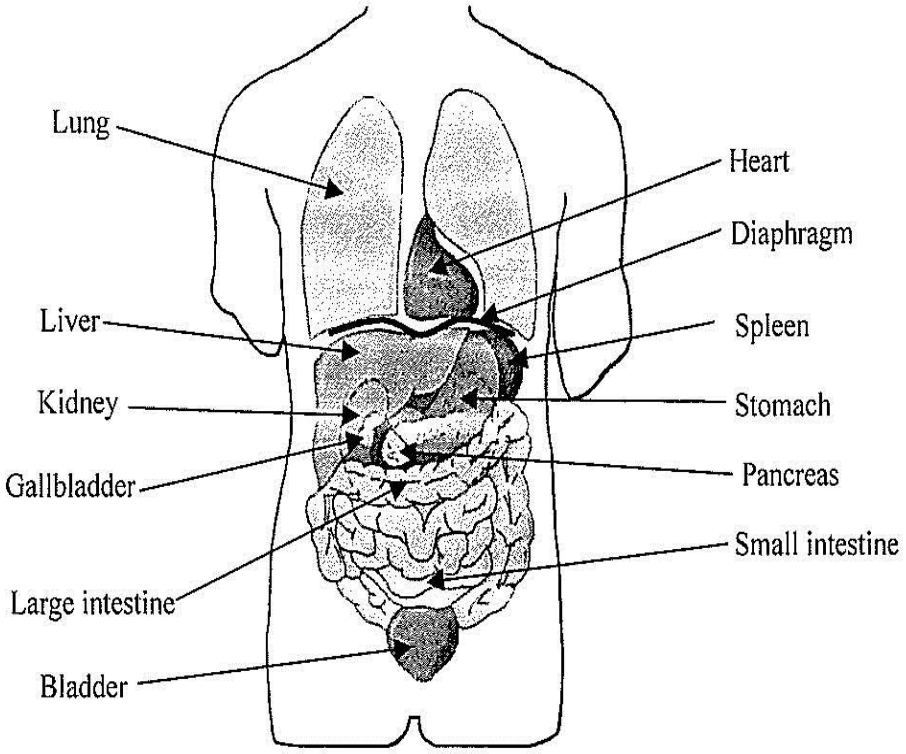


Adult

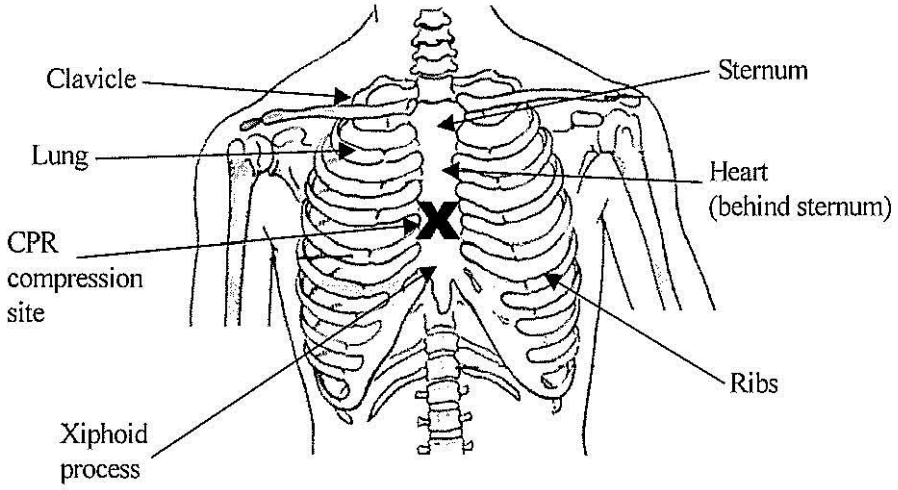
Abdominal Quadrants



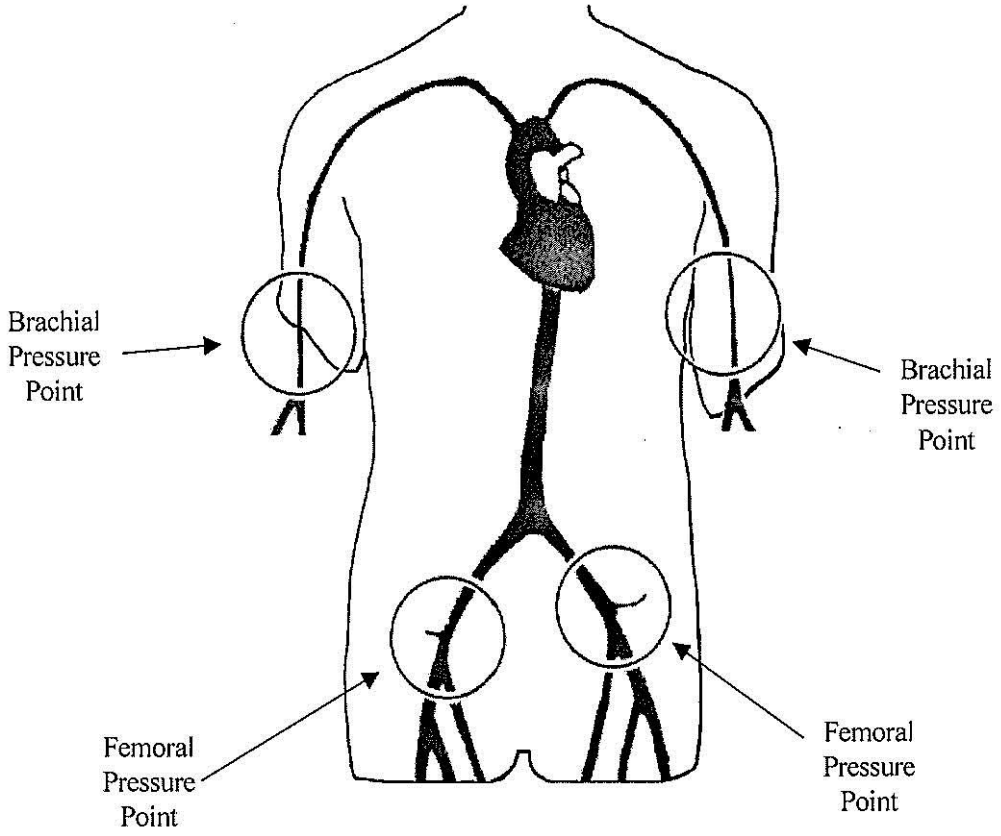
Major Organs



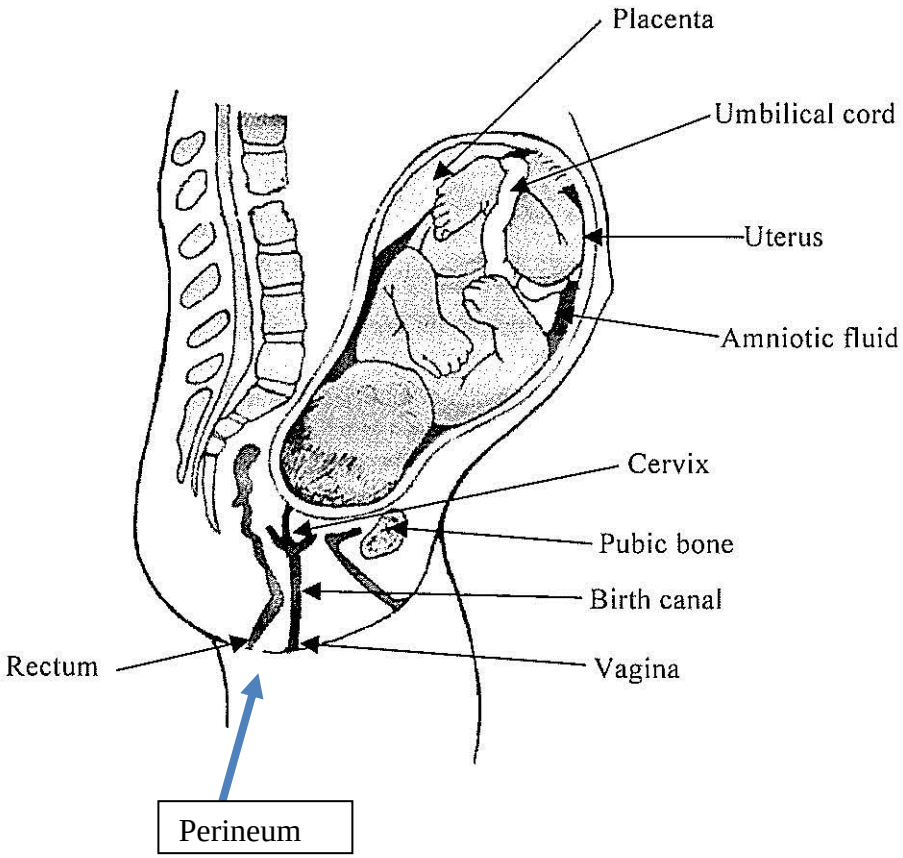
CPR Compression Site



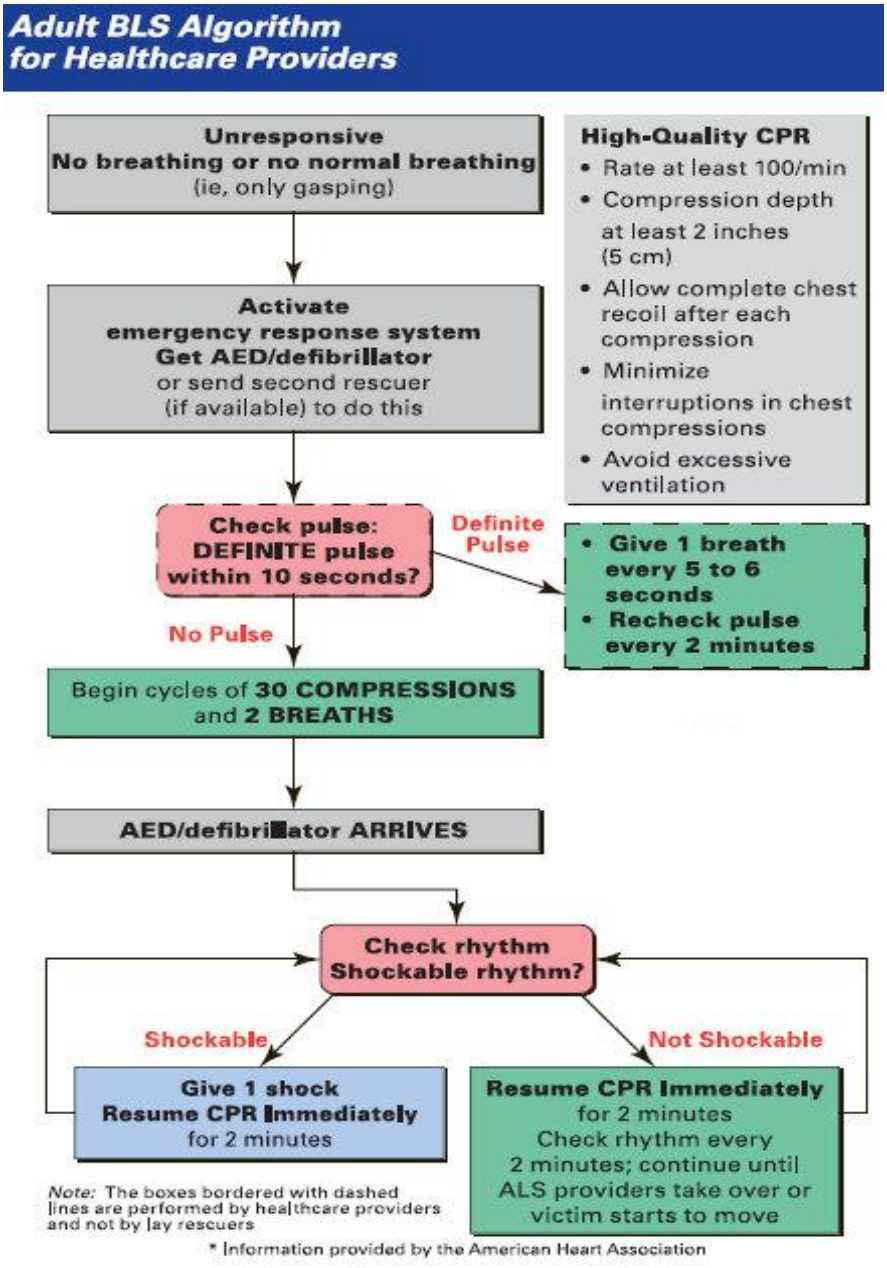
Arterial Pressure Points



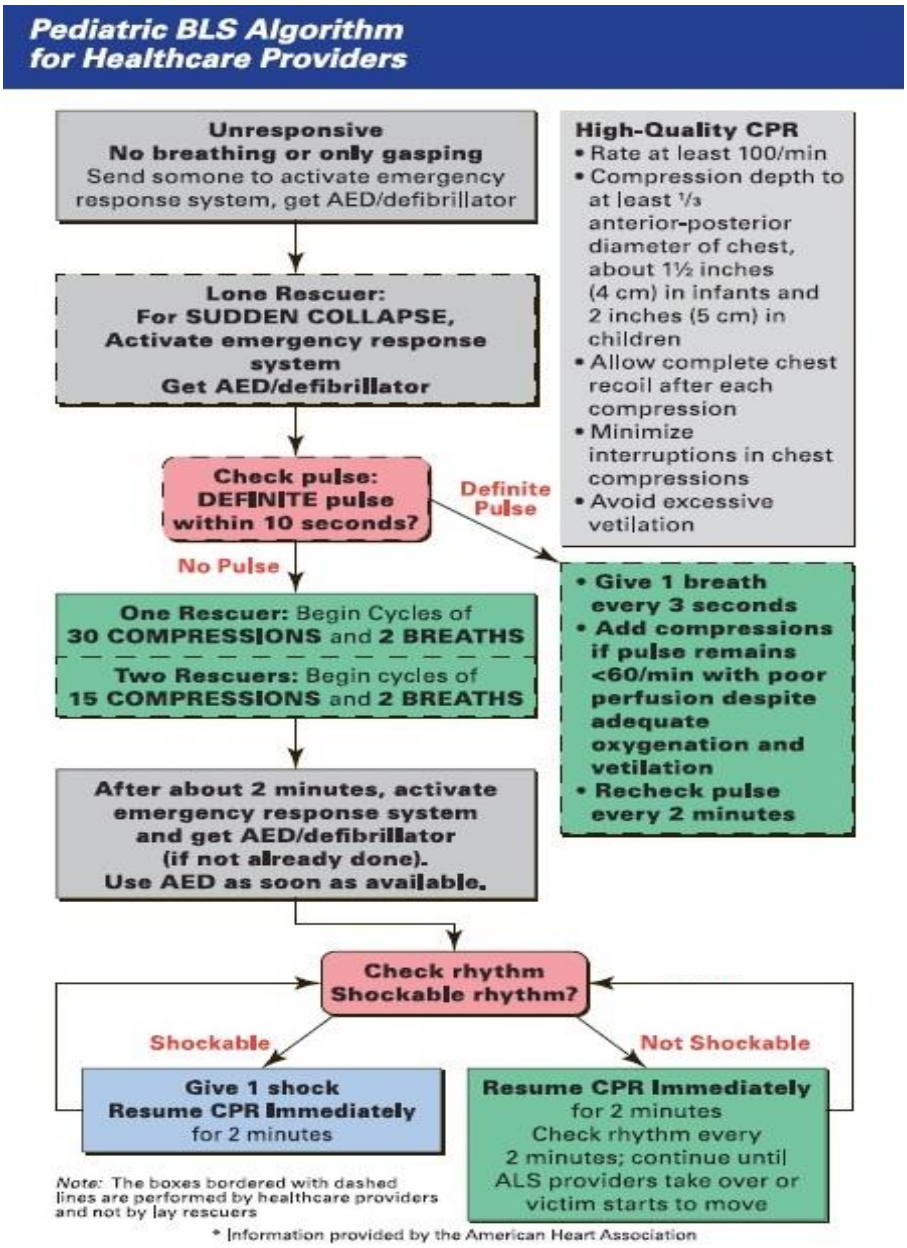
Infant In Utero



CPR Flow Chart



CPR Flow Chart, Continued



Glossary

Introduction	**The following glossary terms apply only to Learning Domain 34: First Aid and CPR.**
abdominal thrust	A technique used to force air out of the lungs, expelling obstructions from a victim's airway
abrasion	An open wound characterized by a scraping away of only the outer portion of the skin
active shooter	An active shooter is an individual actively engaged in killing, or attempting to kill, people in a confined or heavily populated area.
airborne pathogens	A pathogen that is spread by tiny droplets sprayed during breathing, coughing, or sneezing
airway	The passageway by which air enters and leaves the lungs
amniotic fluid	*Amniotic fluid* is a clear, slightly yellowish liquid that surrounds the unborn baby (fetus) during pregnancy. It is contained in the *amniotic* sac
amputations	An open wound characterized by a surgical or traumatic removal of a body extremity
anaphylaxis (anaphylactic shock)	A severe life-threatening allergic reaction caused by exposure to certain allergens
Automated External Defibrillator (AED)	An external defibrillator capable of cardiac rhythm analysis which can deliver an electric shock to a cardiac arrest victim

Continued on next page

Glossary, Continued

avulsions	An open wound characterized by a part or structure of the body being forcibly torn or cut away
bacteria	Microscopic organisms that can live in water, soil, or organic material, or within the bodies of plants, animals, and humans
bandage	Any material used to hold a dressing in place
biological death	The point when breathing and circulation stop, brain cells die due to lack of oxygen, and vital organs begin to deteriorate
bone	Any of the pieces of hard, whitish tissue making up the skeleton in humans and other vertebrates
blood borne pathogens	A pathogen that is spread when the blood or other body fluids (e.g., semen, phlegm, mucus membranes, etc.) of one person come into contact with an open wound or sore of another
C-Spine	Cervical spine; consists of the seven bony rings (vertebrae) that reside in the neck between the base of the skull and the thoracic vertebrae
capillary refill	The filling of blood vessels that connect small veins with small arteries
cardiac arrest	A state when a victim is unresponsive, not breathing, and has no carotid pulse to indicate circulation
cardio-pulmonary resuscitation (CPR)	A method of artificially restoring and maintaining a victim's breathing and circulation

Continued on next page

Glossary, Continued

carotid pulse	The most reliable indication that the victim's heart is functioning and to determine the severity of the victim's condition during the assessment process; felt on either side of the neck
cartilage	Connective tissue that covers the outside of the end of bones; helps for certain flexible structures of the body and allows for smooth movement of bones at joints
cervix	The cervix is the lower end of the womb (uterus). It is a passage way that allows blood from a menstrual period and a baby (fetus) to pass from the womb into the vagina
chemical burn	Burn caused by acids or alkalis coming into contact with the skin
chest seal	An occlusive dressing designed for treating penetrating chest wounds (also known as a sucking chest wound), a life-threatening condition that could lead to tension pneumothorax
chest thrust	A maneuver used to force obstructions from a victim's airway; used instead of abdominal thrusts when the victim has abdominal injuries, is in late stages of pregnancy, is too obese for abdominal thrusts to be effective, or is an infant
clinical death	The moment breathing and circulation stop, reversible condition if basic life support is begun immediately
closed fracture	Broken bone where there is no break in the skin at the site of the fracture
convulsion	Violent uncontrolled muscle contractions

Continued on next page

Glossary, Continued

coronary artery disease (CAD)	A disease caused when fatty deposits build up in the walls of the arteries that feed the heart muscle (often referred to as coronary heart disease)
crowning	The appearance of a segment of the fetal scalp at the vaginal opening in *childbirth*
dermis	Second layer of the skin containing nerves, hair follicles and sweat glands
diabetes	A condition brought on when the body does not produce a sufficient amount of insulin
dislocation	When a bone is pushed/pulled out of alignment from a joint
dressing	Any material applied to a wound to control bleeding and prevent contamination
electrical burn	Burn that occurs when the body becomes a conduit for electrical current
Emergency Medical Services (EMS)	First aid and medical services, rescue procedures and transportation, or other related activities necessary to ensure the health or safety of a person in imminent peril
emergency rescue personnel	Any person who is a peace officer, employee or member of a fire department, fire protection, or firefighting agency of the federal, state, city, or county government
epidermis	Outer-most layer of the skin

Continued on next page

Glossary, Continued

epinephrine	A hormone produced by the body; when administered as a medication, it will constrict blood vessels and dilate the bronchioles helping to open a victim's airway
fainting	A form of shock characterized by sudden unconsciousness
finger sweep	Opening the victims mouth by grasping both the tongue and lower jaw in hand then inserting the index finger along the victims cheek then the throat to hook the object
first-degree burn	Damage only to the epidermis, also known as a superficial burn
fractures	Complete or partial break of a bone
frostbite	Freezing of tissue below the skin surface
frostnip	Superficial freezing of outer layer of skin
gastric distention	When air is forced into the victim's stomach as well as lungs, causing the stomach to become distended; can happen during rescue breathing maneuver
glucose	The basic source of energy within the human cell
head-tilt/ chin-lift	Technique used to open a victim's airway when there are no indications of head, neck, or spinal injury
heart attack	When the heart muscle goes into distress due to lack of oxygenated blood. If the heart is sufficiently damaged, cardiac arrest will result. The greatest risk of death from heart attack is within 2 hours after the onset of symptoms

Continued on next page

Glossary, Continued

heat cramps	A condition caused when the body loses too much salt due to prolonged perspiration
heat exhaustion	A form of shock that can occur when the body becomes dehydrated; more serious than heat cramps
heat stroke	A life-threatening condition which occurs when the body's internal temperature rises abnormally high
hemorrhage	Rapid loss of blood due to a ruptured blood vessel, artery or organ
high blood sugar	Hyperglycemia
hyper-ventilation	Abnormally rapid breathing
hypothermia	When the body's internal temperature drops to the point where body systems are affected
implied consent	The legal position that assumes that an unconscious, confused, or seriously ill victim would consent to receiving emergency medical services if that person were able to do so
incision	An open wound characterized by a smooth, straight cut caused by a sharp object
insulin	A hormone produced by the pancreas that must be present in the body in order for glucose to pass from the bloodstream into the body's cells

Continued on next page

Glossary, Continued

jaw-thrust	Technique used to open a victim's airway when there are indications of head, neck, or spinal injury
joint	Location where bones fit together; allows for body movement
laceration	An open wound characterized by a jagged-edged wound caused by objects tearing or ripping the skin
ligament	Connective tissue that attaches to the end of bones and supports joints; allows for a stable range of motion
Low blood sugar	Hypoglycemia
mild airway obstruction	When the victim indicates an airway problem (i.e., choking) but is able to speak or cough
occlusive dressing	A nonporous dressing used to cover a wound and create an air-tight seal
open fracture	Broken bone where there is a break in the skin at the site of the fracture
open wound	Any injury where the skin has been broken, exposing the tissue underneath
paradoxical breathing	When both sides of the chest do not move in a synchronized manner

Glossary, Continued

pathogens	Agents that are spread through the air or by contact with another person's blood or body fluids that cause infection and disease
perfusion	The continued flow of blood through the capillaries supplying the tissues and organs of the body with oxygen and removing waste products
penetrating trauma	Penetrating trauma is an injury that occurs when an object pierces the skin and enters the body, creating an open wound
perineum	The area between the anus and the scrotum in the male and between the anus and the labial opening to the vagina in the female
placenta	A temporary, disk-shaped organ that joins the mother and fetus, transfers oxygen and nutrients from the mother to the fetus, and permits the release of carbon dioxide and waste products from the fetus
poison	Any substance introduced to the body that causes damage
priapism	Persistent and painful erection of the penis
primary assessment	A rapid systematic process for detecting life-threatening medical conditions; includes assessment for responsiveness, airway, breathing, circulation, control of major bleeding, and treatment for shock
pulse	A pulse, measured in beats per minute, is an indication of the rate of blood flow through the body
puncture	An open wound characterized by a deep wound through the skin and other tissue

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radiation burns	Illness and symptoms resulting from excessive exposure to radiation, whether that exposure is accidental or intentional (as in radiation therapy)
recovery position	On the victim's side with the head supported by the lower forearm
rescue teams	Person(s) deployed to assess, triage and treat victims
rescue breathing	The process of using one's own breaths to artificially breathe for a victim
respiration rate	The number of breathing cycles (inhaling and exhaling) per minute
respiratory arrest	Complete cessation of breathing
respiratory failure	The inability to intake oxygen, to the point where life cannot be sustained
second-degree burn	Damage to the epidermis and dermis, as known as partial thickness

Continued on next page

Glossary, Continued

secondary assessment	A systematic examination of a victim to determine whether serious conditions exist; includes gathering information, conducting head-to-toe check for injuries, and checking vital signs
seizure	The result of a surge of energy through the brain. Instead of discharging electrical energy in a controlled manner, the brain cells continue firing, bringing on sudden changes in sensation, behavior, or movement
self-care	Applying lifesaving skills and techniques to one's self in the event of a life threatening injury before the arrival of EMS.
severe airway obstruction	When a victim is unconscious and unable to breath after the airway has been opened and a finger sweep performed, or conscious but unable to speak, cough, or breathe
shock	A life-threatening condition caused by inadequate tissue perfusion
Skeletal muscles	A muscle that is connected to the skeleton to form part of the mechanical system that moves the limbs and other parts of the body
sprain	Severely stretched or torn ligament
strain	Over-stretched or torn muscle

Continued on next page

Glossary, Continued

stroke	When an artery providing blood to the brain is blocked and the tissues of that part of the brain do not receive adequate amounts of oxygen; can also be caused by a ruptured blood vessel in the brain creating pressure to brain tissues
supine	On the victim's back (face-up)
tendon	Bands of connective tissue that bind muscles to bones
tension pneumothorax	Occurs when there is a complete collapse of the lung that occurs when air enters, but has no place to escape. This causes pressure against the heart and other structures
thermal burn	Burn caused by direct heat
third-degree burn	Damage to the epidermis, dermis, and into fatty layer and muscle beneath the skin also known as full thickness burn
triage	The sorting of, and allocation of treatment to, patients (especially mass casualty and disaster victims), according to a system of priorities designed to maximize the number of survivors.
virus	A submicroscopic agent that is capable of infecting living cells, reproducing, and causing various types of disease
vital signs	Vital signs are outward indications of what may be going on inside the body and whether or not a victim is injured or ill