LESSON

01

COURSE INTRODUCTION

Duration • 02 Periods (Lecture-02 Periods)

LESSON OBJECTIVES

Upon completion of this lesson, you will become familiar with:

1. Other participants and the respective organizations they represent, the course coordinator, the instructors and the support staff.

2. The following aspects of the course: Purpose, objectives, evaluation and methodology, materials to be used, course schedule, facilities and ground rules.

1 Personal Introductions

Instructors, assistants, and support personnel should introduce themselves to the group. The instructor will have the participants introduce themselves or introduce a fellow participant.

2 Course Materials

Participant's Workbook (WB)

Reference Material (RM)

3

Course Purpose and Objectives

3.1 Purpose

To provide the participant the knowledge and skills needed to render aid on-site to sick or injured persons, to stabilise their condition and prepare them for transport to a medical facility.

3.2 Performance Objectives

In the final practical evaluation, you will be given three scenarios — a trauma case, a medical emergency, and a childbirth — you will respond to them one at a time using the procedures you will learn in this course. You will be able to:

1) Receive and register the request for assistance.

2) Respond to the scene, evaluate it and report the situation.

3) Request the resources needed and secure the scene.

4) Gain access to the victim and evaluate his/her condition.

5) Select all the necessary equipment.

6) Stabilise the patient at the scene.

7) Package and prepare the patient for transport.

8) Report the condition of the patient and the treatment given.

9) Prepare the equipment for the next emergency.

You will be provided all the basic equipment of a Medical First Responder, the forms and the Personal protective equipment. You will have 15 minutes to complete all the steps established in the protocol for each incident.

3

Course Purpose
(Cont.)

3.3 Training Objectives

Upon completion of the course, you will be able to:

1) List the steps for preparing the medical first responder's equipment.

2) Describe the method for receiving and documenting a request for assistance, reporting on the situation and requesting resources.

3) List the steps for securing the scene and gaining access to the victim.

4) Describe patient assessment and select the correct equipment to provide care.

5) Describe the procedures for stabilizing, preparing and transporting a patient.

6) Complete a report on a patient's condition and the treatment given.

4

Course Methodology

The course methodology is highly participatory and allows constant interaction between the instructor and participants. Participants will be required to gain some background knowledge as well as acquire manual skills. Instructional and performance objectives are clearly stated at the beginning of each lesson.

5

Participant Testing and Course Schedule

See the MFR Course Evaluation System chart on the next page. There is a total of 23 lessons which includes a General Review (Lesson 22), and a Final Practical Evaluation (Lesson 23).

Each lesson is followed by an open-book Post-Test (self-test), to reinforce the material covered. Post-Tests will not be collected by the instructors.

- **Unit Tests:** The lessons are grouped into six units, each followed by a Unit Test at the end of Lessons 5, 7, 11, 14, 17 and 21, each one worth 100 points.

- There are **Practical Exercises** at the end of Lessons 6, 7, 8, 10, 11, 12, 18, 19, and 21. You must complete all exercises satisfactorily.

- There are two **Group Presentations**: one after Lesson 13 and another after Lesson 21. You must complete both Group Presentations satisfactorily.

- There is a **Group Exercise** after Lesson 19. Each group will be given the same surprise scenario. You will be required to use all your MFR skills and complete the scenario as learned in the course. This is **not** a scored exercise.

- The **Final Practical Evaluation** at the end of the course will include three stations with simulated situations typical of the region.

  Station 1: Trauma Case 100 points (80 points to pass)

  Station 2: Medical Emergency 50 points
  (40 points to pass)

  Station 3: Childbirth 50 points (40 points to pass)

  In the Final Practical Evaluation, you must complete all steps identified for each of the three stations in the respective evaluation form and established protocol.

MFR COURSE EVALUATION SCHEDULE

Lesson	**Lesson Post Test** Not Scored	**Practical Exercises** Successful Performance Required	**Written Unit Tests** Passing Score Required
1	Course Introduction		**Pre-Test**
2	EMS and the MFR		
3	Infectious Disease and Precautions		
4	The Incident		
5	Anatomical References		**Unit Test 1**
6	Patient Assessment	Patient assessment and taking vital signs	
7	BLS and CPR	CPR and FBAO	**Unit Test 2**
8	Oxygen Therapy	Administering oxygen, mask, BVM, and airways	
9	Hemorrhage and Shock		
10	Soft-Tissue Injuries	Controlling hemorrhage, tourniquet, treating and bandaging	
11	Musculoskeletal Injuries	Immobilisation and splinting	**Unit Test 3**
12	Skull, Spinal and Chest Injuries	Treating injuries, using cervical collar	
13	Burns and Environmental Emergencies		**Unit Test 4**
14	Poisoning		
	First Group Presentation *(Passing score required)*		
15	Cardiovascular Emergencies and Abdominal Distress		
16	Respiratory Emergencies		
17	Seizures, Diabetic Emergencies and CVA		**Unit Test 5**
18	Childbirth Emergencies	Infant delivery and complications, mother and infant assessments	
19	Lifting and Moving Patients	Securing and moving patients on spine boards	
	Group Exercise		
20	Report Writing and Preparation for the Next Call		**Unit Test 6**
21	MCI and Triage	Triaging patients using S.T.A.R.T.	
	Second Group Presentation *(Passing score required)*		
22	Course Review		**Post-Test**
23	**Final Practical Evaluation – Three Stations** *Passing Score Required* **Trauma** **Medical** **Childbirth**		

5

Participant Testing and Course Schedule (Cont.)

Daily Lesson Evaluations: At the end of each lesson, you will be asked to rate the instructor and lesson content, and provide comments. At the end of each day, you will identify what has worked well and what needs improvement.

Overall Course Evaluation: You will be asked to critique the MFR Course as a whole, and identify its strengths and weaknesses.

Conditions for Passing the Course

- **Punctual attendance at all activities (lessons, practises, and evaluations) is mandatory.**

- **Minimum score on Unit Tests is 70 points.**
  Your overall average must be a minimum of 70 points in order to participate in the Final Practical Evaluation.

- **Make-up tests:** If you do not receive a passing score on one of the Unit Tests, you will receive **one make-up opportunity per test.** The make-up Unit Tests will be in the same format and in the presence of at least two instructors. **The highest score possible on a make-up Unit Test is 70 points, regardless of your actual score.** If you are unable to pass any one of the make-up tests, you will not be able to take any remaining tests. In this case, you may continue the course at your own discretion. You will receive only a letter of attendance after completing all remaining course activities, including exercises.

- **Practical Exercises:** Your performance on all practical exercises must be satisfactory.

5 Participant Testing and Course Schedule (Cont.)

- **Group Presentation:** Your group must achieve a passing score.

- **Final Practical Evaluation:** Likewise, only **one make-up opportunity** will be given for **each station** in the Final Practical Evaluation. You must pass each make-up station before proceeding to the next station. You must pass all three stations to successfully complete the course. If you are unable to pass any one make-up Practical Evaluation, you will receive only a letter of attendance as described above.

- **After successfully completing all Unit Tests and the Final Practical Evaluation,** you will receive a Certificate of Completion.

6 Facilities and Ground Rules

Classroom Etiquette

- Smoking is prohibited inside any building; participants will be able to smoke outside during breaks.

- No eating or drinking in the classroom (this may be modified by the course coordinator to allow drinking tea or coffee, etc.).

- Interruptions will only be permitted for emergencies. The administrative staff will post messages for the participants, which you can retrieve during breaks. Mobile (cellular) phones and beepers must be off or set to silent/vibrate mode.

Meal Schedule

6 Facilities and Ground Rules (Cont.)

Housing

- Covered expenses: _____
- Extra expenses (telephone calls, laundry, drinks or other): _____

_____

Travel

- Reservations, confirmations, itineraries, changes, should be directed to administrative staff.

Safety

- Emergency procedures

_____

_____

_____

- First aid kit

_____

- Reference Material

_____

7 File

You can bring up any questions or issues to the attention of the instructors. If they are unable to answer your question at the time, it will be recorded in the "File" and will be covered later at the appropriate time.

_____

_____

PARTICIPANT COURSE EVALUATION

Location: _____ **Dates:** _____

Dear Participant: This course evaluation is a vital part of monitoring the MFR training programme. Your comments are valuable and will help us to refine and improve the course. Please answer this anonymous and confidential questionnaire as carefully as possible. Attach an extra sheet if necessary.

PART 1 – LESSON EVALUATION

Please fill in this form at the end of **every lesson**. Timing is important, so that you capture your ideas while fresh. Rate each of the 23 lessons, focusing on two aspects: lesson content and the instructor. Fill in each rating from 1 to 5, using the following scale:

1 VERY POOR	2 POOR	3 AVERAGE	4 GOOD	5 EXCELLENT

DAILY LESSON EVALUATION

Lesson Number		Rating		Comments	
		Content	Instructor	Positive	Needs Improvement
1.	Course Introduction				
2.	EMS and the MFR				
3.	Infectious Disease and Precautions				
4.	The Incident				
5.	Anatomical References				
6.	Patient Assessment				
7.	BLS and CPR				

DAILY LESSON EVALUATION

Lesson Number		Rating		Comments	
		Content	Instructor	Positive	Needs Improvement
8.	Oxygen Therapy				
9.	Hemorrhage and Shock				
10.	Soft-Tissue Injuries				
11.	Musculoskeletal Injuries				
12.	Skull, Spine, and Chest Injuries				
13.	Burns and Environmental Emergencies				
14.	Poisoning				
15.	Cardiovascular Emergencies, Brain Attack and Hypertension				
16.	Chronic Obstructive Pulmonary Disorder				
17.	Seizures, Diabetic Emergencies and Acute Abdomen				
18.	Childbirth Emergencies				
19.	Patient Handling and Lifting & Moving Patients				
20.	Report Writing and Preparation for the Next Call				
21.	Triage				
22.	General Review				
23.	Final Practical Evaluation				

Additional comments regarding the lessons:

PART 2 – OVERALL COURSE EVALUATION:

Please fill in this form at the end of the course. Rate each course component.
Fill in each rating using the same scale of 1 to 5.

1 VERY POOR	2 POOR	3 AVERAGE	4 GOOD	5 EXCELLENT

OVERALL COURSE EVALUATION

Course Component	Rating	Comments	
		Positive	Needs Improvement
Pre-Work			
Participant's Workbook			
Lesson Sequence			
Group Activities			
Course Method			
Visual Aids			
Reaching Lesson Objectives			
Instructors as a Team			
Applicability of Final Presentation			
Relevance of Course to Your Work			
Quality of Classroom Facilities			

OVERALL COURSE EVALUATION
GENERAL QUESTIONS

1. What is your overall opinion of the difficulty level of the MFR Course?

☐ Too basic ☐ Appropriate ☐ Too advanced

Please tell us why: _____

_____

2. What is your opinion of the course duration?

☐ Too short ☐ Appropriate ☐ Too long

Please tell us why:_____

_____

3. Did the MFR Course meet your personal expectations?

☐ Yes ☐ No

Please tell us why:_____

_____

4. **From an overall point of view, how would you rate the MFR Course? (Circle one, please.)**

1 VERY POOR	2 POOR	3 AVERAGE	4 GOOD	5 EXCELLENT

Additional comments or suggestions regarding the MFR Course you would like to add:

_____

_____

_____

_____

_____

_____

MFR LESSON 1 EVALUATION

Course Location: _____ **Dates:** _____

Do not write your name on this form. Please complete a copy of this form at the end of every lesson. Your evaluations are very valuable towards improving the course. Please use the ratings below.

1 VERY POOR	2 POOR	3 AVERAGE	4 GOOD	5 EXCELLENT

Please fill in the required information.	**Lesson Number :** 1	**Lesson Name :** Course Introduction	
	Instructor's Name		
Use a scale from 1 to 5 as described above to rate the various lesson components.	**Lesson Rating (rate 1 to 5)**		
	Content	Instructor	Method
	Workbook	Interaction	
Mark your selection with an "**X**"	**Instruction Level** ☐ Too basic	☐ Appropriate	☐ Too advanced
	Duration ☐ Too short	☐ Appropriate	☐ Too long
	Usefulness Was this lesson useful to you?	☐ Yes	☐ No
Rate from 1 to 5	**Overall Lesson Rating** Taking all the above into consideration, I rate this lesson: _____		
If you need additional space, please use the back of the sheet.	**Comments and Observations**		

Thank you for your help. Your input is valuable.
Please turn in this completed form to the instructor.

LESSON

02

EMERGENCY MEDICAL SYSTEMS (EMS) AND THE MEDICAL FIRST RESPONDER (MFR)

Duration 02 Periods (Lecture-02)

LESSON OBJECTIVES

Upon completion of this lesson, you will be able to:

1. Describe the emergency medical services (EMS) system in the area you reside.
2. List six duties and/or responsibilities of the medical first responder (MFR).
3. Define negligence and give an example as it relates to EMS.
4. Define abandonment and give an example as it relates to EMS.
5. Define implied consent and expressed consent.

1 Introduction to Pre-hospital Care

2 The Emergency Medical Services (EMS) System

What is your definition of an EMS system?

> **EMS System:** A network of resources linked together for the purpose of providing emergency care and transport to victims of sudden illness or injury.

3

Components of an Emergency Medical Services (EMS) System

Copy the diagram from the presentation in the space below:

Draw an organizational chart of your local emergency medical system (EMS):

4 Medical First Responder (MFR)

Definition: The first person on the scene of an incident with emergency medical care skills, typically trained to the most basic EMS level.

5 Qualities of the MFR

- Responsible _____
- Sociable _____
- Honest _____
- Pride (hygiene, uniform, personal appearance) _____

_____

- Emotionally stable _____

_____

- Professional demeanour _____

_____

- Good physical condition _____

_____

- Demonstrated ability _____

_____

- Resourceful _____

_____

6

Duties of the MFR

1) Protect your safety and the safety of your crew, the patient, and bystanders.

2) Gain access to the patient.

3) Assess the patient to identify life-threatening problems.

4) Alert additional EMS resources.

5) Provide care based on assessment.

6) Assist other EMS personnel.

7) Participate in record-keeping and data collection as received.

8) Act as liaison with other public safety workers.

9) Perform patient preparation for movement and transportation.

7

Legal Aspects

7.1 Local Legislation and Protocols

Local Legislation

Protocols

7.2 Responsibilities of the MFR

MFR responsibility, refers to the legal and ethical obligation that all persons who practice any profession must be accountable before the law for any acts that cause harm as a result of carrying out that activity.

Scope of Care: Actions that are legally allowed by the MFR when providing patient care.

The scope of care in Indian situation is the skills and knowledge learned in this MFR course as it has been approved by MHA.

Notes:

Duty to Act: The contractual or legal obligation of the MFR to provide care.

Notes:

Breaches of Responsibility

Abandonment: Discontinuing emergency medical care without making sure that another health care professional with equal or better training has taken over.

Notes: _____

_____

Negligence: Failure to provide the expected standard of care, causing injury or death of the patient.

Notes: _____

_____

7.3 Rights of the Patient

- To solicit and receive pre-hospital care.

_____

- Confidentiality regarding personal information and condition.

_____

- To pursue legal recourse for acts of negligence, abandonment, and/or violations of confidentiality.

_____

- In some situations, the patient has the right to refuse care. The patient may be required to sign a refusal form in the presence of a witness.

_____

CONSENT

Implied Consent: Consent assumed on the part of an unconscious, confused or seriously injured patient or, in a minor patient that cannot make decisions.

It is assumed that if the person were conscious, he/she would authorise care. Likewise, one assumes that if a relative or the minor's guardian were present, he/she would authorise care.

Notes: _____

_____

_____

_____

_____

Expressed Consent: Permission that must be obtained from every responsive, competent adult patient before providing emergency care.

Notes: _____

_____

_____

_____

_____

8

Basic Equipment of the MFR

8.1 Basic Personal Protective Equipment (PPE)

- _____
- _____
- _____
- _____
- _____
- _____

8.2 Basic Equipment for Pre-hospital Care

- Kit
- Dressings
- Bandages
- Tape
- Paper Cup
- Tourniquet
- Blankets
- Sheets
- Pillow
- Splints
- Scissors
- Hand sanitizer and face shield,
- Pulse oxymeter
- Oxygen and accessories (optional)
- Backboard
- Cervical collars (all sizes)
- Pen light (Torch light)
- Blood pressure cuff (sphygmomanometer)
- Stethoscope
- Disinfectant (betadine)
- Sterile water or normal saline
- Activated charcoal
- Aluminium foil
- Tongue depressor
- Childbirth kit
- Oropharyngeal airways (all sizes)
- Occlusive dressing

POST-TEST | LESSON 2

Emergency Medical Systems and the Medical First Responder

1. Describe the local emergency medical services (EMS) system.

2. List six duties and/or responsibilities of the medical first responder (MFR).

3. Define negligence and give an example as it relates to EMS.

4. Define abandonment and give an example as it relates to EMS:

MFR LESSON 2 EVALUATION

Course Location: _____ **Dates:** _____

Do not write your name on this form. Please complete a copy of this form at the end of every lesson. Your evaluations are very valuable towards improving the course. Please use the ratings below.

1 VERY POOR	2 POOR	3 AVERAGE	4 GOOD	5 EXCELLENT

<table>
<tr><td rowspan="2">Please fill in the required information.</td><td colspan="2">Lesson Number :</td><td>Lesson Name :</td></tr>
<tr><td colspan="3">Instructor's Name</td></tr>
<tr><td rowspan="3">Use a scale from 1 to 5 as described above to rate the various lesson components.</td><td colspan="3">Lesson Rating (rate 1 to 5)</td></tr>
<tr><td>Content</td><td>Instructor</td><td>Method</td></tr>
<tr><td>Workbook</td><td>Interaction</td><td></td></tr>
<tr><td rowspan="3">Mark your selection with an "X"</td><td>Instruction Level
☐ Too basic</td><td>☐ Appropriate</td><td>☐ Too advanced</td></tr>
<tr><td>Duration
☐ Too short</td><td>☐ Appropriate</td><td>☐ Too long</td></tr>
<tr><td colspan="3">Usefulness
Was this lesson useful to you?
☐ Yes ☐ No</td></tr>
<tr><td>Rate from 1 to 5</td><td colspan="3">Overall Lesson Rating
Taking all the above into consideration, I rate this lesson: _____</td></tr>
<tr><td>If you need additional space, please use the back of the sheet.</td><td colspan="3">Comments and Observations</td></tr>
</table>

Thank you for your help. Your input is valuable. Please turn in this completed form to the instructor.

LESSON

03

INFECTIOUS DISEASE AND PRECAUTIONS

Duration 02 Periods (Lecture- 02 Periods)

LESSON OBJECTIVES

Upon completion of this lesson, you will be able to:

1. Define infectious disease.
2. Describe the two means of transmission of infectious diseases.
3. List eight signs and symptoms of infectious disease.
4. List three categories of body substance isolation precautions.
5. List five components of the personal protective equipment (PPE) used during patient assessment and pre-hospital treatment.

1

Infectious Diseases

Infectious diseases are illnesses caused by pathogens, microorganisms such as bacteria or viruses that can be transmitted.

1.1 METHODS OF TRANSMISSION

- **Direct contact** occurs through contact with bodily fluids, contact through open wounds or exposed tissues, or contact with mucous membranes of the mouth, eyes or nose.

  Notes: _____

  _____

  _____

- **Indirect contact**, through airborne pathogens spread by tiny droplets sprayed during breathing, coughing or sneezing, or by way of contaminated objects, such as needles.

  Notes: _____

  _____

  _____

1

Infectious Diseases
(Cont.)

1.2 Diseases of Concern

As a medical first responder, you can be exposed to infectious diseases whenever you treat a patient. Although there are many infectious diseases, some of greatest concern because they are life-threatening are:

- _____
  _____
- _____
  _____
- _____
  _____

Other diseases you may be exposed to:

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

2 Signs and Symptoms

Patients contaminated with an infectious disease may not present with signs or symptoms. A major source of infectious transmission is the **"chronic carrier"**. Such a person can carry an infection for years without signs or symptoms.

_____

_____

When signs and symptoms of infectious disease do appear, they may include:

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

3

Body Substance Isolation (BSI)

Definition: A strict form of infection control based on the premise that blood and other bodily fluids are infectious.

Body substance isolation consists of a combination of equipment and procedures that protect you from the blood and other bodily fluids of the patient. With BSI precautions, it is possible to take care of patients safely, including those with infectious diseases. BSI precautions fall under three categories:

3.1 Hand washing:

The single most important thing you can do to prevent the spread of infection (even if wearing gloves).

Notes: _____

_____

3.2 Cleaning equipment:

Cleaning, disinfecting, and sterilising are related terms. **Cleaning** is simply washing an object with soap and water. **Disinfecting** is cleaning plus using a chemical like alcohol or bleach to kill most of the pathogens. **Sterilising** is a process in which a chemical or other process (such as superheated steam) is used to kill all microorganisms on the object.

Notes: _____

_____

3.3 Using personal protective equipment (PPE):

You must always use PPE to protect against infection. This will keep you from coming into contact with bodily fluids. PPE includes eye protection, gloves, gown, head cover/cap and CPR mask.

Notes: _____

_____

All body fluids are considered infectious and appropriate precautions must be taken for all patients at all times!!

IMPORTANT:

- Always discard contaminated items properly.
- Your safety and the safety of others is a risk from cross-contamination.

4 Immunization

The following immunizations are recommended for active duty MFR's:

- Tetanus prophylaxis (every 10 years)
- Hepatitis-A Vaccine
- Hepatitis-B Vaccine
- Influenza vaccine (every year)
- Polio
- Rubella (German measles)
- Measles
- Mumps
- Doses of COVID 19 Vaccine.

Notes: _____

_____

Though there is no current immunization for tuberculosis, you should be checked for exposure to the Disease yearly. Consult your local protocols for immunisations.

5 Reporting Exposures

Report any suspected exposure to blood or bodily fluids to your supervisor as soon as possible. Include in your report the date and time of exposure, type of bodily fluids involved, the amount, and details of the incident. All agencies should have a written policy in place to handle exposures to infectious body substances.

_____

_____

_____

_____

POST-TEST | LESSON 3

Infectious Disease and Precautions

1. Define infectious disease.

_____

_____

2. Describe the two methods of transmission of infectious diseases.

- _____
- _____

3. List eight possible signs and symptoms of infectious disease.

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

4. List three categories of body substance isolation precautions.

- _____
- _____
- _____

5. List six components of the personal protective equipment (PPE) used during patient assessment and pre-hospital treatment.

- _____
- _____
- _____
- _____
- _____

MFR LESSON 3 EVALUATION

Course Location: _____ **Dates:** _____

Do not write your name on this form. Please complete a copy of this form at the end of every lesson. Your evaluations are very valuable towards improving the course. Please use the ratings below.

1 VERY POOR	2 POOR	3 AVERAGE	4 GOOD	5 EXCELLENT

Please fill in the required information.	**Lesson Number :**	**Lesson Name :**	
	Instructor's Name		
Use a scale from 1 to 5 as described above to rate the various lesson components.	**Lesson Rating (rate 1 to 5)**		
	Content	Instructor	Method
	Workbook	Interaction	
Mark your selection with an "**X**"	**Instruction Level** ☐ Too basic	☐ Appropriate	☐ Too advanced
	Duration ☐ Too short	☐ Appropriate	☐ Too long
	Usefulness Was this lesson useful to you?	☐ Yes	☐ No
Rate from 1 to 5	**Overall Lesson Rating** Taking all the above into consideration, I rate this lesson: _____		
If you need additional space, please use the back of the sheet.	**Comments and Observations**		

Thank you for your help. Your input is valuable.
Please turn in this completed form to the instructor.

LESSON

04

THE INCIDENT

Duration • 02 Periods (Lecture- 02 Periods)

LESSON OBJECTIVES

Upon completion of this lesson, you will be able to:

1. List the five items of information to obtain when receiving a call for assistance.
2. List five factors to consider when responding to a call.
3. List the three steps for scene size-up, in proper order.
4. List the six items of information that should be included in the initial report when arriving at the scene.
5. List the three priorities when securing the scene.
6. List five basic tools used to gain access to a patient trapped in a vehicle.
7. List two ways to gain access to a patient trapped in a vehicle.

1 The Incident

Definition: An event caused by a natural phenomenon or human activity that requires the intervention of emergency service personnel to prevent or mitigate loss of life and damage to property and the environment.

2 Call for Assistance

Information to obtain:

1) Address/location of the incident.

_____

2) Identify the origin of the call (telephone, radio, in-person, etc.)

_____

3) Incident type (what is happening)

_____

4) Victims (number and condition)

_____

5) Actions taken.

_____

EXERCISE 4-1
Documenting a Call for Assistance

The instructor will provide guidance on using the forms on the next two pages for this exercise.

EXERCISE 4-1
Documenting a Request for Assistance Sample Form

Incident number:

Time of the call: **Date:**

Incident location:

Origin of the call: ☐ **Telephone** ☐ **Radio** ☐ **Personal** **Other:** _____

Name and location of person making the call:

Incident type:

☐ Traffic ☐ Structural fire ☐ Natural disaster

☐ Marine ☐ Medical ☐ Haz-Mat

☐ Structural Collapse ☐ Other _____

Brief explanation of situation:

EXERCISE 4-1
Documenting a Request for Assistance
Sample Form (Cont.)

VICTIM(S): Number:
Actions underway at the scene:
Other pertinent information:
Name or identification of person receiving the call:
Other information if any given:

3

Response

When responding to an incident, the following factors should be considered:

- Day of the week (traffic etc.)

_____

- Time of the day (school, business hours, people at home etc.)

_____

- Weather (rain, wind, storms etc.)

_____

- Social disturbances, riots etc

_____

- Topography (winding roads etc.)

_____

- Hazardous materials (fuel leaks, radiation etc.)

_____

- Access routes (freeways, crossings, bridges, height, width, road maintenance etc.)

_____

- Power lines

_____

- Proper vehicle placement

_____

4 Types of Incidents

- Motor vehicle collision _____
- Structural fire _____
- Natural phenomena _____
- Wateremergencies (Drowning/flood) _____
- Medical emergency _____
- Incidents involving hazardous materials _____
- Structural collapse _____
- Electrical accidents _____
- Aircraft accident _____
- Train accidents _____
- Ship accidents _____

5 Scene Size-up

> **Definition:** The evaluation of factors that are used in the decision-making process to establish the strategy and tactics to be used in a particular incident.

Ongoing evaluation of the incident begins when the call is received and continues until the incident is successfully mitigated.

5.1 Scene Size-Up Criteria

Using the following criteria for scene size-up, in this order:

1) What is the current situation? (Determine actual state.)

_____

2) Where is it going? (Determine potential situation.)

_____

3) How do I control it? (Determine operations and resources needed.)

_____

5.2 Reporting

The following information should be included in the initial report:

1) Address/location _____

2) Type of incident _____

3) Environmental conditions _____

4) Current situation _____

5) Number of victims _____

6) Resources needed _____

EXERCISE 4-2
Scene Size-Up

For this exercise, the instructor will be showing you three slides, which you will analyses. You will then be instructed to fill out the forms on the following three pages with the relevant information.

EXERCISE 4-2
Scene Size-Up Image 1

Scene Size-up

What is the current situation? (actual state)

_____

_____

_____

Where is it going? (potential situation)

_____

_____

How can we control it? (operations and resources needed)

_____

_____

Guide to Reporting Scene Information (to Dispatch Office)

Address/location _____

_____

Type of incident _____

_____

Environmental conditions _____

_____

Problems present _____

_____

Number of victims _____

Resources needed _____

_____

EXERCISE 4-2
Scene Size-Up Image 2

Scene Size-up

What is the current situation? (actual state)

Where is it going? (potential situation)

How can we control it? (operations and resources needed)

Guide to Reporting Scene Information (to Dispatch Office)

Address/location

Type of incident

Environmental conditions

Problems present

Number of victims

Resources needed

EXERCISE 4-2
Scene Size-Up Image 3

Scene Size-up

What is the current situation? (actual state)

Where is it going? (potential situation)

How can we control it? (operations and resources needed)

Guide to Reporting Scene Information (to Dispatch Office)

Address/location

Type of incident

Environmental conditions

Problems present

Number of victims

Resources needed

6 Securing the Scene

There are three priorities when securing the scene:

1) Place your vehicle properly

_____

2) Isolate and mark the scene

_____

3) Mitigate risks

_____

7 Gaining Access

The MFR should always analyse the need for personal protection, such as helmet, eye protection, mask, self-contained breathing apparatus, gloves, etc. **before** attempting to gain access to a patient.

In case the incident occurs in water (Indian Coast Guards), cliffs (Indo-Tibetan Border Police), etc., the MFR should request assistance from specially trained personnel.

7.1 Basic Tools

Fill in the local names used for the tools listed below:

Pliers _____

Screwdriver _____

Tin cutter _____

Hammer _____

Knife _____

Rope _____

Padlock remover _____

Pry bar _____

Vise grips _____

Axe _____

Hacksaw _____

Rubber mallet _____

Automatic centre punch _____

Personal protective equipment _____

7.2 Gaining access to buildings

Always look for alternate means of entry.

Consider the easiest route for entry and exit based on the situation and the patient's needs.

Notes: _____

_____

- **Doors** _____

_____

_____

- **Windows** _____

_____

_____

7.3 Gaining access to vehicles using basic tools

Generally and if possible, medical treatment should begin before the patient is extricated. The patient should be removed in such a way as to minimize further injury. Access may be simple (not requiring tools) or complex (requiring tools and special training).

Take only those steps you are trained to take.

Call for additional resources.

Notes: _____

_____

- **Doors** _____

_____

_____

- **Windows** _____

_____

_____

POST-TEST | LESSON 4

The Incident

1. List the five items of information to obtain when receiving a call for assistance.

   - _____
   - _____
   - _____
   - _____
   - _____

2. List five factors to consider when responding to a call.

   - _____
   - _____
   - _____
   - _____
   - _____

3. List the three steps to scene size-up, in proper order.

   - _____
   - _____
   - _____

POST-TEST | LESSON 4

The Incident (Cont.)

4. **List the six items of information that should be included in the initial report to the dispatch office when arriving at the scene.**

- _____
- _____
- _____
- _____
- _____
- _____

5. **List the three steps to secure the scene.**

- _____
- _____
- _____

6. **List five basic tools used to gain access to a patient trapped in a vehicle.**

- _____
- _____
- _____
- _____
- _____

7. List two ways to gain access to a patient trapped in a vehicle.

- _____
- _____

MFR LESSON 4 EVALUATION

Course Location: _____ **Dates:** _____

Do not write your name on this form. Please complete a copy of this form at the end of every lesson. Your evaluations are very valuable towards improving the course. Please use the ratings below.

1 VERY POOR	2 POOR	3 AVERAGE	4 GOOD	5 EXCELLENT

Please fill in the required information.	**Lesson Number :**	**Lesson Name :**	
	Instructor's Name		
Use a scale from 1 to 5 as described above to rate the various lesson components.	**Lesson Rating (rate 1 to 5)**		
	Content	Instructor	Method
	Workbook	Interaction	
Mark your selection with an "**X**"	**Instruction Level** ☐ Too basic	☐ Appropriate	☐ Too advanced
	Duration ☐ Too short	☐ Appropriate	☐ Too long
	Usefulness Was this lesson useful to you?	☐ Yes	☐ No
Rate from 1 to 5	**Overall Lesson Rating** Taking all the above into consideration, I rate this lesson: _____		
If you need additional space, please use the back of the sheet.	**Comments and Observations**		

Thank you for your help. Your input is valuable. Please turn in this completed form to the instructor.

LESSON

05

ANATOMICAL REFERENCES

Duration • 03 Periods (Lecture-03 Periods)

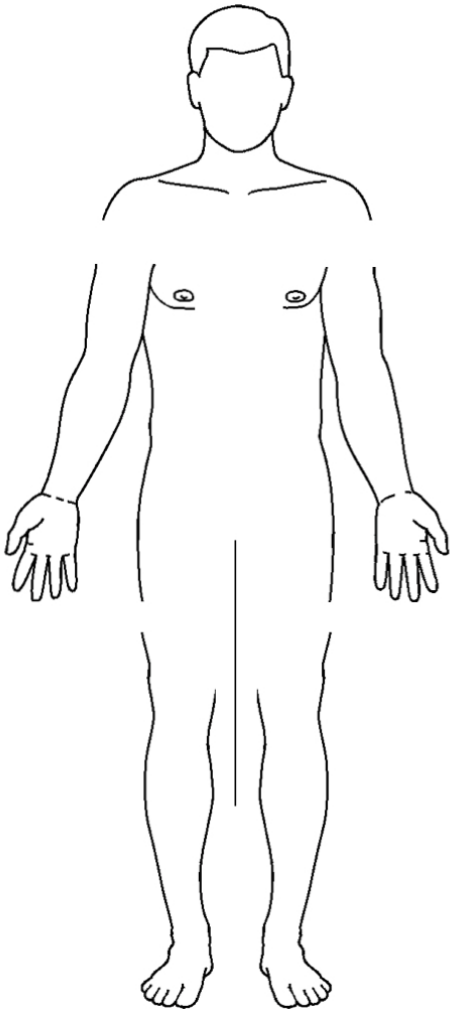
LESSON OBJECTIVES

Upon completion of this lesson, you will be able to:

1. Define anatomical position.
2. Identify and describe the three anatomical planes.
3. Identify the five regions of the human body.
4. List the five body cavities and the organs they contain.
5. Describe the location of a wound on a patient using anatomical references.
6. Name the four abdominal quadrants.
7. Identify and label the main internal organs located in each abdominal quadrant.

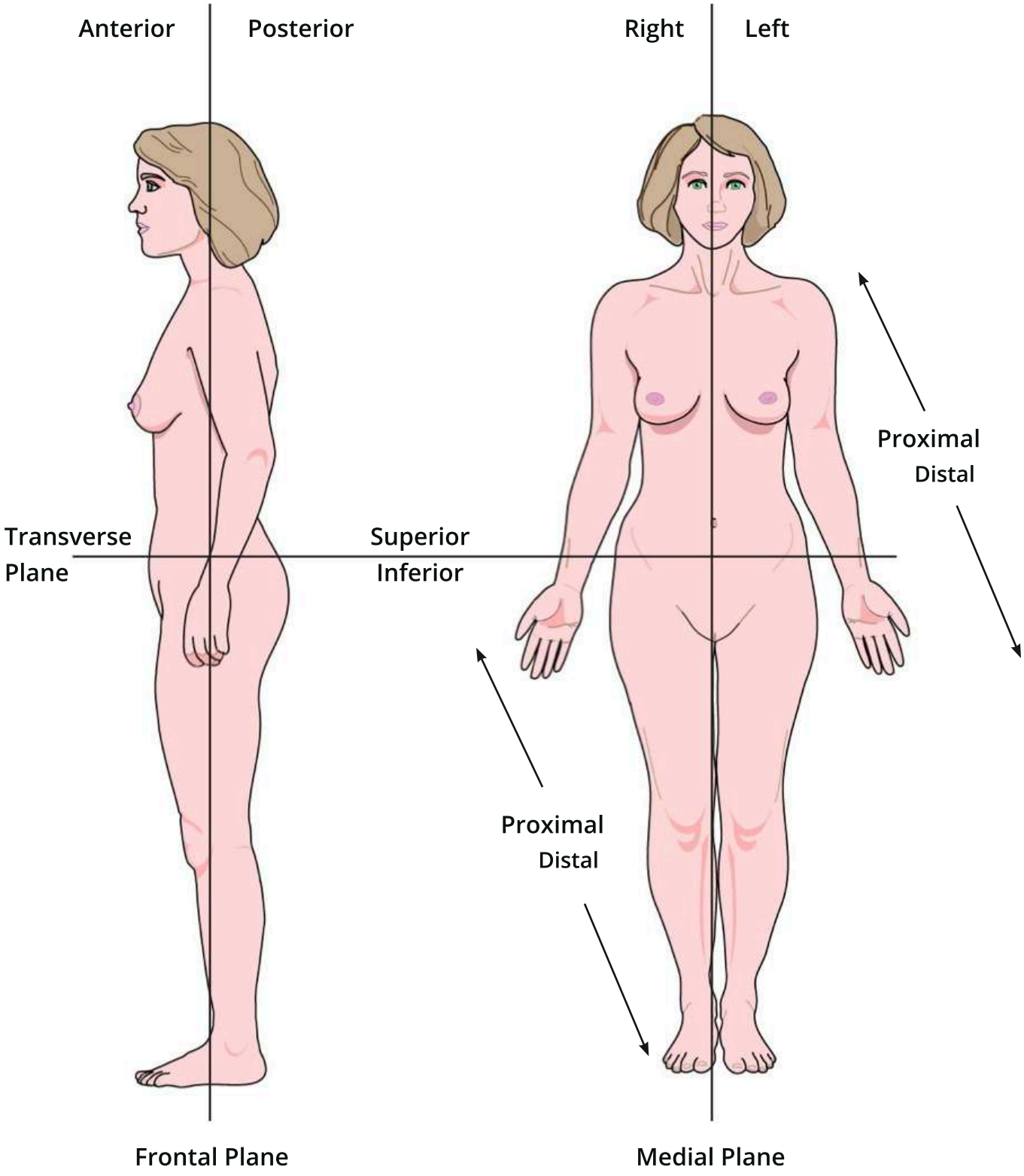
1 Anatomical Position

Definition: Standing erect with arms down at the sides, palms facing forward. "Right" and "Left" refers to the patient's right and left.



2

Conventional References



2

Conventional References (Cont.)

2.1 Anatomical Planes

The anatomical planes refer to imaginary planes that divide the body in two halves, in different orientations. Write in the descriptions of the three anatomical planes below:

Medial plane: _____

_____

Transverse plane: _____

_____

Frontal plane: _____

_____

2.2 Extremities and Subdivisions

Proximal: Means close, or closer to the point of reference given.

Distal: Means distant, or farther away from the point of reference given.

_____

_____

2.3 Positional Terms

Prone _____

_____

Supine _____

_____

Lateral recumbent or "recovery" _____

_____

3

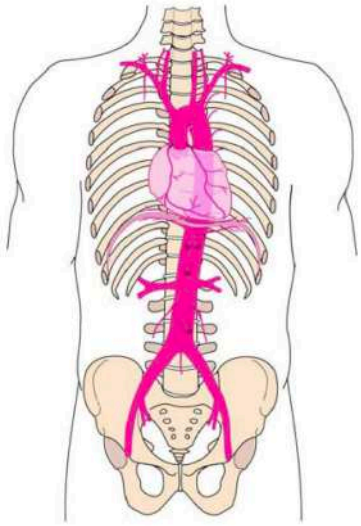
Body Regions

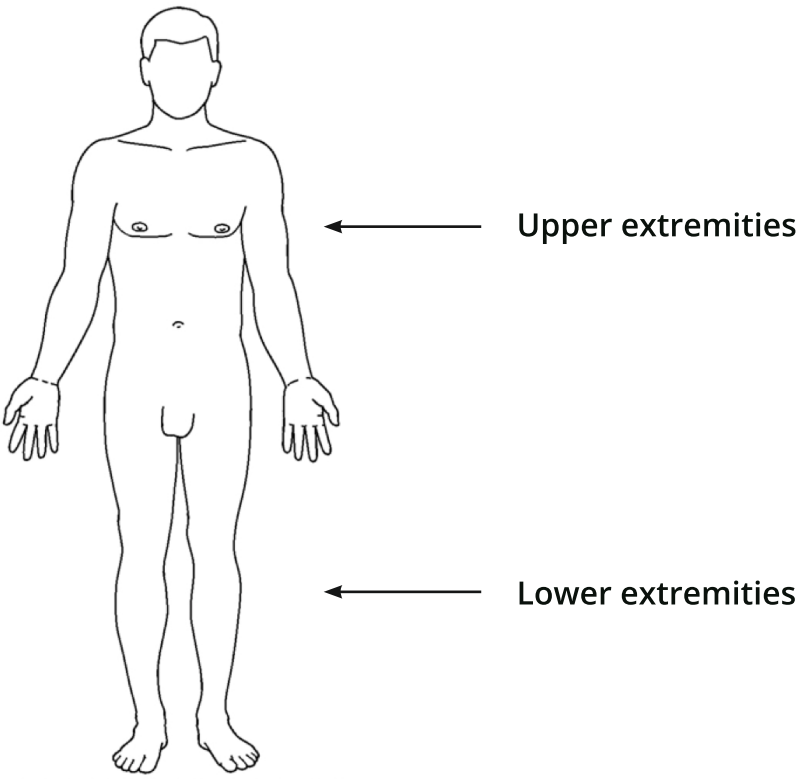
- _____
- _____
- _____
- _____
- _____

▸ Body Regions

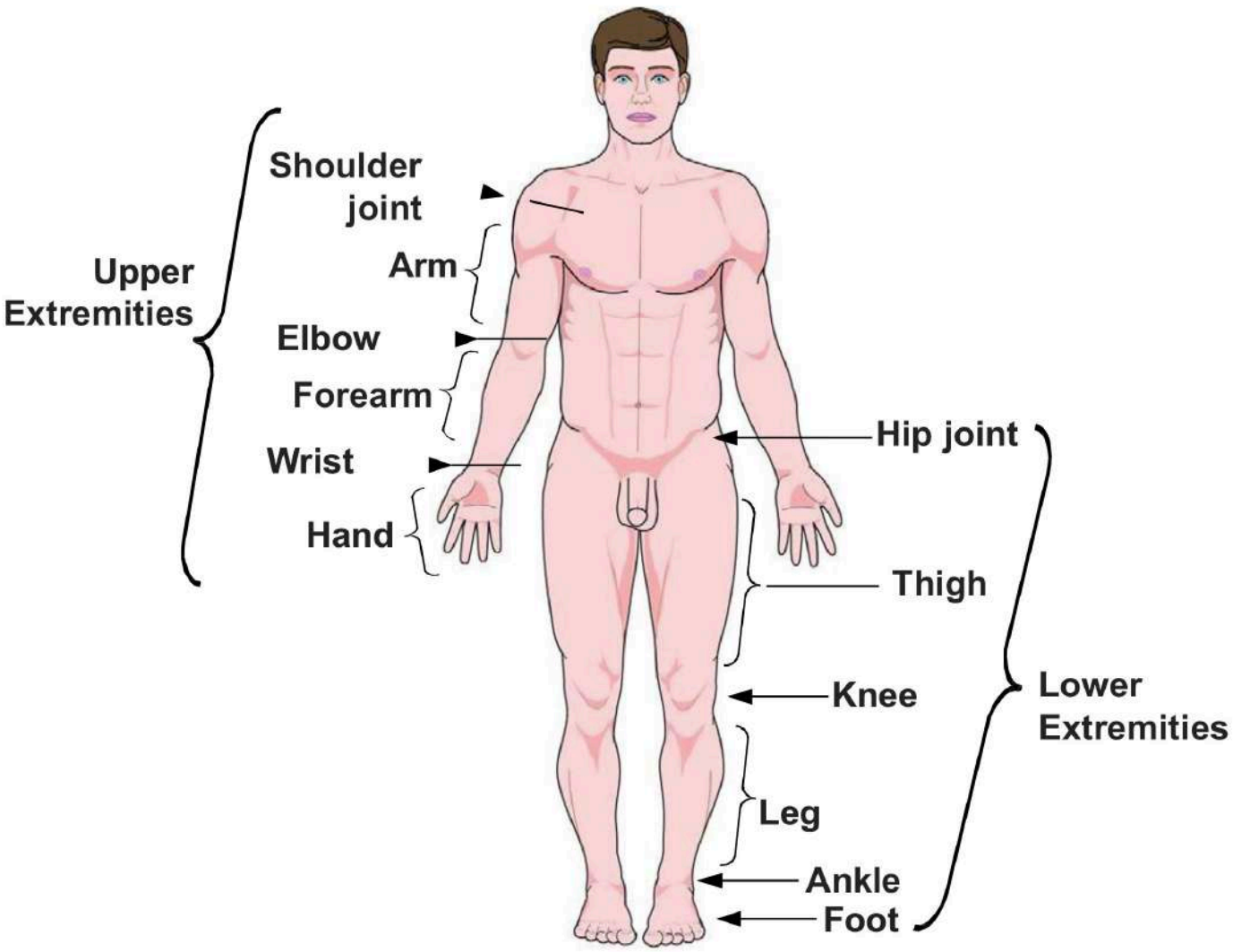
Head and Neck

Trunk





Extremities and Subdivisions



4

Body Cavities

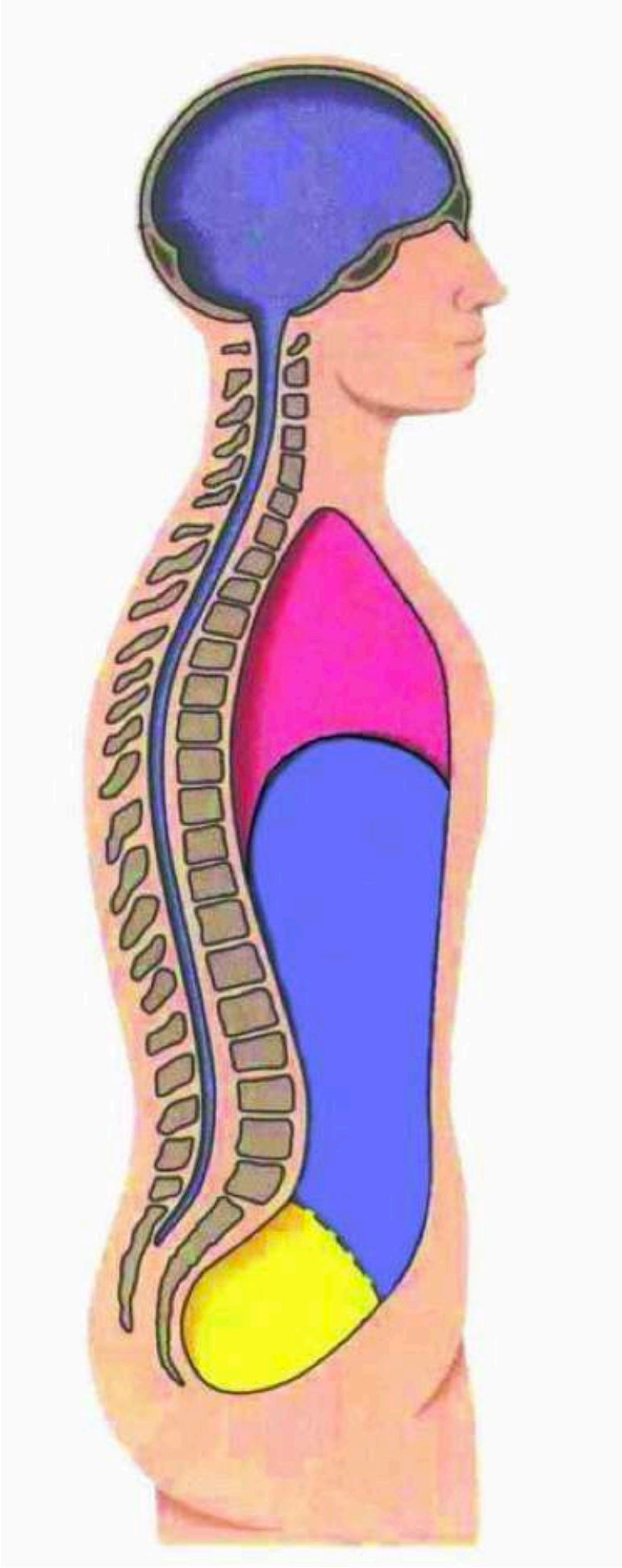
1) Cranial

2) Thoracic

3) Abdominal

4) Pelvic

5) Spinal

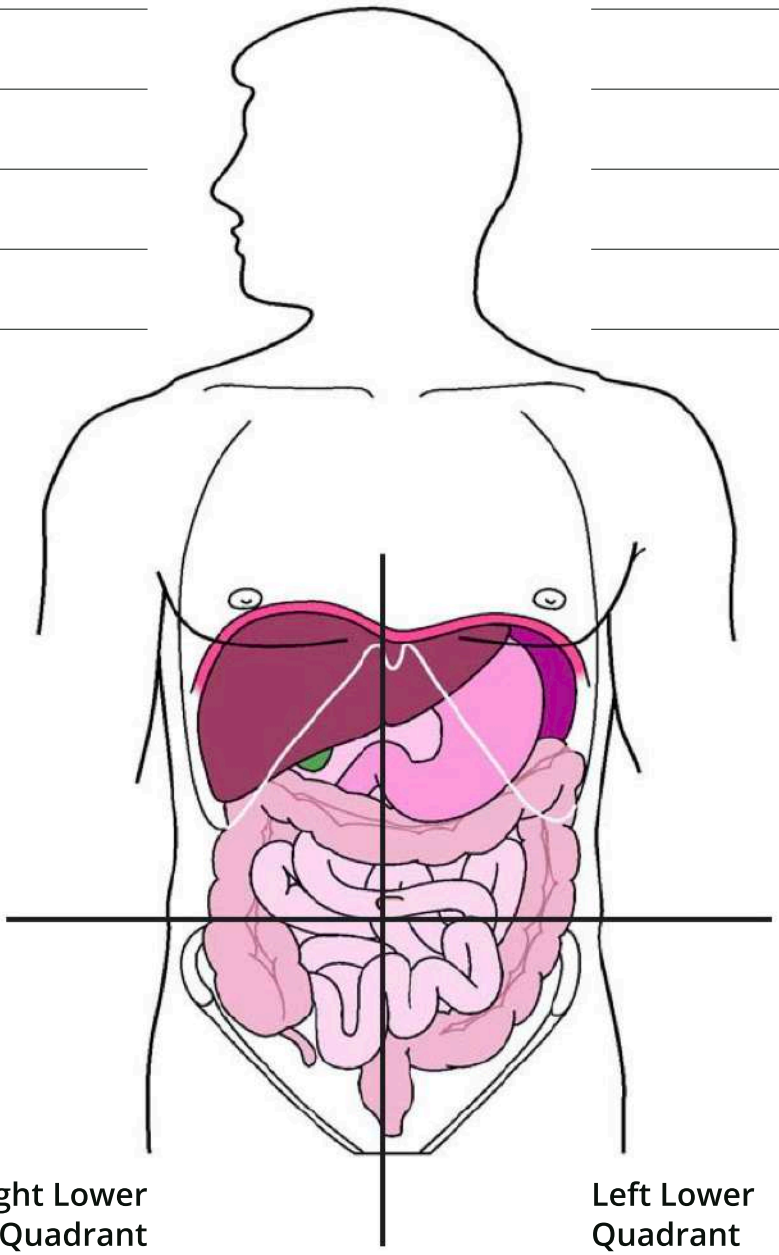


5

Abdominal Quadrants and Organs

Right Upper Quadrant

Left Upper Quadrant



Right Lower Quadrant

Left Lower Quadrant

5

Abdominal Quadrants and Organs (Cont.)

Organs in the midline area:

Hollow abdominal organs:

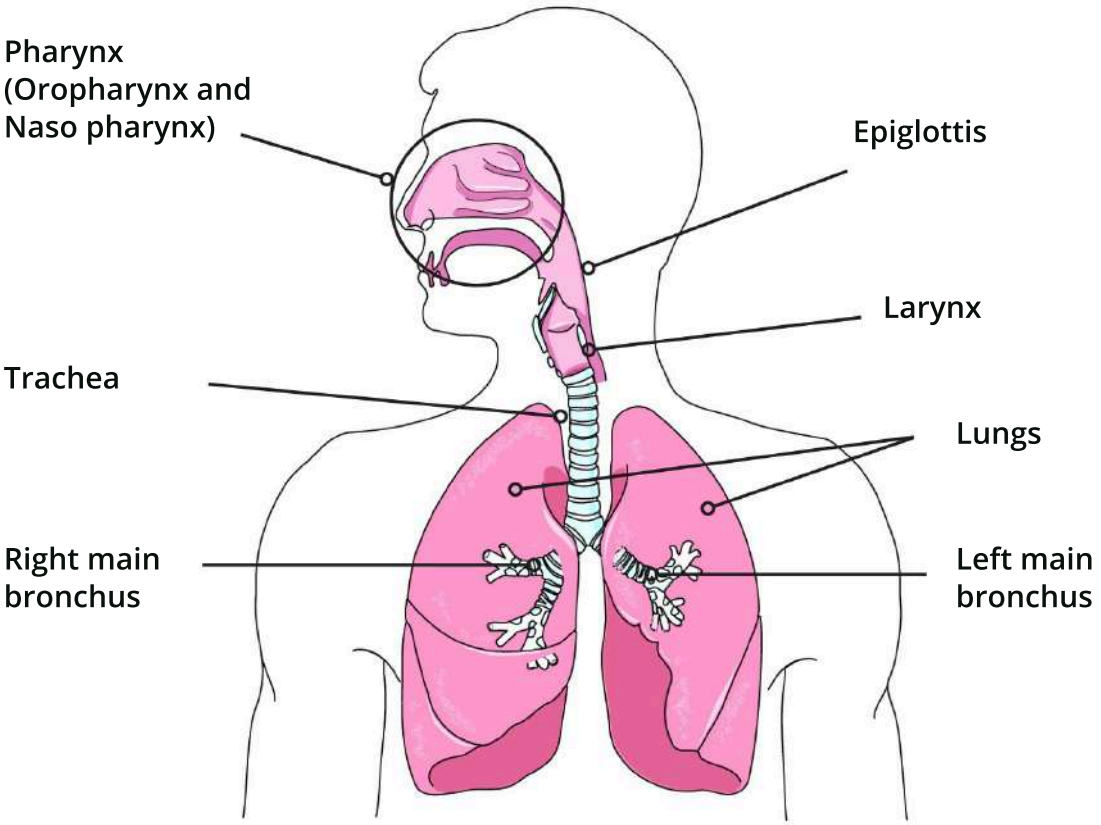
Solid abdominal organs:

Location of kidneys:

6.1 Respiratory System

The function of the respiratory system is to **deliver oxygen** to the body and to **remove carbon dioxide** from the body. Air passing into and out of the lungs is known as respiration. Breathing in is called inspiration or inhaling and breathing out is called expiration or exhaling. While breathing or or during the process of inspiration, the muscles of the thorax contract, moving the ribs outward and up. The diaphragm contracts and lowers. This process expands the chest cavity and causes air to flow into the lungs. During exhalation the opposite occurs. The muscles of the chest relax and cause the ribs to move inward. At this time, the diaphragm relaxes and moves up.

The respiratory system is made up of the organs that allow us to breathe. Air enters in through the nose and the mouth. The area behind the mouth and nose is called the **pharynx** which is divided into the **oropharynx** and the **nasopharynx**. The **trachea** is the air passageway to the lungs. The **epiglottis** is a leaf-shaped structure that keeps foreign objects from entering the trachea during the swallowing process. The trachea splits into two **bronchi**. These air passages become smaller and smaller until they reach the **alveoli**, where carbon dioxide and oxygen are exchanged with blood.

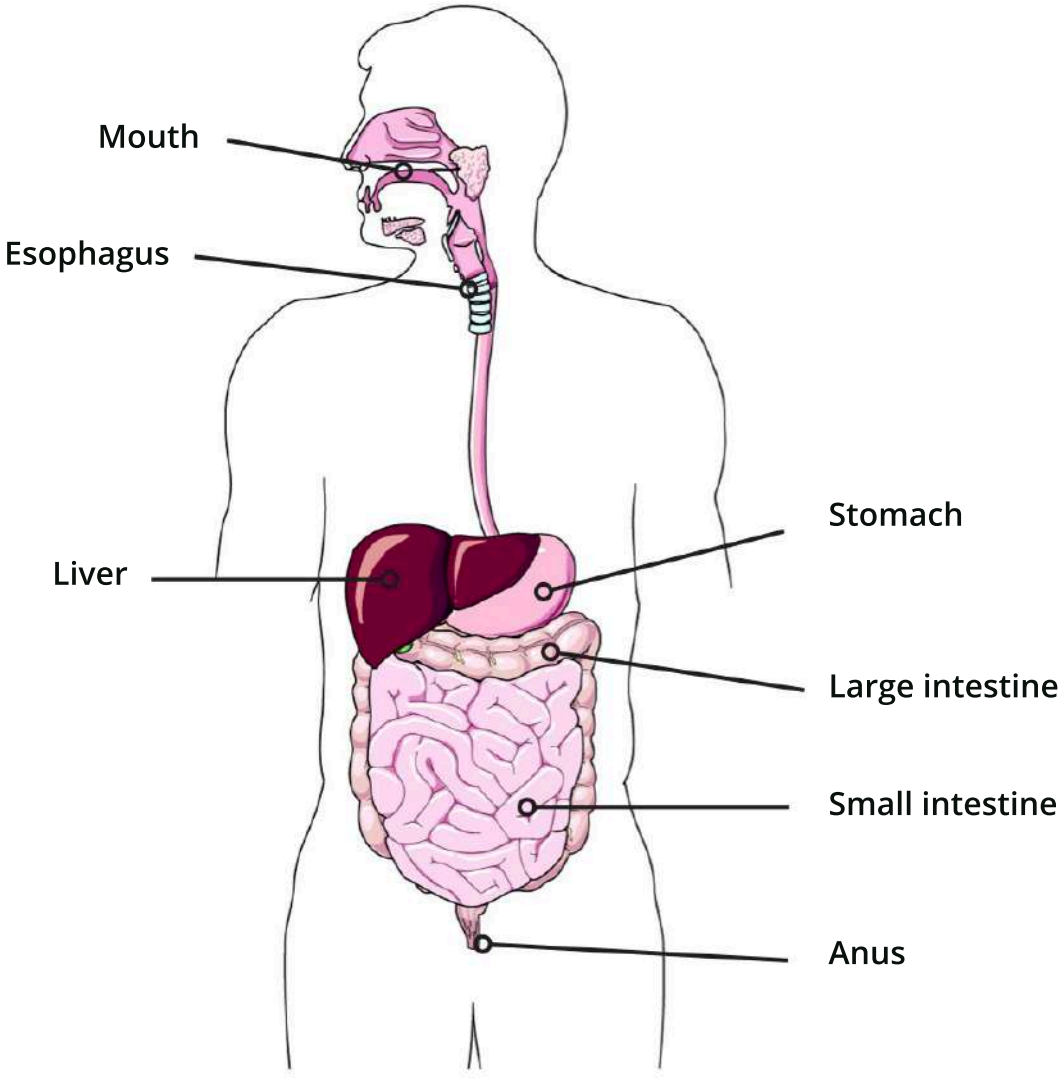


6.2 Digestive System

The digestive system consists of the alimentary tract (food passageway) and additional organs. The main function of the digestive system is to ingest food and get rid of waste. Digestion consists of two processes: mechanical and chemical.

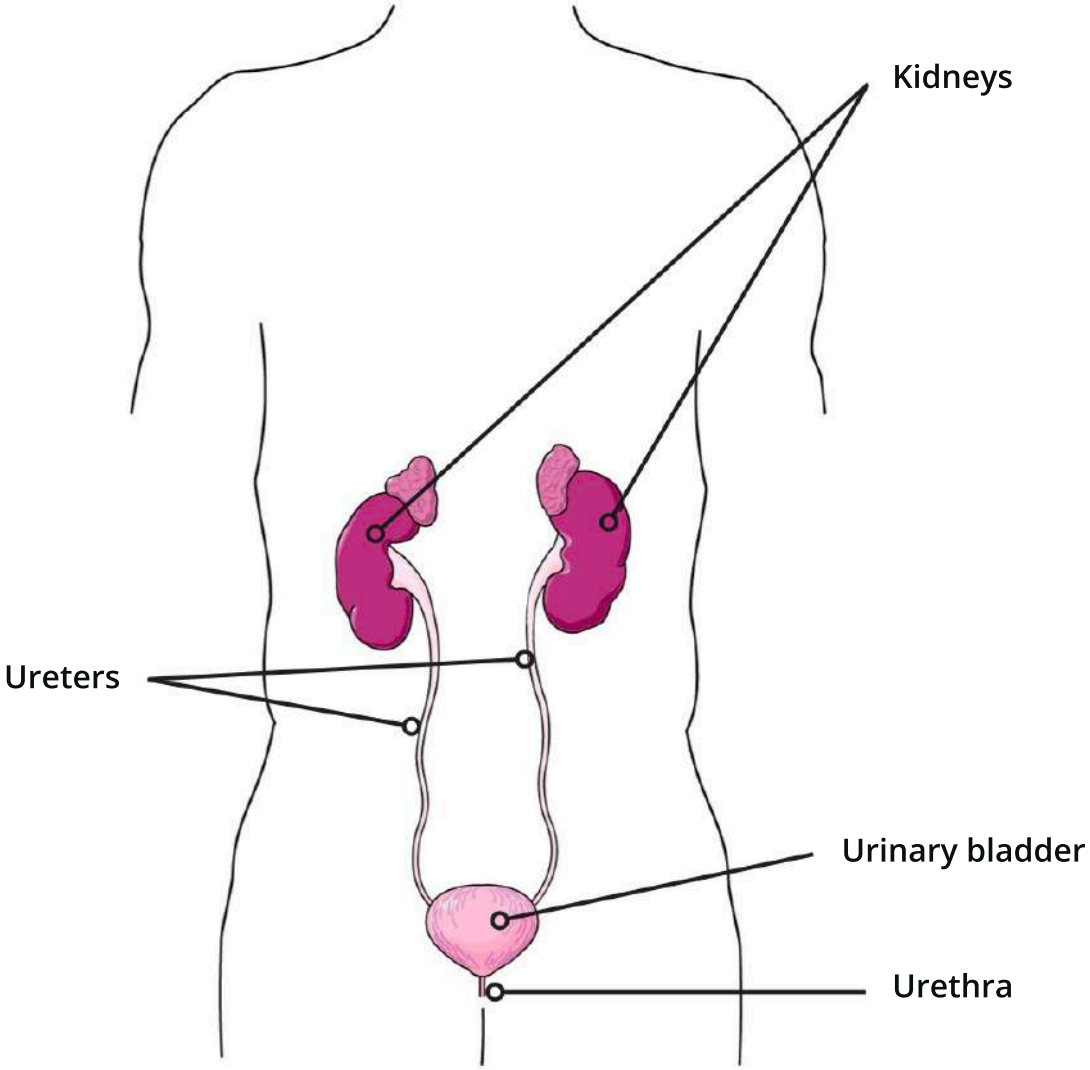
The **mechanical process** includes chewing, swallowing, the rhythmic movement of matter through the tract, and defecation (the elimination of waste). The **chemical process** consists of breaking down food into simple components that can be absorbed and used by the body.

Excluding the mouth and the esophagus, the organs of the digestive system are in the abdomen. These organs include the stomach, pancreas, liver, gallbladder, small intestine, and large intestine.



6.3 Urinary System

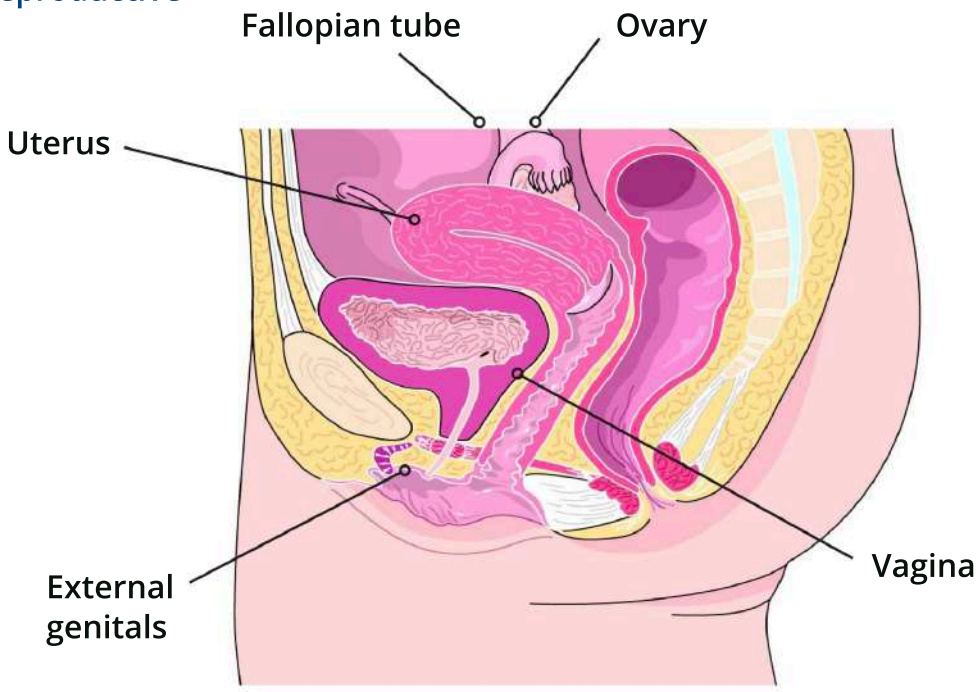
The urinary system filters and excretes waste from the body. It consists of two kidneys and two ureters, one urinary bladder and one urethra. The ureters take urine from the kidneys to the next part of the system-the bladder. The bladder stores urine until it is passed through the urethra and is excreted from the body.



6.4.1 Female Reproductive System

The reproductive system of the female consists of two **ovaries**, two **fallopian tubes**, the **uterus**, the **vagina** and **external genitals**. The female reproductive system provides the egg (ovum) which is fertilized by the male's sperm.

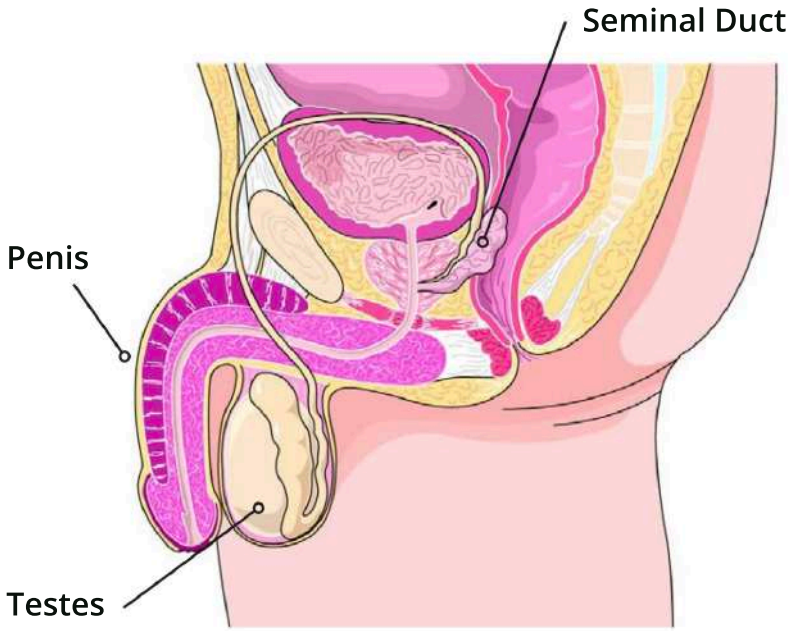
▸ Female Reproductive System



6.4.2 Male Reproductive System

The reproductive system of the male consists of two **testes**, the **seminal duct**, **accessory glands**, and the **penis**. The male reproductive system provides the sperm which fertilizes the female's ovum.

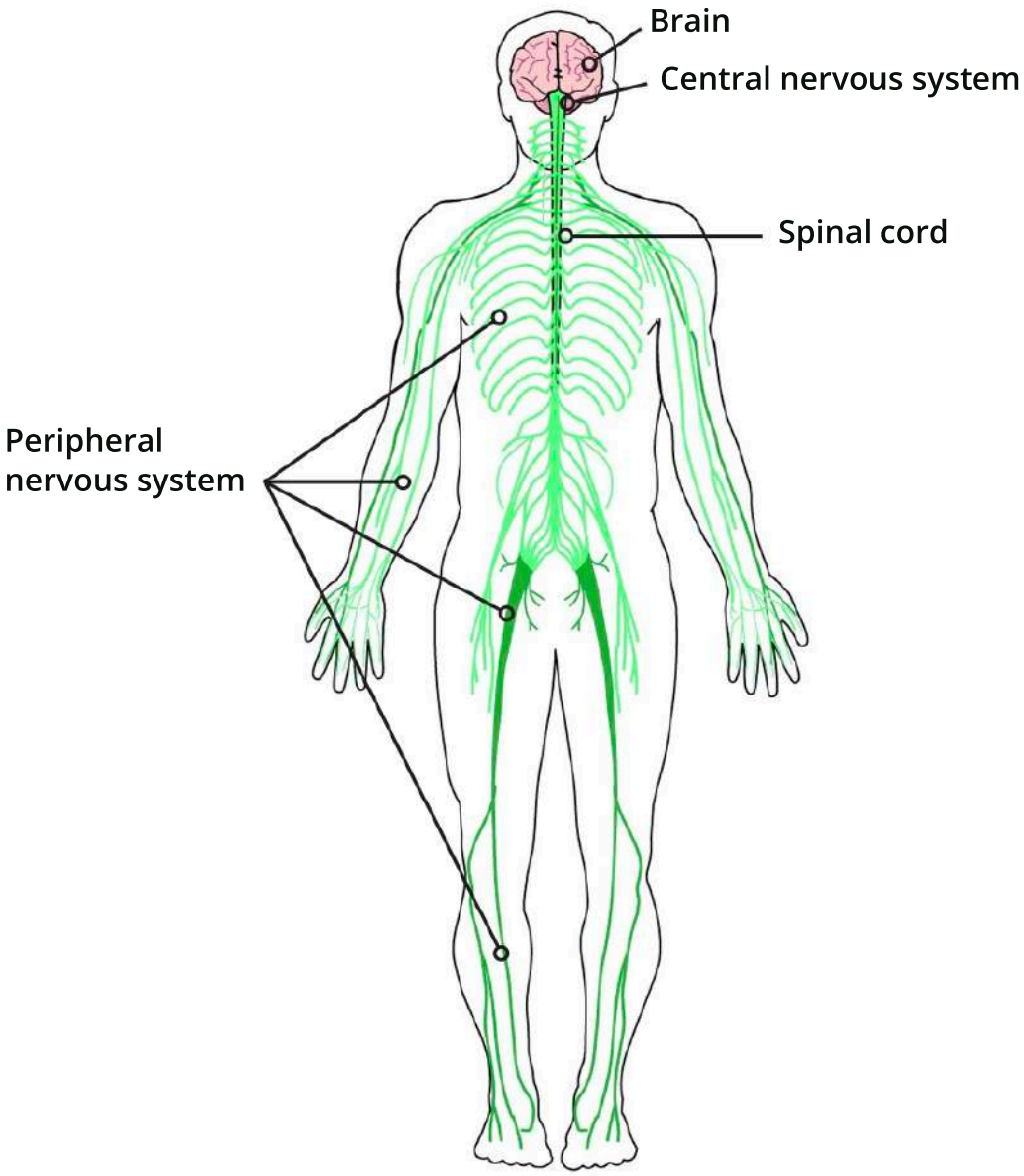
▸ Male Reproductive System



6.5 Nervous System

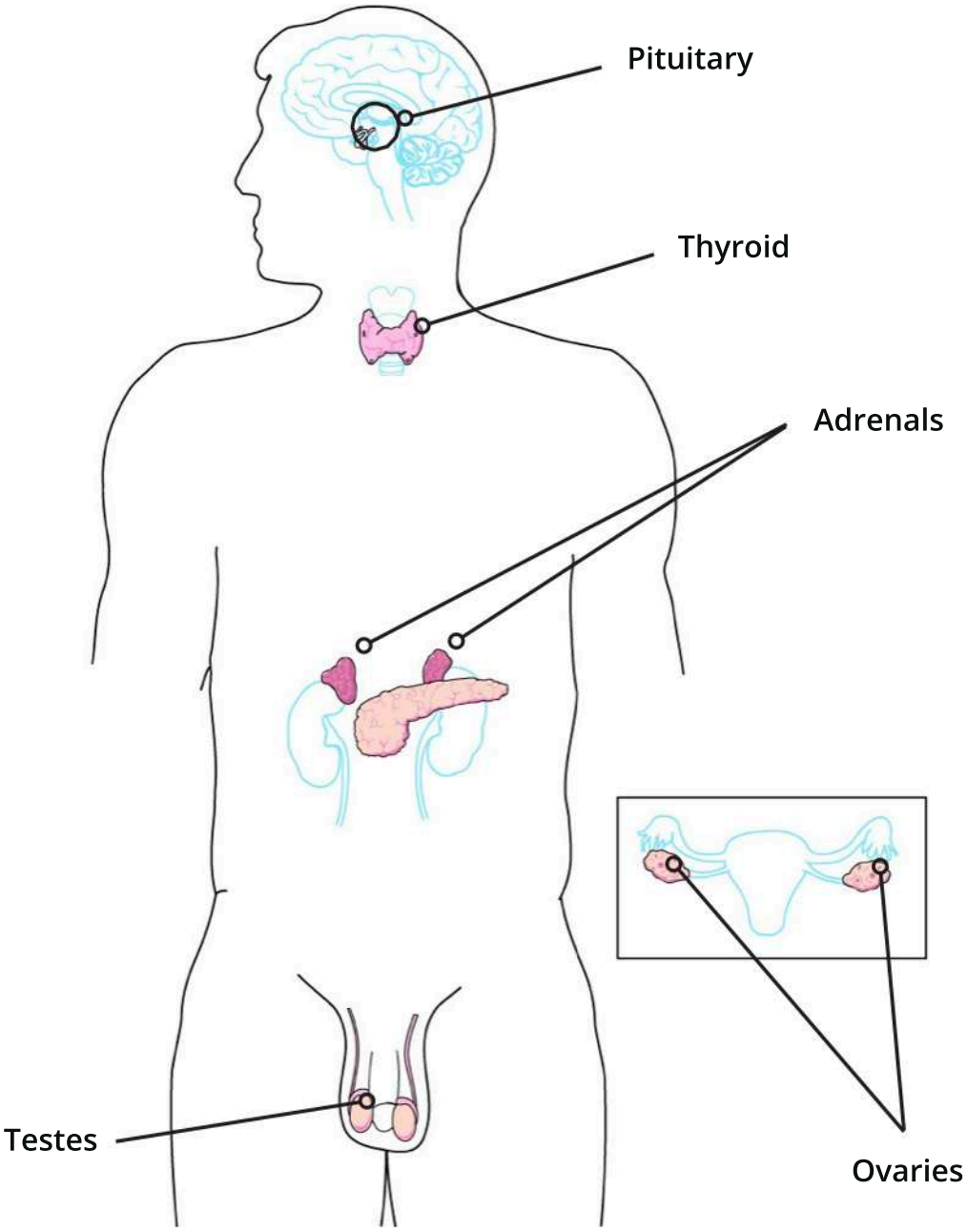
The nervous system is composed of the **brain**, the **spinal cord** and **nerves**. The nervous system has two major functions: communication and control. This system lets a person be aware of and react to the environment. It coordinates the body's responses to stimuli and keeps body systems working together.

The nervous system has three main parts: the **central nervous system**, the **peripheral nervous sytem** and the **autonomic nervous system**. The central nervous system consists of the **brain** and the **spinal cord**. The peripheral nervous system consists of the **nerves**. The autonomic nervous system **regulates functions** throughout the body.



6.6 Endocrine System

The endocrine glands regulate the body by secreting hormones directly into the bloodstream. These glands affect physical strength, mental ability, stature, reproduction, hair growth, voice pitch, and behavior. The secretions from these tiny glands can affect how people think, act and feel. Each gland produces one or more hormones. Some of the glands in the endocrine system are **the thyroid, parathyroid, adrenals, ovaries, testes**, and the **pituitary**.



6.7 Musculoskeletal System

The musculoskeletal system is made up of the skeleton and muscles. This system helps to give the body shape and to protect internal organs. Muscles also provide for movement.

The skeleton shapes the human body with its bony framework. The bone consists of living cells and nonliving matter. The nonliving matter contains calcium compounds that help make the bone hard and rigid. Without bones, the body would collapse. The skeleton is held together mainly by **ligaments, tendons** and layers of **muscle**.

The three kinds of joints are immovable like the skull, slightly movable like the spine, and freely movable like the elbow or the knee.

Major Areas of the Skeleton

The **skull** has several broad, flat bones that form a hollow shell. The top, including the forehead, back, and sides of this shell make up the **cranium**.

The **spinal column** houses and protects the **spinal cord**. The spinal column is the main supportive bony structure of the body and consists of 33 bones called **vertebrae**. The spine is divided into five major sections: the **cervical spine**, the **thoracic spine**, the **lumbar spine**, the **sacrum** and the **coccyx**.

The **thorax**, or rib cage, protects the heart and lungs – vital organs of the body. They are enclosed by 12 pairs of ribs and are attached at the back to the spine. The top 10 pairs are also attached in the front to the sternum, or breastbone. The lowest portion of the **sternum** is called the **xiphoid process**.

The **pelvis**, or hip bones, consists of the **ilium, pubis**, and **ischium**. Iliac crests from the "wings" of the pelvis. The pubis is the anterior portion of the pelvis. The ischium is the posterior portion.

The **shoulder girdle** consists of the **clavicle** (collar bone) and the **scapulae** (shoulder blades).

The **upper extremities** extend from the shoulders to the fingertips. The arm (shoulder to elbow) has one bone known as the **humerus**. The bones in the forearm (elbow to wrist) are the **radius** and the **ulna**.

The **lower extremities** extend from the hips to the toes. The bone in the thigh, or upper leg, is known as the **femur**. The bones in the lower leg (knee to ankle) are the **tibia** and **fibula**. The kneecap is called the **patella**.

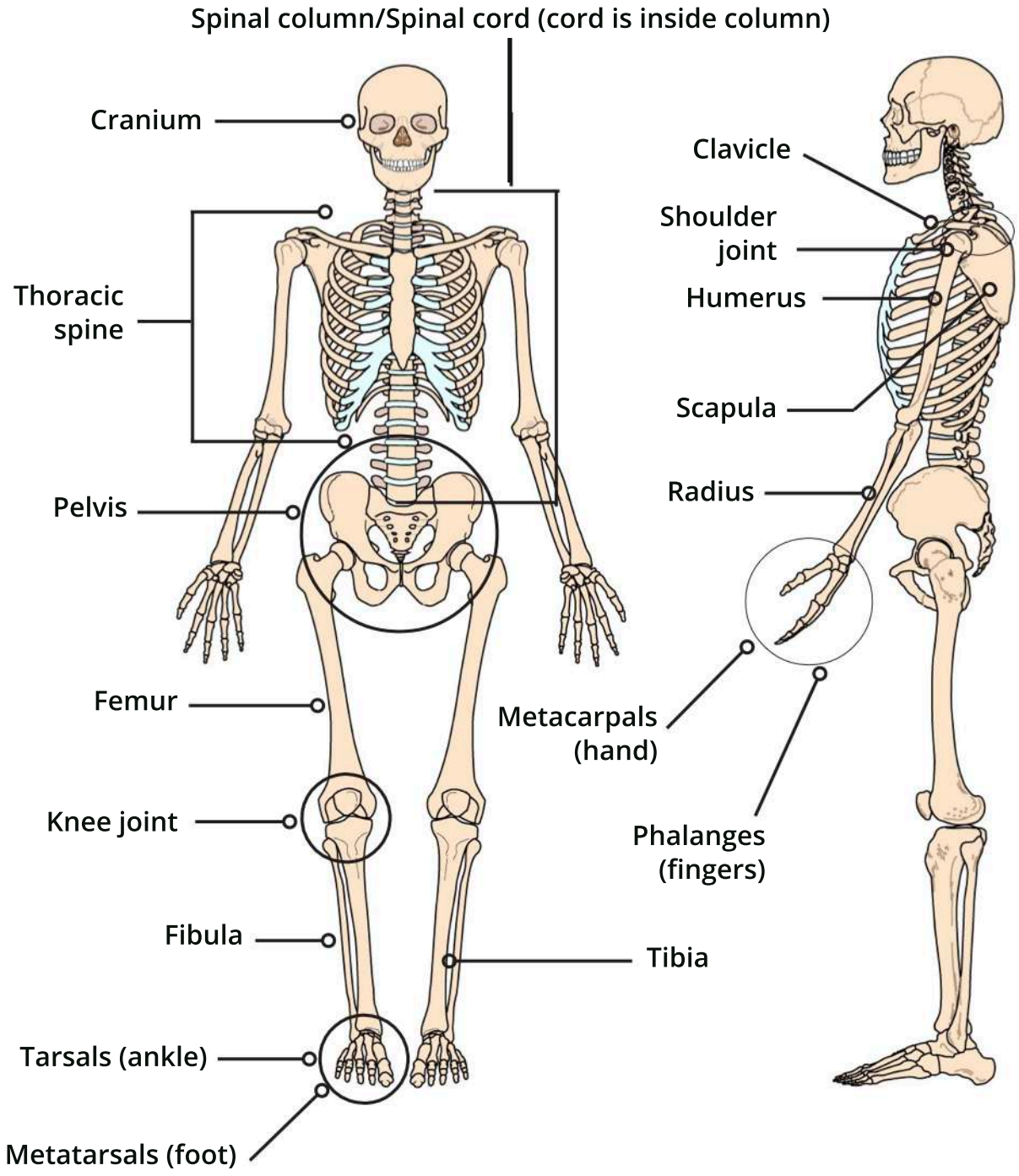
Major Types of Muscles

Skeletal muscle, or **voluntary muscle**, makes possible all deliberate acts like walking and chewing.

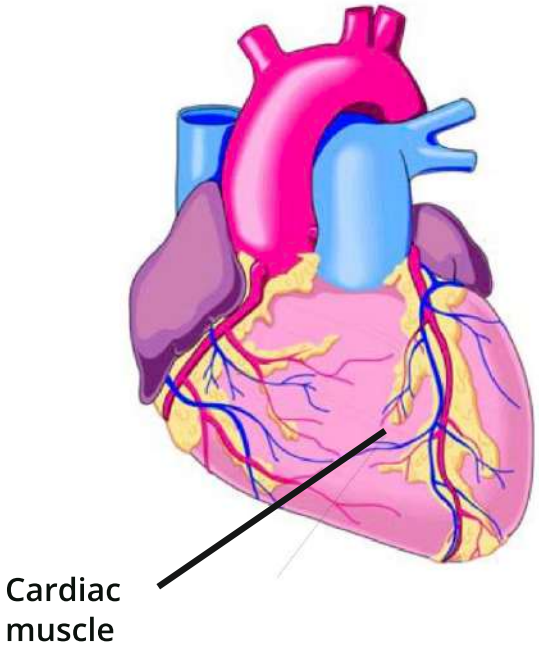
Smooth muscle, or **involuntary muscle**, is made of longer fibers and is located in the walls of tubelike organs, ducts and blood vessels and forms much of the intestinal wall. A person has little or no control over this type of muscle.

Cardiac muscle makes up the walls of the heart. This muscle can stimulate itself into contraction, even when disconnected from the brain.

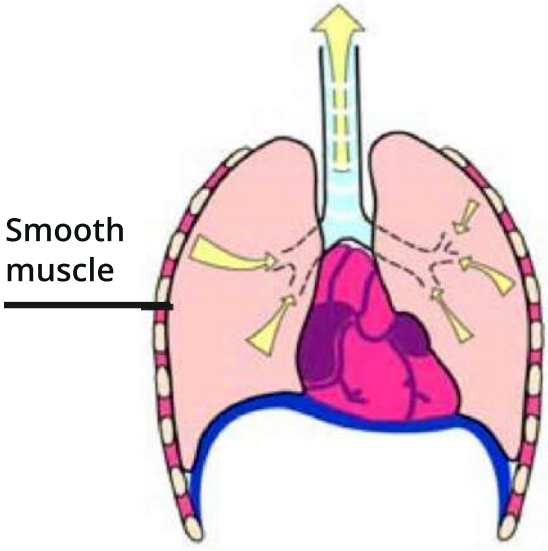
▾ Major Areas of the Skeleton



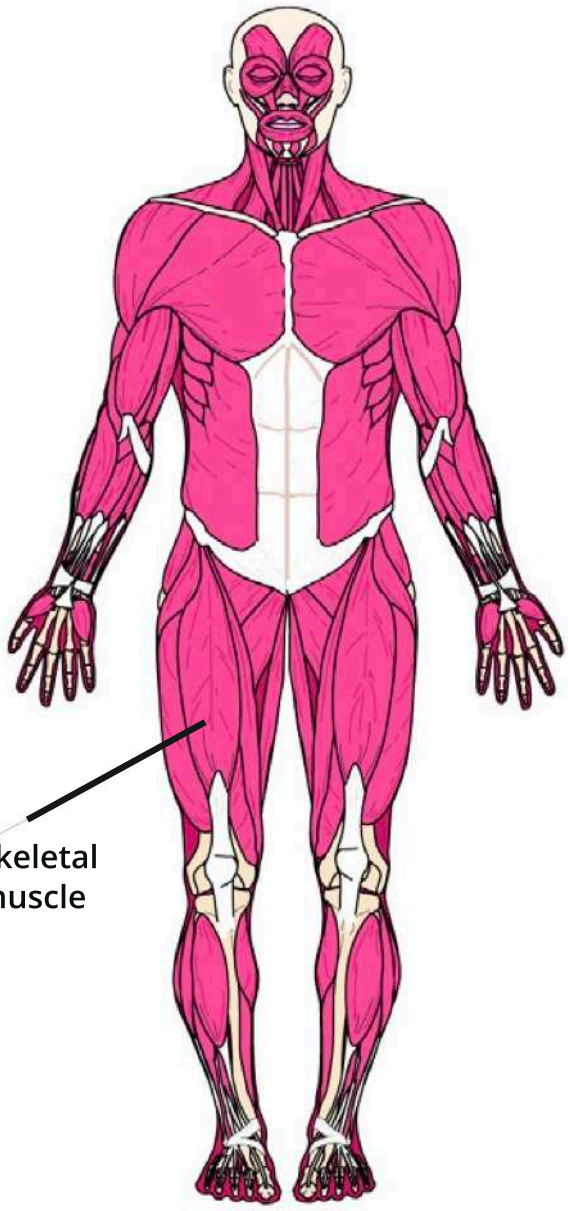
▾ Major Types of Muscle Tissue



Cardiac muscle



Smooth muscle

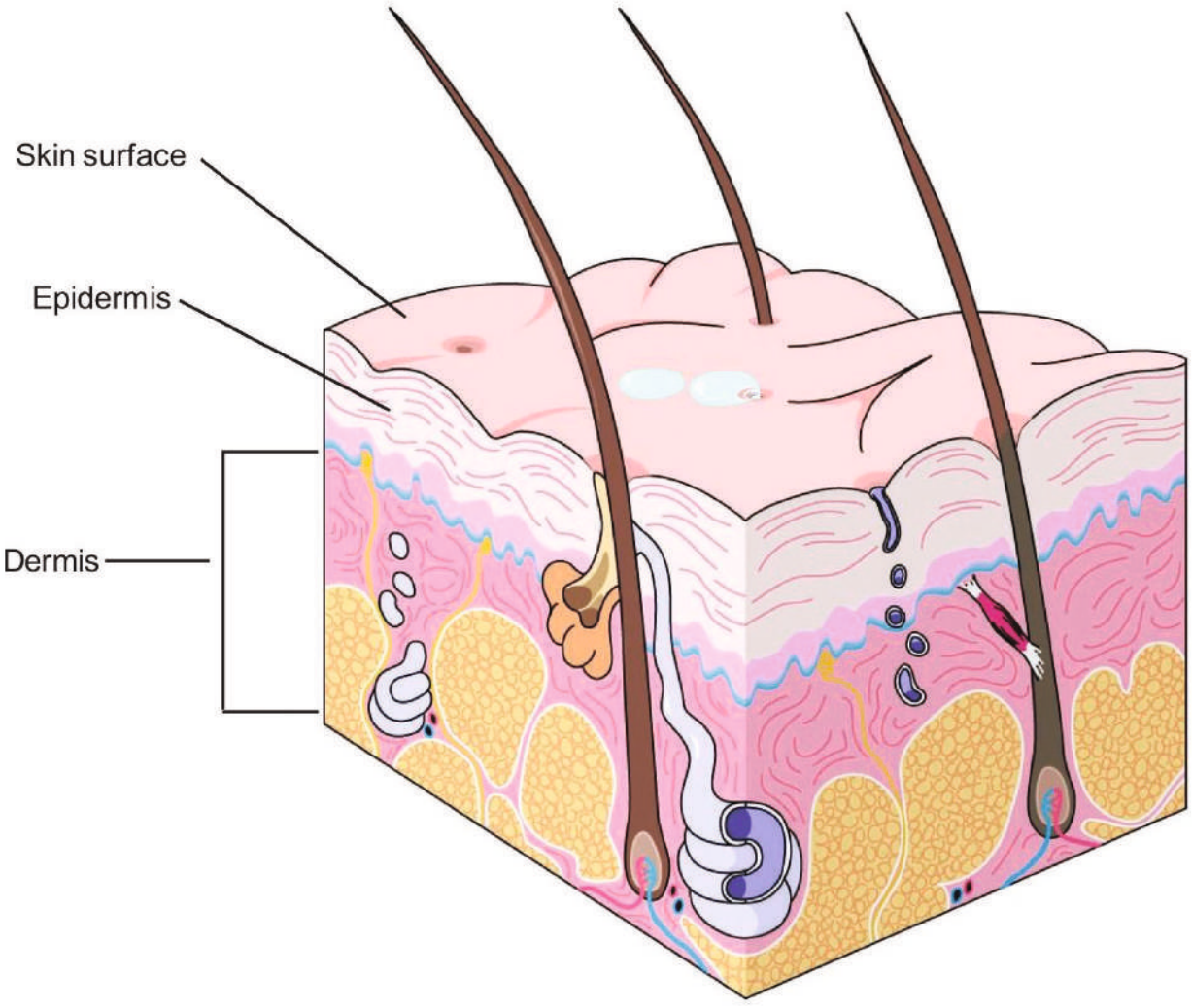


Skeletal muscle

6.8 The Skin

The skin protects the body from the outside world. It also protects the deep tissues from injury, drying out, and invasion by bacteria and other foreign bodies. The skin also helps to regulate the body temperature, aids in getting rid of water and various salts, and helps to prevent dehydration. The skin also acts as the receptor organ for touch, pain, heat, and cold.

The epidermis is the outermost layer of the skin. and contains cells that give it color. The dermis, or second layer, contains a vast network of blood vessels. The deepest layers of the skin contain hair follicles, sweat and oil glands, and sensory nerves. Just under the skin is a layer of subcutaneous fatty tissue.

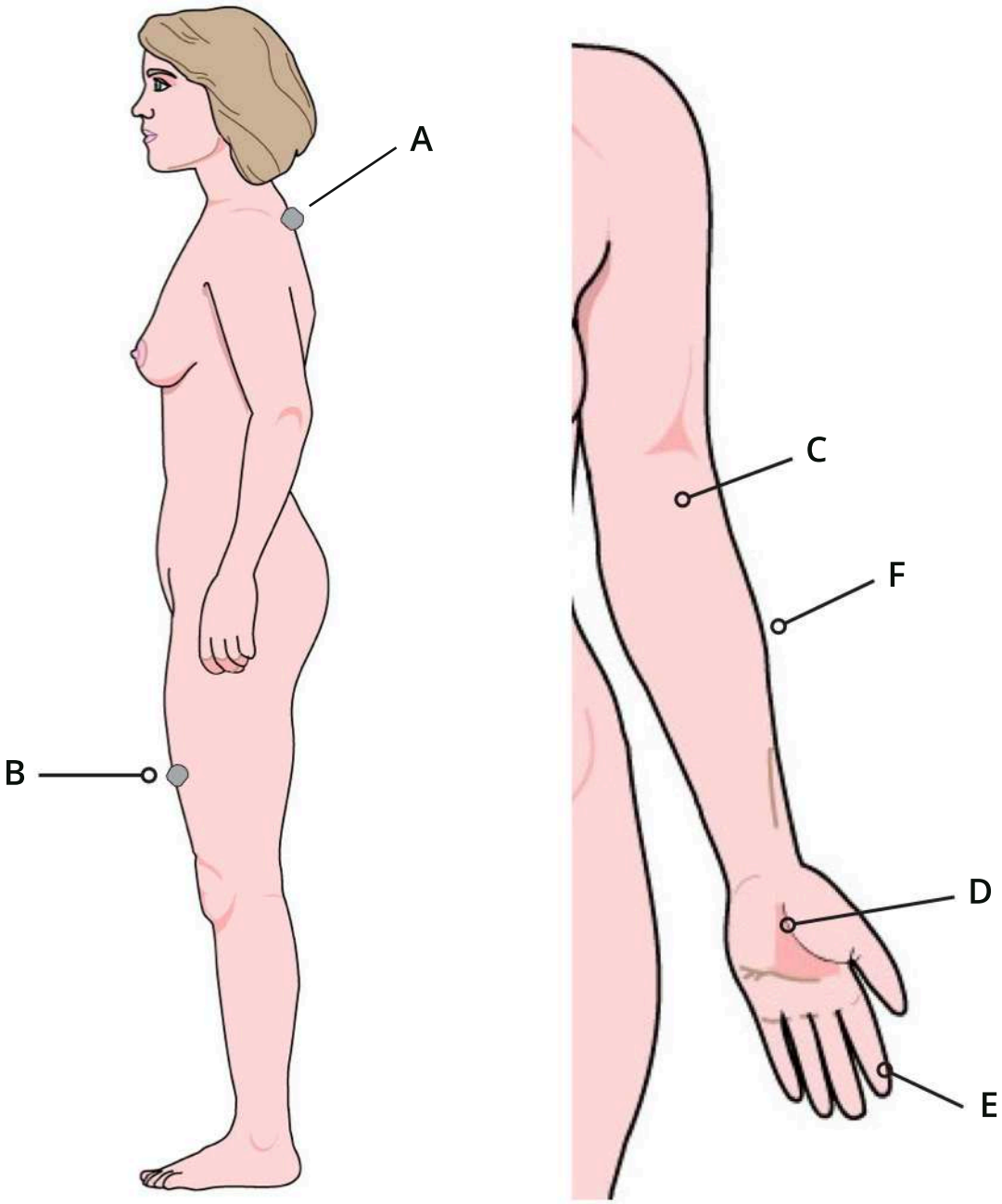


POST-TEST | LESSON 5

Anatomical References

1. Define anatomical position.

2. Describe the location of a wound on a patient using anatomical references. Identify the approximate location of the injuries indicated by the circles. (Respond on the following page).



POST-TEST | LESSON 5

Anatomical References (Cont.)

Injury A: _____

Injury B: _____

Injury C: _____

Injury D: _____

Injury E: _____

Injury F: _____

3. List the five regions of the human body on a skeletal model.

- _____
- _____
- _____
- _____
- _____

4. List five cavities of the body and the organs they contain.

- _____

  _____
- _____

  _____
- _____

  _____
- _____

  _____
- _____

  _____

MFR LESSON 5 EVALUATION

Course Location: _____ **Dates:** _____

Do not write your name on this form. Please complete a copy of this form at the end of every lesson. Your evaluations are very valuable towards improving the course. Please use the ratings below.

1 VERY POOR	2 POOR	3 AVERAGE	4 GOOD	5 EXCELLENT

Please fill in the required information.	**Lesson Number :**	**Lesson Name :**	
	Instructor's Name		
Use a scale from 1 to 5 as described above to rate the various lesson components.	**Lesson Rating (rate 1 to 5)**		
	Content	Instructor	Method
	Workbook	Interaction	
Mark your selection with an "**X**"	**Instruction Level** ☐ Too basic	☐ Appropriate	☐ Too advanced
	Duration ☐ Too short	☐ Appropriate	☐ Too long
	Usefulness Was this lesson useful to you?	☐ Yes	☐ No
Rate from 1 to 5	**Overall Lesson Rating** Taking all the above into consideration, I rate this lesson: _____		
If you need additional space, please use the back of the sheet.	**Comments and Observations**		

Thank you for your help. Your input is valuable.
Please turn in this completed form to the instructor.

LESSON

06

PATIENT ASSESSMENT

Duration **14 Periods (lecture-03 Periods & practical-11 Periods)**

LESSON OBJECTIVES

Upon completion of this lesson, you will be able to:

1. List the five general procedures a medical first responder should complete when arriving at the scene.
2. List the six phases of the patient assessment plan.
3. List the six steps of the initial assessment.
4. Demonstrate a complete physical examination as defined in this lesson.

The sections of this lesson constitute the six phases of the **ASSESSMENT PLAN**.
The Assessment Plan begins with information received on dispatch.

1.1 Arrival on the Scene

When arriving on the scene as a medical first responder, you should:

1) Ensure your own personal safety (includes the use of body surface isolation and securing the scene).

2) Ensure patient safety.

3) Establish a general impression of the scene (determine mechanism of injury) and begin your initial assessment of the patient (if responsive, identify yourself).

4) Identify and treat life-threatening injuries.

5) Stabilise and continue to monitor the patient.

1.2 Identify Yourself

1) State your name and organization.

2) Identify yourself as a medical first responder.

3) Ask the patient if you may help him/her (obtain consent).

1.3 Immediate Sources of Information

1) The scene itself (observe, plan, react)

2) Patient (if responsive)

3) Relatives or bystanders

4) The mechanism of injury (forces that caused the injury – kinematics)

5) Any remarkable deformity or obvious injury

6) Any signs or characteristics of certain types of injury or illness

1

Scene Size-up

Conduct a scene size-up as described in Lesson 4, then continue with the process.

2 Initial Assessment

Definition: A process used to identify and treat conditions that pose an immediate threat to the patient's life.

Steps of the Initial Assessment

The steps of the initial assessment are as follows, in order of importance:

2.1 Form a general impression.

Determine if the situation is trauma or medical.

Neck: examine front and back
(covered later in this lesson)

Apply a cervical collar if needed. You will learn how to select and apply a cervical collar in Lesson 12.
For trauma cases with suspected cervical spine injury, before continuing, immediately immobilize the cervical region immediately to prevent paralysis.

2.2 Check for responsiveness.

Gently shake the patient's shoulders and shout, "Are you okay?" This is important for many reasons (for example, a patient with altered mental status may need airway care or other life- saving aid).

There are four levels of responsiveness commonly used to classify patients: **Alert, Verbal, Painful, Unresponsive** often referred to as "A.V.P.U.":

A = Alert:

A patient who is alert responsive and oriented (e.g. Aware of surroundings, approximate time and date, and his/her name. Commonly referred to as being responsive to person, place and date-oriented.

V = Verbal:

A patient who responds only when spoken to. We say he/she responsive to verbal stimulus.

P = Painful:

The patient responds only to painful stimulus.

U = Unresponsive:

The patient does not respond to any stimulus. Does not open eyes, respond verbally or even flinch when pain is applied. A deeply unconscious person is unquestionably in need of airway and other supportive care.

2 Initial Assessment (Cont.)

2.3 Ensure adequate airway. Depends on patients

Responsive Patient: Determine if the patient can speak clearly. Gurgling or similar sounds may indicate airway obstruction.

Unresponsive Patient: Needs aggressive airway maintenance immediately – make sure airway is open and patient is breathing adequately.

2.4 Verify breathing – look, listen and feel for air exchange (5-10 seconds). Respirations must be adequate.

Adequate breathing is characterized by three factors:

- Full rise and fall of chest
- Easy breathing
- Normal respiratory rate

Inadequate breathing is characterized by:

- Insufficient rise and fall of chest
- Increased respiratory effort
- Cyanosis (bluish/gray discoloration of skin, lips or nail beds)
- Mental status changes
- Inadequate respiratory rate
  (<8 in adults, <10 in children, <20 in infants)

Apply oxygen as needed. Select appropriate delivery system and appropriate accessories. Administering oxygen will be covered fully in Lesson 8.

Oxygen is used for both medical and trauma patients.

2.5 Assess circulation.

Responsive patient: In verbally responsive adults, check radial pulse. Check brachial pulse for an infant. Check rate and rhythm.

Unresponsive patient: Check pulse of an unresponsive adult at the carotid artery. In children, check carotid/femoral pulse, and in infants the brachial artery.

Control serious external bleeding: Identify and treat life-threats. Do not let minor wounds sidetrack you.

2.6 Patient status update.

Inform responding EMS units of your findings

- If more resources will be needed, request them.
- If patient has life threatening injuries or illness, let responding units know.
- If patient is stable with minor injuries, advise responding units.

The initial assessment should be completed and all life-threatening conditions treated before proceeding to the physical exam.

3

Physical Exam

Background

- The initial assessment is designed to help you identify and treat life-threatening conditions.

- The physical exam is a thorough survey of the patient's entire body. It is meant to reveal any signs of illness or injury.

- The physical exam proceeds in a logical order, usually from head to toe, but may vary from patient to patient.

The main purpose of the physical exam is to reveal any injury or medical problem that could be a threat to patient survival if left untreated.

3.1 Principles of Patient Assessment

Patient assessment is a skill, and must be practised. The patient assessment process involves the use of your senses. Three methods are used during your patient assessment:

- **Inspection (looking):** A method of examination that involved looking for sings of injury or illness. Simply make an overall observation of your patient, then an observation of the body.

- **Auscultation (listening):** A method of examination that involves listening for signs of illness or injury. The most important listening you will do is for air entering and leaving the lungs to determine respiratory status.

- **Palpation (feeling):** A method of examination that involves feeling for signs of illness or injury. Palpating, or feeling with your fingertips is usually done last in the exam, because it may cause pain. Actual pressure applied depends on the area and type of problem you suspect.

3.2 Conducting an Examination

Medical vs. Trauma Patients

An examination of the trauma patient is different from an examination of the medical patient.

Physical signs of an injury can be observed and palpated. Medical problems are felt by the patient. In order to provide emergency care, you must ask questions to encourage the patient to describe their symptoms.

When conducting an exam, look for the following signs of injury. You can use the mnemonic "BPDOC" to remember them:

B = Bleeding
P = Pain
D = Deformities
O = Open wounds
C = Crepitus Sound

Some signs may be obvious. Others, such as abdominal tenderness caused by internal injuries, are not as obvious, and are potentially serious.

As you proceed, listen to your patient. Listening shows you care and will usually enable you to gather important information.

3.3 Physical Exam (Head-to-Toe)

1) Examination of the Head

- **Scalp and skull:** Check for deformities, open injuries, tenderness and swelling.

- **Ears and nose:** Look for blood or cerebrospinal fluid (CSF) in or around openings.

- **Pupils:** Usually symmetrical (unless otherwise due to prior condition or injury, consider possible artificial eye). Abnormal findings include no reactivity to light, pupils that remain constricted, or unequal pupils.

- **Mouth:** Check for bleeding, pain, deformities, open wounds. Check for possible airway obstructions such as foreign objects, loose teeth, etc.

- **Face: Bones and muscles**

2) Examination of the Neck

- Always go front to back (anterior to posterior).

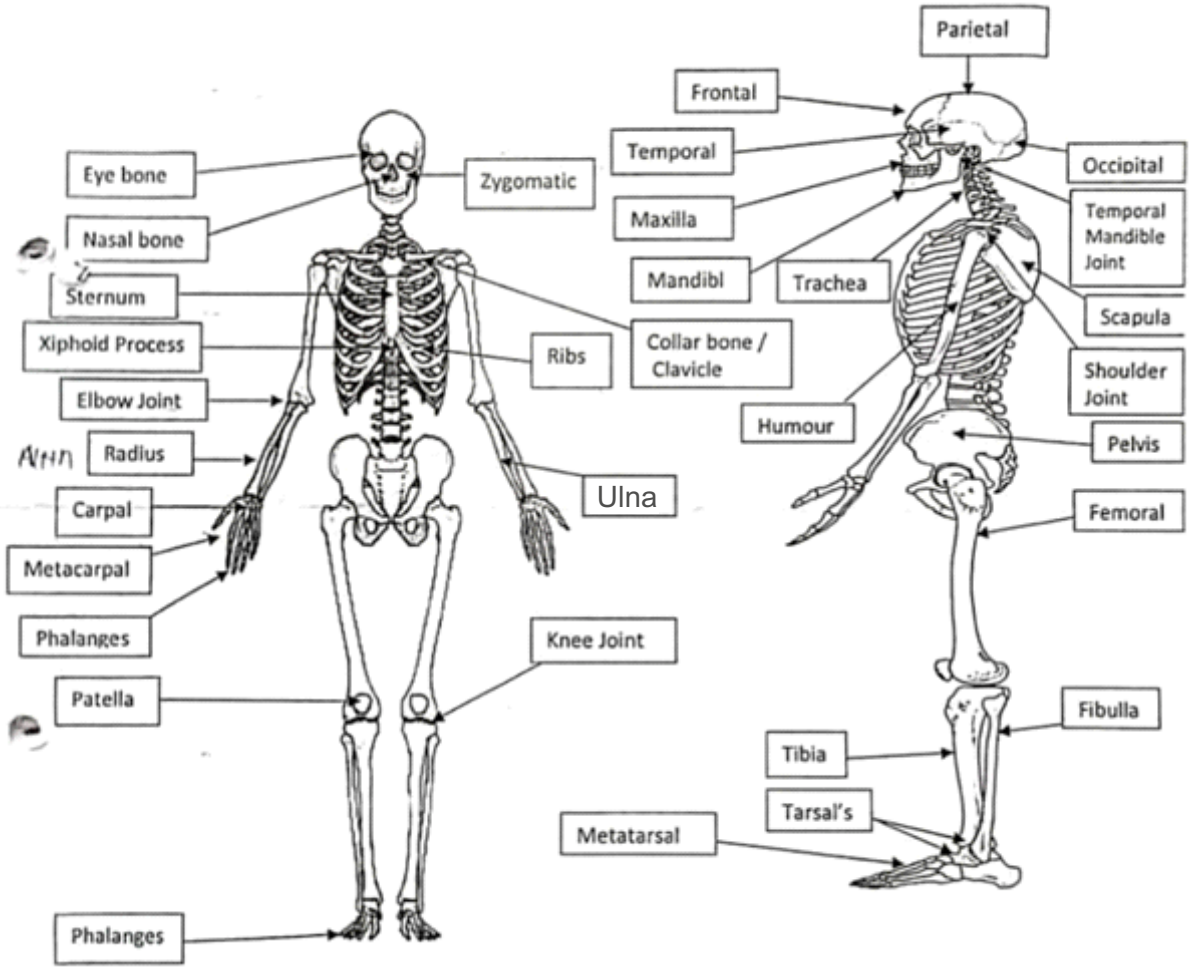
- Check for deformities, open injuries, tenderness and swelling.

- Check trachea for mid-line position.

- Palpate vertebrae.

- Open injuries (bandage immediately with occlusive dressing to prevent air from entering veins).

- Check for medic alert necklace.


Parietal
Frontal
Temporal
Maxilla
Mandibl
Eye bone
Nasal bone
Sternum
Xiphoid Process
Elbow Joint
Radius
Carpal
Metacarpal
Phalanges
Patella
Zygomatic
Ribs
Collar bone / Clavicle
Ulna
Knee Joint
Phalanges
Trachea
Occipital
Temporal Mandible Joint
Scapula
Shoulder Joint
Humour
Pelvis
Femoral
Fibulla
Tibia
Tarsal's
Metatarsal

3

Physical Exam
(Cont.)

3) Examination of the Chest

Any injury may involve the vital organs or major blood vessels.

- Check for deformities, open injuries, tenderness and swelling.

_____

- Feel ribs for deformities all the way to spine.

_____

- Palpate the sternum.

_____

4) Examination of the Abdomen

Abdominal organs may be injured without external signs.

- Check for rigidity (hardness) or distension.

_____

- Cuts, scrapes (lacerations and abrasions), penetrating wounds, protruding organs. Potential bleeding and infection.

_____

- May indicate underlying injury. Palpate quadrant with pain as your last step.

_____

- Swelling or discoloration.

_____

3

Physical Exam
(Cont.)

5) Examination of the Back

- Check chest wall for deformities that may indicate broken ribs.

_____

- Check for obvious deformities and/or tenderness along entire length of spine that may indicate spinal cord injury.

_____

- As with chest injuries, check for sucking wounds, penetrating injuries, cuts, etc.

_____

- Blood accumulation in the flanks and/or tenderness may indicate abdominal injury.

_____

3

Physical Exam
(Cont.)

6) Examination of the Pelvis

- Composed of the left and right ileum, ischium and pubic bone.

_____

- Pelvic or hip fracture could result in blood loss of _____ litres or more.

_____

- Internal organs, blood vessels and nerves pass through pelvic area.

_____

- Spinal injury possible.

_____

- Genital region: priapism in males.

_____

- Deformities not always obvious. Palpate iliac crest (pelvic wings) and pubic bones.

_____

- Open injuries may occur, but are uncommon. Penetrating injuries possible.

_____

- Assess for tenderness.

_____

3

Physical Exam
(Cont.)

7) Examination of the Lower Extremities

Common sites of injury – do not rush your examination.

- Check for deformities, open injuries, tenderness and swelling.

_____

- Check _____ pulse.

_____

- Check for motion – wiggle _____.

_____

- Check for sensation – gently squeeze one extremity then another. Ask the patient _____?

_____

- When do you remove patient's shoes?

_____

8) Examination of the Upper Extremities

Common sites of injury – do not rush your examination.

- Check for deformities, open injuries, tenderness and swelling.

_____

- Check _____ pulse.

_____

- Check for motion – wiggle _____.

_____

- Check for sensation – gently squeeze one extremity then another. Ask the patient _____?

_____

- Check for medic-alert bracelet.

_____

3.4 Measuring Vital Signs

A patient's vital signs include:

- Respiration
- Pulse
- Skin
- Pupils
- Blood pressure

At the conclusion of the lesson, we will practise measuring vital signs. You can assess and monitor most vital signs by looking, listening and feeling.

Proper Equipment to Measure Vital Signs

- Wristwatch – count seconds.

- Penlight – examine pupils.

- Stethoscope – respiration and blood pressure..

- Pen and notebook – take note

- Blood pressure cuff (sphygmomanometer) – measure B/P

More important than just measuring vital signs is **measuring changes over time**. It is important to establish baseline vital signs. For example, if pulse on initial reading is 80 and later becomes 120, this indicates a possibly serious condition developing.

Age Definitions

Infant:	**Child:**	**Adult:**
Under 1 year	1 to 8 years	9 and older

Respiration

Normal Respiratory Rates

Age Group	Respirations per minute
Infant	25-50 rpm
Child	15-30 rpm
Adult	12-20 rpm

To count respirations, count the number of times a chest or abdomen rises and falls in 30 seconds, then multiply by 2. Pretend to count pulse or do something so the patient is unaware and breathing naturally.

When respirations are all the same frequency and depth (shallow or deep breathing), breathing is considered regular. If frequency or rate is different, breathing is irregular (rhythm).

Unusual noises (snoring or wheezing) can indicate an obstructed airway.

Abnormal breathing conditions:

- Poor rise and fall of the chest
- Increased effort
- Cyanosis

Pulse

The pulse is the pressure wave in the arteries generated by the heartbeat. It directly reflects the rate, rhythm, and strength of contractions of the heart. Each time the heart beats, arteries expand and contract. You can feel the pulse by pressing on an artery over a bony prominence.

Normal Pulse Rates

Age Group	Pulse Rate per minute
Infant	120-150 ppm
Child	80-150 ppm
Adult	60-80 ppm

3

Physical Exam
(Cont.)

Skin Temperature

Normal body temperature: _____

Method: Place the back of your hand against the patient's skin. This is called **relative skin temperature**. It is not an exact measurement, but can tell you if it is high or low.

_____

_____

Skin Coloration

Skin coloration can be characterized by:

- Paleness: _____
- Redness: _____
- Blueness: _____
- Yellowness: _____
- Black and blue mottling: _____
- In people with darker skin, you can also check for colour changes in these areas:

  _____

Skin Condition

Reported as dry, moist or wet with respect to local environment.

Capillary Refill

Used for infants and children under 6 years old. Not always accurate in adults. Press on the nail bed and observe how long it takes for the normal pink color to return after releasing. Always re-check at the same place. Capillary refill may be delayed in patients with cold extremities. This method is used on adults in triage situations.

_____

_____

_____

3

Physical Exam
(Cont.)

Pupils

Normal responses: Pupils constrict with exposure to light and dilate with less light. Both pupils should be the same size unless a prior injury or condition has changed this. To assess, shine a penlight into the eyes. If outdoors, cover the eyes and assess for dilation.

Abnormal findings: No reaction to light, pupils remain constricted (possible drug overdose), or unequal pupils (head injury or stroke).

Blood Pressure

This is the amount of pressure the blood exerts against the artery walls. It can tell you if the organs are getting the blood they need. Use a blood pressure cuff (sphygmomanometer) to measure blood pressure.

The result of a contraction of the heart, forcing blood through the arteries, is **systolic pressure**. Relaxation between contractions is called **diastolic pressure**. Both normally rise and fall together.

Blood pressure varies with age, gender and medical history of the patient. Blood pressure values are usually 10 mmHg lower in females than in males.

Normal Blood Pressure Values (mmHg)

	Adult	Child (up to 12 years old)
Systolic:	100+ age, up to 150 mmHg	80+ (2 x age)
Diastolic:	65-90 mmHg	50-80 mmHg

3

Physical Exam
(Cont.)

Methods for Taking Blood Pressure

Auscultation: _____

_____

Palpation: _____

_____

Blood Pressure Factors

Several factors can influence blood pressure. Some increase blood pressure while others will decrease it:

- Conditions or substances that constrict blood vessels can increase blood pressure, such as cold environment, stress, pain, smoking, caffeine, and decongestants.
- Heart failure, trauma and/or shock will decrease blood pressure.

Other factors can affect a reading, such as not hearing accurately, placing the stethoscope improperly, the arm not at heart level, using the wrong size cuff, or deflating the cuff too fast.

_____

_____

_____

4 Patient History

Re-evaluate what you observed when you arrived on scene.

- Secure the scene _____

_____

- Patient history _____

_____

- Gather information _____

_____

Remember differences between a medical and a trauma patient. In trauma, perform physical exam first. For a medical patient, take a history first.

To conduct a patient interview or history, you can use the mnemonic, **"S.A.M.P.L.E.".**

S	A	M	P	L	E
Signs and symptoms	Allergies	Medication	Pertinent history	Last oral intake	Events

S Signs and Symptoms:

Signs are conditions you can observe (see, feel or hear) such as a broken wrist or unequal pupils and tenderness.

Symptoms are conditions that only the patient can feel or describe, such as stomach pain or dizziness.

Begin by asking open-ended questions such as:

- _____
- _____

Avoid leading or closed-ended questions that have "yes" or "no" answers, for example:

- _____
- _____

Do not diagnose.
Treatment is based on assessment findings.

4 Patient History (Cont.)

A **Allergies:** Medications, food, environment. May determine possible causes of patient's condition.

M **Medications:** Identify all medications the patient is currently taking or has recently taken. These may identify a medical condition.

P **Pertinent history:** Obtain historical information pertinent to the emergency care you are providing.

L **Last oral intake:** Ask your patient when the last time was he or she ate or drank anything. Pertinent to a patient who is unresponsive or confused. Important if the patient needs immediate surgery.

E **Events:** Activities prior to the incident.

5 Ongoing Assessment

A patient may be in stable or unstable condition. The assessment process must be ongoing until your patient is turned over to the next level of care. Complete the following every 5 minutes for unstable patients, and every 15 minutes for stable patients.

1. Reassess
2. Reassess
3. Reassess
4. Reassess
5. Reassess
6. Repeat
7. Reassess
8. Continue to calm and reassure the patient.

Maintain professionalism and concern for patient's modesty. Do not leave patient unattended.

6

Hand-off Report

When you are relieved of your patient by a higher-level care provider, be prepared to give appropriate information about your patient. This is the **hand-off** report, also known as **patient transfer information.**

The hand-off report includes the following eight areas of information:

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

The report is designed to be an up-to-the-minute account of the patient's condition, treatment and other information. Sometimes this will also appear in your written report.

Patient Assessment

Stations 1,2,3 and 4

Student Name: _____ **Dates:** _____

Instructions: In this station, the participant will say out loud what he or she is doing, stating possible findings, while demonstrating each of the following procedures. Check the box showing on which attempt the participant was able to perform the step successfully. Mark UTP with an X to indicate the participant was unable to perform successfully within four attempts.

Performance Guidelines	Successful on Attempts				UTP
	1	2	3	4	
1. Scene size-up (secure or not secure).					
2. Ensure personal safety and proper use of PPE.					
3. Identify yourself (to the victim, the family or bystanders)					
4. Perform all steps for the initial assessment.					
5. Perform all steps for physical exam.					
6. Obtain patient history.					

Comments: _____

_____

_____

Overall Performance: ☐ Outstanding ☐ Successful ☐ Needs Improvement

Instructor: _____

Measuring Vital Signs
Stations 2 or 3

Student Name: _____ **Dates:** _____

Instructions: Check the box showing on which attempt the participant was able to perform the step successfully. Mark UTP with an X to indicate the participant was unable to perform successfully within four attempts.

Performance Guidelines	Successful on Attempts				UTP
	1	2	3	4	
1. Proper use of PPE					
2. Explain to the patient that you will be measuring vital signs					
3. Check respirations					
4. Check pulse (radial)					
5. Check skin condition					
6. Check pupils					
7. Palpate blood pressure (systolic only)					
8. Check blood pressure (use BP cuff and stethoscope)					

Comments: _____

_____

_____

Overall Performance: ☐ Outstanding ☐ Successful ☐ Needs Improvement

Instructor: _____

Patient Assessment Plan

Scene Size-Up	Initial Assessment	Physical Examination	Patient History	Ongoing Assessment	Patient Hand-Off
What is the current situation? • Medical or mechanism of injury • Observe for hazards	General impression	BPDOC	S.A.M.P.L.E.	Repeat Initial Assessment	Patient age and sex
Where is it going? • What are the possibilities?	Responsiveness	Head	Signs and symptoms	Repeat Physical Exam	Chief complaint
How do I control it? • What resources are needed?	Airway	Neck	Allergies	Reassess treatment and interventions	Level of responsiveness
	Breathing	Chest and back	Medications	Calm and reassure the patient	Airway status
	Circulation	Abdomen	Past history		Breathing status
	Patient status update	Pelvis	Last oral intake		Physical exam findings
		Extremities	Events		S.A.M.P.L.E. history
		Vital signs • Respiration • Pulse • Skin • Pupils • Blood pressure			Treatment

POST-TEST | LESSON 6

Patient Assessment

1. List the five general procedures taken by the rescuer when arriving at the scene.

- _____
- _____
- _____
- _____
- _____

2. List the six phases of the patient assessment plan.

- _____
- _____
- _____
- _____
- _____
- _____

3. List the six steps of the initial assessment.

- _____
- _____
- _____
- _____
- _____
- _____

MFR LESSON 6 EVALUATION

Course Location: _____ **Dates:** _____

Do not write your name on this form. Please complete a copy of this form at the end of every lesson. Your evaluations are very valuable towards improving the course. Please use the ratings below.

1 VERY POOR	2 POOR	3 AVERAGE	4 GOOD	5 EXCELLENT

Please fill in the required information.	**Lesson Number :**	**Lesson Name :**	
	Instructor's Name		
Use a scale from 1 to 5 as described above to rate the various lesson components.	**Lesson Rating (rate 1 to 5)**		
	Content	Instructor	Method
	Workbook	Interaction	
Mark your selection with an "**X**"	**Instruction Level** ☐ Too basic	☐ Appropriate	☐ Too advanced
	Duration ☐ Too short	☐ Appropriate	☐ Too long
	Usefulness Was this lesson useful to you?	☐ Yes	☐ No
Rate from 1 to 5	**Overall Lesson Rating** Taking all the above into consideration, I rate this lesson: _____		
If you need additional space, please use the back of the sheet.	**Comments and Observations**		

Thank you for your help. Your input is valuable. Please turn in this completed form to the instructor.

LESSON

07

BASIC LIFE SUPPORT (BLS) AND CARDIOPULMONARY RESUSCITATION (CPR)

Duration 22 Periods
(Lecture-04 Periods and Practical-18 Periods)

LESSON OBJECTIVES

Upon completion of this lesson, you will be able to:

1. List two causes of partial or total upper airway obstruction.
2. Describe and demonstrate two-rescuer CPR for adults.
3. Describe and demonstrate CPR in adults, children, and infants using a mannequin.
4. Demonstrate rescue breathing for adults, children and infants using a mannequin, with and without foreign body airway obstruction.

1

Heart and Lung Function and Anatomy

1.1 The Cardiovascular System

The cardiovascular system consists of the _____ , _____ and _____. The heart is a muscular organ, approximately the size of a fist, and is located in the thoracic cavity behind the sternum and between the lungs. The coronary arteries are special arteries that supply blood to the heart muscles themselves.

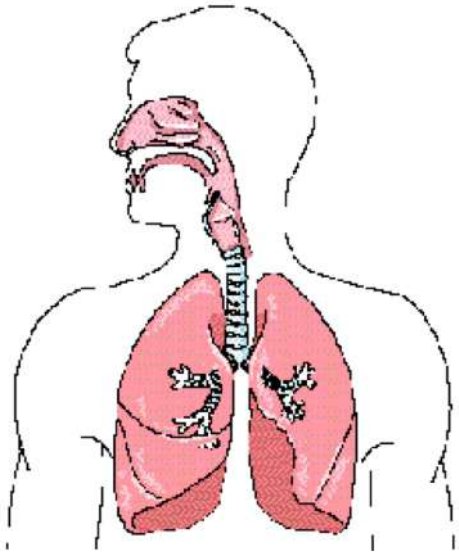
The function of the heart is to _____.

The _____ side receives oxygenated blood from the lungs and pumps it to the body through the arteries. The _____ side receives, through the veins, the blood that has circulated through the body and pumps it to the lungs to be oxygenated once again.

Notes: _____

_____

1.2 The Respiratory System



The respiratory system is made up of four components:

- _____
- _____
- _____
- _____

The alveoli are surrounded by the _____ . The brain sends nerve signals to muscles in the thorax and diaphragm, causing us to breathe. With each inhalation, air is carried through the airways to the alveoli in the lungs, where oxygen and carbon dioxide are exchanged.

In combination with the respiratory system, the circulatory system supplies the oxygen necessary for life, and eliminates carbon dioxide from the body.

_____

_____

_____

_____

2 Breathing

Adequate breathing is characterized by:

- Chest and abdomen rise and fall with each breath

_____

- Air can be heard and felt exiting the mouth and or nose.

_____

- _____
- _____

Inadequate breathing is characterized by:

- Inadequate rise and fall of the chest

_____

- Noisy breathing: bubbles, rales, stridor, whistling, etc.

_____

- _____
- _____
- _____
- _____

Absent breathing is characterized by:

- No chest or abdominal movement

_____

- Air cannot be heard or felt exiting the mouth or nose

_____

3 Cyanosis

Definition: a bluish coloration of the skin and mucous membranes caused by a lack of oxygen in the blood and tissues.

This condition can be the result of the patient breathing in an environment poor in oxygen, suffering from illness or respiratory injury, or airway obstruction.

Cyanosis can be more easily noticed on the lips, ears and nostrils or nail beds. In patients with dark pigmentation, it is necessary to inspect the nostrils, palms and nail beds, and the mouth and tongue.

Notes: _____

_____

4 Clinical and Biological Death

The respiratory and circulatory system are _____ — if either one stops, the other will do the same in a very short time. The brain is the first organ to suffer the effects of a lack of oxygen. Shortly after oxygen supply is cut off, brain cells begin to die, causing irreversible damage.

Clinical death: Occurs when a patient is in respiratory arrest (not breathing) or in cardiac arrest (heart not beating). The patient has a period of 4 to 6 minutes to be resuscitated without brain damage. Clinical death **can** be reversed.

_____

_____

Biological death: The moment the brain cells begin to die. Biological death **cannot** be reversed.

_____

_____

EXCEPTION: Cold-Water Drownings. There have been cases of persons resuscitated one hour or more after cold-water drowning. In these cases, victims should receive prolonged resuscitative efforts. Prolonged resuscitation efforts can be effective when drowning occur in cold water or circumstances suggest that hypothermia preceded asphyxia, (coverd in lesson burn and environmental emergencies) In a cold environment, a person should not be considered dead until the victim's body is warmed.

5 Signs of Certain Death

Lividity: _____

_____

Rigormortis: _____

_____

Decomposition: _____

_____

Other: _____

_____

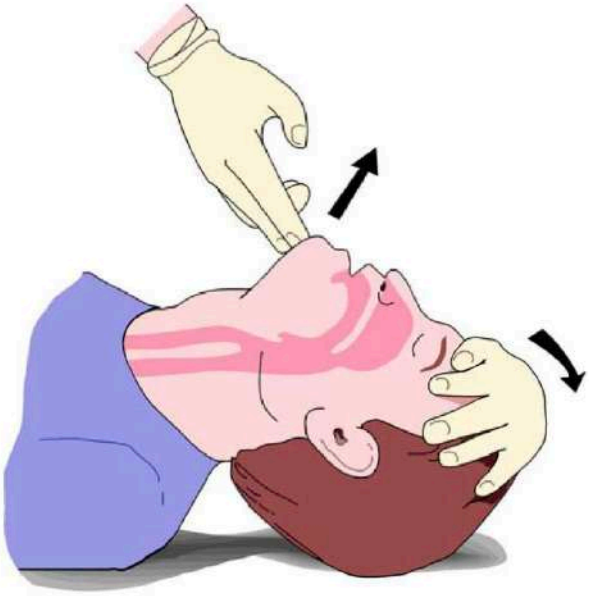
Only a medical doctor can pronounce a person officially dead.

Once the airway is open, check breathing. Look, listen and feel. If patient is not breathing, artificial ventilation should be started. If unable to ventilate, assume the airway is obstructed.

6

Techniques for Opening the Airway

▸ *Head-Tilt Chin-Lift*



▸ *Jaw Thrust*

When opening the airway, use the correct method:

Medical case:	**Trauma case:**
Head-tilt chin-lift	Jaw trust maneuver

6

Techniques for Opening the Airway (Cont.)

6.1 Head-Tilt Chin-Lift

This is the method of choice for opening the airway.

Do not use this method if you suspect head, neck or spinal injury.

1) Position the patient lying _____.

2) Kneel by the patient's shoulders toward the head.

3) Place one hand on the _____ and place the fingertips of your other hand under the _____ part of the patient's jaw.

4) Lift up on the chin, supporting the jaw, and at the same time, tilt the head back as far as possible.

For infants and children: Place in the "sniffing" position — do not over-extend.

Important precautions:

- Always keep the patient's mouth slightly open – use your thumb to hold down the patient's lower lip.
- Never dig into the soft tissue under the patient's chin.

Once the airway is open, check breathing. Look, listen and feel. If patient is not breathing, artificial ventilation should be started. If unable to ventilate, assume the airway is obstructed.

6

Techniques for Opening the Airway (Cont.)

6.2 Jaw Thrust

The jaw thrust is the manoeuvre recommended on an unconscious patient with suspected head, neck or spinal injury.

1) Position the patient lying face up.

2) Kneel above the patient's head. Place your elbows next to the patient's head on the surface where the patient is lying. Place both hands on either side of the patient's head.

3) Grasp the angle of the patient's jaw on both sides. For an infant or child use two or three fingers.

4) Use a lifting motion to move the jaw forward (up) with both hands.

5) Keep the patient's mouth slightly open by using your thumbs if needed.

7

Artificial Ventilation (Rescue Breathing)

Once the patient has an open airway, health care providers can provide artificial ventilation for a patient breathing inadequately or not at all.

How is it possible to maintain a patient alive with exhaled air? Natural air contains approximately 21% oxygen and the body only utilises about 5%. Therefore, exhaled air contains 16% oxygen. This exhaled air can resuscitate a person who is not breathing, until a high-concentration oxygen source is available.

Notes: _____

_____

There are many techniques for artificial ventilation. You should become competent in three. Fill in the blanks below in proper order of preference:

1. Mouth-to- _____
2. Mouth-to- _____
3. Mouth-to- _____

Breathing Rates and Duration

Adults	10–12 breaths per minute lasting 1.5–2 seconds.
Children and infants	12-20 breaths per minute lasting 1–1.5 seconds.
Newborns:	40 breaths per minute lasting 1–1.5 seconds.

Look for **proper chest rise**. With infants and newborns, use puffs from the mouth so as not to over-ventilate.

Notes: _____

_____

7

Artificial Ventilation (Rescue Breathing) – Cont.

Hazards to rescuers

- Diseases: Blood-borne and/or airborne. Mask, gloves, and eye protection should be worn. Use a bag-valve mask (BVM) or pocket mask (these items will be discussed in Lesson 8).

_____

- Chemicals: Exposure from a contaminated patient. Patient should be decontaminated first.

_____

- Vomitus: One-way valve on a pocket mask or BVM should be used.

_____

Gastric Distention

This problem can occur during rescue breathing, which can force some into the patient's stomach, causing the stomach to become inflated, or distended. This can result in two serious problems:

- Reduced lung volume _____
- Vomiting, resulting in possible airway obstruction or aspiration (causing lung damage and/or a lethal form of pneumonia)

Prevention:
Avoid or minimize gastric distention by positioning the patient's head properly and by avoiding giving ventilations that are too _____ or too _____. Volume should be limited to that which causes the chest to _____.

_____

_____

When gastric distention presents, be prepared for vomiting. If the patient does vomit, roll the patient (entire body) onto his or her side, manually stabilising the head and neck. Be prepared to clear the patient's mouth and throat with gauze and gloved fingers. Apply suction per local protocol. Place the patient in the recovery position, as discussed next.

_____

_____

7

Artificial Ventilation (Rescue Breathing) – Cont.

Recovery Position:

For a patient with a pulse and adequate breathing, place the patient in the recovery position. This position uses gravity to keep the airway clear, allowing fluids to drain out of the mouth instead of into the airway. The recovery position should be used on an unresponsive, uninjured patient who is breathing adequately. Keep the patient in that position until transportation arrives.

Do not move the patient into the recovery position if you suspect trauma or C-spine (cervical spine) injury.

1) Lift the patient's left arm above his head and cross his right leg over the left leg.

2) Support the patient's face as you grasp his right shoulder.

3) Roll the patient toward you onto his side (preferably the left side). Then place his right hand under the side of his face. If possible, move the patient's head, shoulders, and torso simultaneously as a unit without twisting. The head should be in as close to a midline position as possible.

4) Flex the patient's top leg slightly at the knee.

7

Artificial Ventilation (Rescue Breathing) – Cont.

7.1 Mouth-to-Mask Ventilation Procedure

This method uses a pocket face mask with a one-way valve to form a seal around the patient's nose and mouth. It is the preferred method because it eliminates _____ with the patient and prevents exposure.

▼ *Mouth-to-Mask Ventilation*

1) Place the mask around the patient's mouth and nose. The narrower top portion of the mask should be seated on the _____. The broader portion should fit the chin.

_____

_____

2) Seal the mask by placing heel and thumb of each hand along the border of the mask and compressing firmly to provide a tight seal around the edges of the mask.

_____

3) Open the patient's airway, using the appropriate manoeuvre.

_____

4) Give breaths at the appropriate rate and depth, observing _____ and _____. Listen for patient exhalation.

_____

7.2 Mouth-to-Barrier Device Ventilation Procedure

There are two broad categories of barrier devices:

_____ and _____.

Most have a one-way valve but have no exhalation port. The patient's exhaled air will leak out around the barrier device.

1) Position the barrier device around the patient's mouth and nose, providing _____.

_____

2) Open the patient's airway, using the appropriate manoeuvre.

_____

3) Deliver breaths at the appropriate rate and depth, observing chest rise and fall. Listen for patient exhalation.

_____

7.3 Mouth-to-Mouth Ventilation Procedure

The risk of contacting infectious diseases makes mouth-to-mouth ventilation very risky for use in the field. The decision to use this method is a personal one. Use barrier devices whenever possible.

1) Open the patient's airway, using the appropriate manoeuvre.

_____

2) Gently pinch the patient's nose closed with your thumb and index finger (of the hand on the forehead), to prevent _____.

_____

3) Take a deep breath and seal your lips around the patient's mouth, providing an adequate seal. If ventilating an infant or small child, cover both the mouth and nose with your mouth.

_____

4) Deliver breaths at the adequate rate and depth.

_____

7

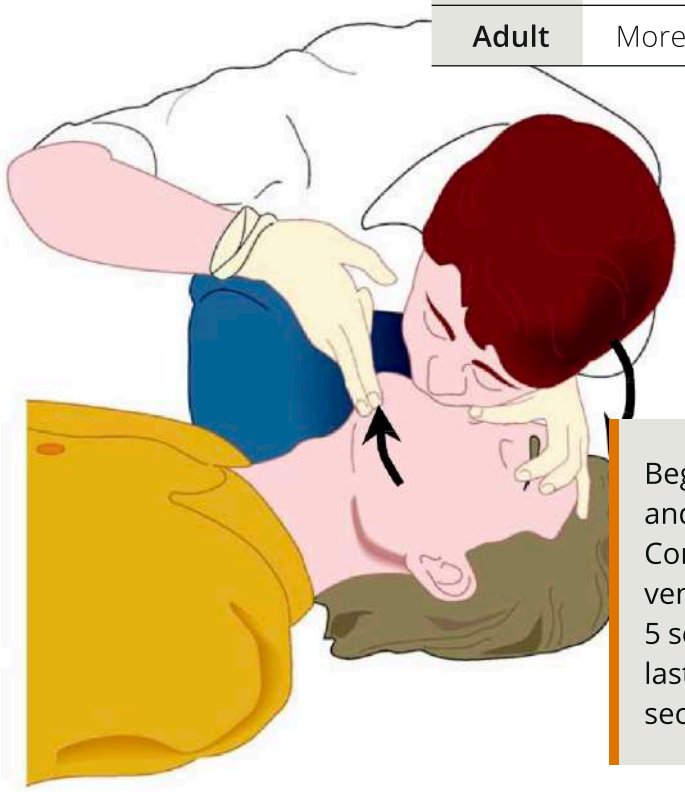
Artificial Ventilation (Rescue Breathing) – Cont.

Stoma Patients: Occasionally, you may encounter a patient who has undergone a laryngectomy. This person will have a "stoma," a permanent opening from the trachea to the front of the neck. Perform direct mouth-to-stoma ventilation.

Infant	0 to 1 year old
Child	1 to 9 years old
Adult	More than 9 years

▸ *Mouth-to-Mouth Ventilation*

USE GLOVES



Begin with two slow and deep ventilations. Continue with one ventilation every 5 seconds for an adult, lasting 1.5 to 2 seconds each.

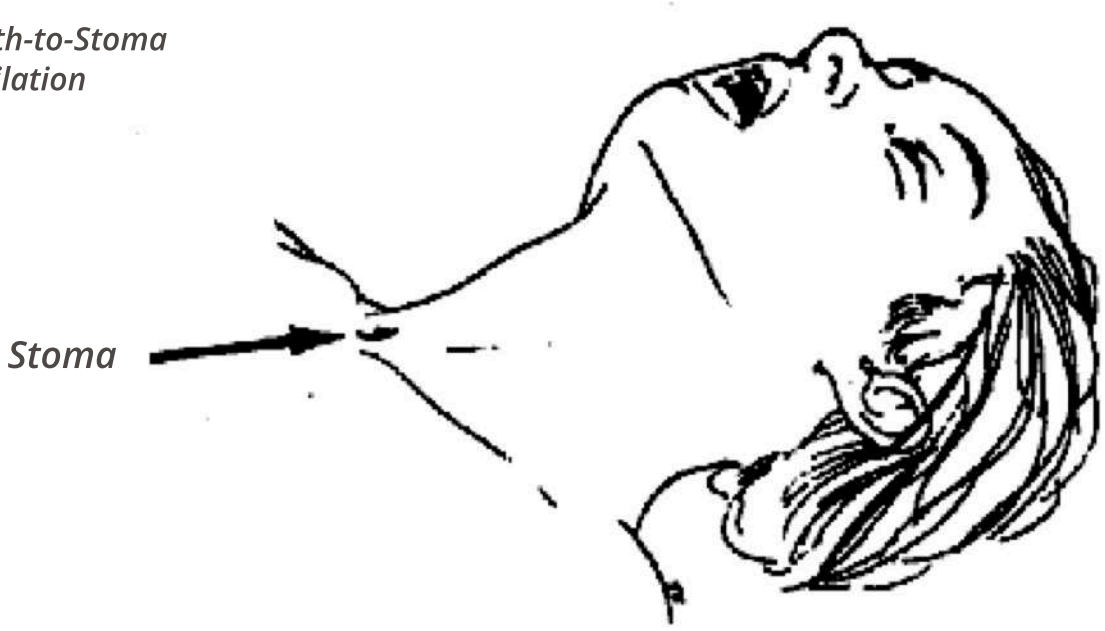
▸ *Mouth to Mouth and Nose Ventilation*

USE GLOVES

7

Artificial Ventilation (Rescue Breathing)
– Cont.

▸ *Mouth-to-Stoma Ventilation*



8 Chain of Survival

Cardiopulmonary resuscitation (CPR) can save the lives of victims in cardiac arrest. Two-thirds of heart attack victims (due to heart disease) die outside the hospital, most within two hours of the onset of symptoms. Though CPR itself is not enough to save the life of a victim of heart attack, it is a vital link in the chain of survival.

The "Chain of Survival" has five links, and the patient's chances for surviving are the greatest when all the links come together.

1) Early access _____

_____

2) Early CPR _____

_____

3) Early defibrillation _____

_____

4) Early advanced care _____

_____

5) Integrated post-cardiac arrest care _____

_____

The need for these interventions should not be limited to victims of heart disease. Many victims of drowning, trauma, electrocution, suffocation, airway obstruction, allergic reaction, etc., may be saved by prompt intervention.

9

Heart Attack Risk Factors

Risk factors that cannot be changed

- _____
- _____
- _____
- _____

Risk factors that can be changed

- _____
- _____
- _____
- _____

Contributing factors

- _____
- _____
- _____
- _____

10

Cardiopulmonary Resuscitation (CPR)

When respiratory arrest occurs, the heart can continue to pump for several minutes and circulate oxygen. Without early intervention, respiratory arrest may lead to cardiac arrest. Once cardiac arrest occurs, circulation ceases and vital organs are deprived of oxygen.

When respiratory and cardiac arrest occur together, the patient is considered _____. Within 4 to 6 minutes without circulation, brain damage will begin, and after 8 to 10 minutes, the damage is irreversible.

CPR involves a combination of chest compressions and artificial ventilations designed to revive a person and prevent biological death by mechanically keeping a person's heart and lungs working.

CPR must begin as soon as possible.

10

Cardiopulmonary Resuscitation (CPR) - Cont.

10.1 Preparing for CPR

No patient should undergo CPR until the need for resuscitation has been established by appropriate assessment. Before providing CPR you must determine unresponsiveness and Pulselessness. On establishing pulselessness in a patient immediately CPR will be started (Latest guidelines of AHA)

Follow these steps:

1) **Establish unresponsiveness.** Ask the patient, "_____?" or shake/tap the patient. If unresponsive, position the patient properly (must be supine with arms along the body on a firm, flat surface, or blood flow will be compromised).

_____

_____

2) **Activate the EMS system.** (Ask someone else to activate when available).

3) **Perform C-A-B.**

Circulation: _____

_____

Airway: _____

_____

Breathing: _____

_____

10

Cardiopulmonary Resuscitation (CPR)
- Cont.

10.2 CPR Chest Compressions for Adults

Chest compressions consist of rhythmic, repeated pressure over the lower half of the sternum. When combined with artificial ventilation, it provides enough blood circulation to sustain Life. Follow these steps:

1) **Position the patient.** Must be supine on firm, flat surface, with arms _____.

2) **Expose the patient's chest.** Remove the patient's shirt (male only), providing for patient's privacy as much as possible.

3) **Get in position.** Kneel close to the patient's side, your body centered with the patient's sternum and your knees about as wide apart as your shoulders.

4) **Locate the compression site.** Place the heel of the dominant hand at the center of the patient's chest (between the nipples, along the axix of the sternum).

5) **Position your hands.** Put your free hand on top of your first hand. Extend or interlace your fingers (do not rest them on the chest wall).

6) **Position your shoulders.** They should be directly over your hands.

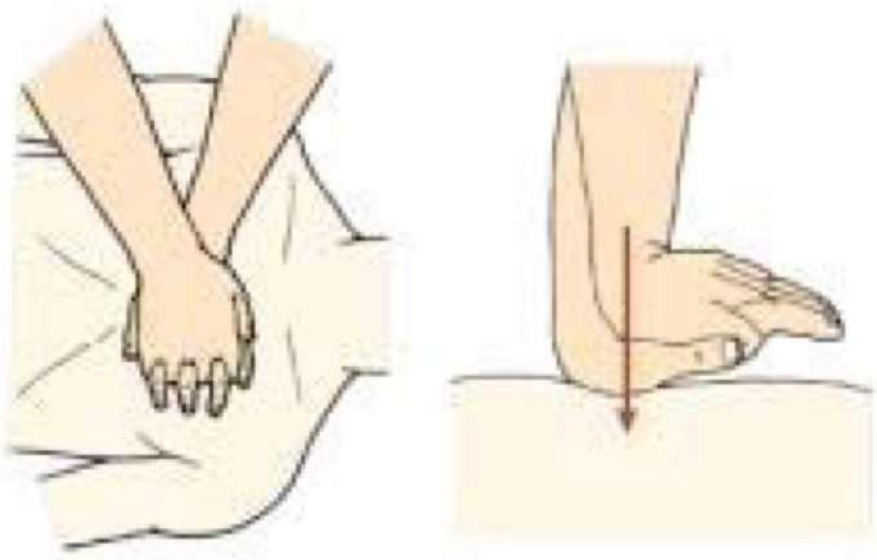
7) **Perform chest compressions.** Keeping your arms_____ and your elbows _____, thrust **straight downward** from your shoulders. Release pressure **completely** after each compression. However, do not lift or move your hands, or you will lose proper position. Count as you perform compressions.

ADULT CPR SUMMARY:

Above 9 years

- **Compression depth:** at least 2 inches (5 cm)
- **Compression rate:** at least 100 per minute
- **Each ventilation:** 1 second
- **Pulse location:** carotid artery
- **One-rescuer cycle:** 30 compressions, 2 breaths
- **Two-rescuer cycle:** 30 compressions, 2 breaths
- **5 cycles:** (about 2 minutes)

▾ *Hand positioning for adult chest compressions*



10

Cardiopulmonary Resuscitation (CPR)
- Cont.

10.3 CPR Chest Compressions for Children and Infants

Cardiac arrest in infants is rarely caused by heart problems. Usually the cause is too little oxygen (hypoxia) due to injuries, suffocation, smoke inhalation, etc.
For this reason, you should resuscitate an infant/child for two minutes before activating the EMS system (if you are alone).

1) **Position the patient.** Must be supine on firm, flat surface, with arms along sides. If an infant, place him or her on your forearm, using your palm to support the head.

2) **Expose the patient's chest.** Remove the patient's shirt or blouse.

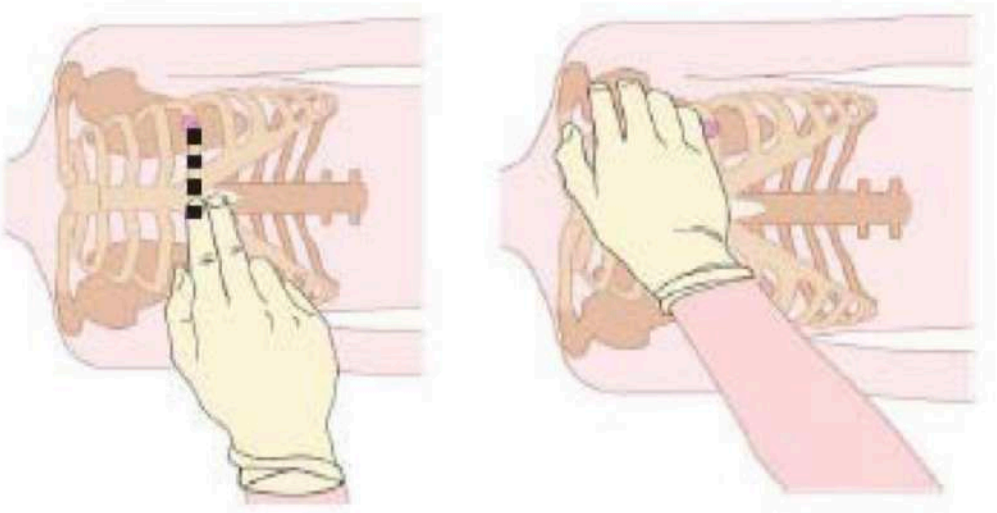
3) **Locate the compression site.** In a child, use the same location as an adult. In infants, use one finger width below an imaginary line between the nipples.

4) **Perform chest compressions.** Use the flat part of your middle and ring fingers to compress the sternum. Release pressure **completely** after each compression. However, do not lift or move your hands, or you will lose proper position. Count as you perform compressions.

CHILD CPR SUMMARY:
1-9 years of age

- **Compression depth:** at least 1/3 anterior-posterior diameter or about 2 inches (5 cm)
- **Compression rate:** at least 100 per minute
- **Each ventilation:** 1 second
- **Pulse location:** carotid artery
- **One-rescuer cycle:** 30 compressions, 2 breaths
- **Two-rescuer cycle:** 15 compressions, 2 breaths
- **5 cycles** (about 2 minutes)

▾ *Hand positioning for child chest compressions*

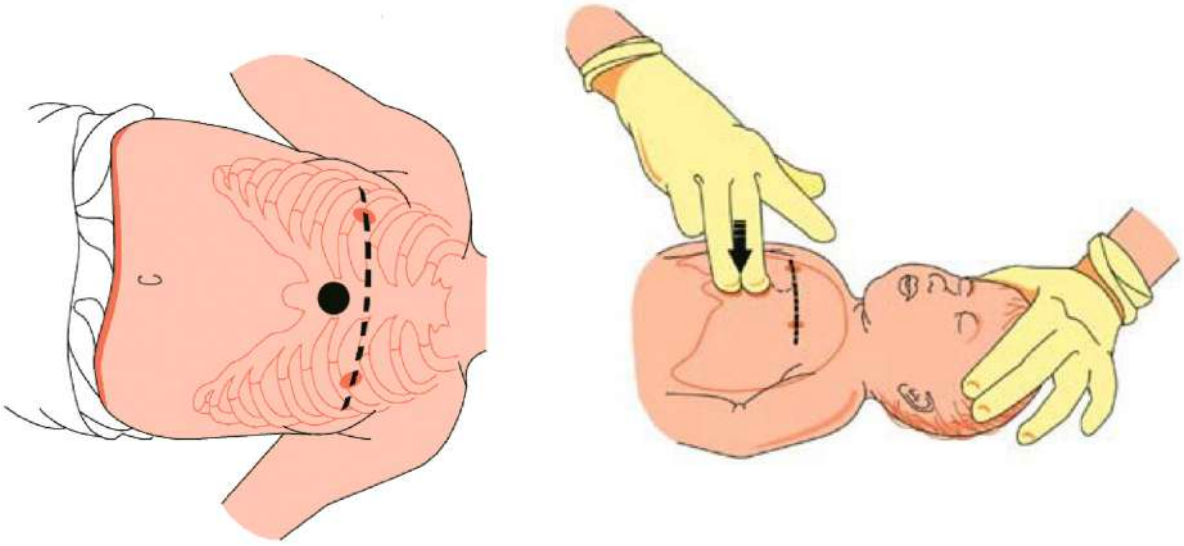


INFANT CPR SUMMARY:

1 year old and under

- **Compression depth:** at least 1/3 anterior-posterior diameter or about 1 1/2 inches (4 cm)
- **Compression rate:** at lest 100 per minute
- **Each ventilation:** 1 second
- **Pulse location:** brachial artery
- **One-rescuer cycle:** 30 compressions, 2 breaths
- **Two-rescuer cycle:** 15 compressions, 2 breaths
- **5 cycles** (about 2 minutes)

▼ *Finger positioning for infant chest compressions*



11

Special Considerations Regarding CPR

11.1 Signs of Successful CPR

"Successful" CPR does not mean that the patient survives – it only means that you performed it correctly. Very few patients will survive if they do not receive advanced cardiac life support (ACLS). The goal of CPR is to prevent the death of cells and organs for a few crucial minutes. The patient's condition needs to be monitored throughout CPR to determine if CPR is effective.

- Have someone feel for a pulse during compressions. A pulse should be palpable with every compression.

_____

- The chest should rise and fall with each ventilation.

_____

- The pupils may begin to react normally.

_____

- Patient's skin colour may improve.

_____

- Patient may attempt to move and try to swallow.

_____

- Heartbeat may return.

_____

11

Special Considerations Regarding CPR (Cont.)

11.2 When Not to Begin CPR

Usually you perform CPR when the patient has no pulse. However, there are special circumstances under which CPR should not be initiated even whenthe patient has no pulse. You should not initiate CPR when any of the signs of certain death, mentioned earlier, are present, which include:

- _____
- _____
- _____
- _____
- _____
- _____

11.3 Complications Caused by CPR

Even properly performed CPR can cause injuries, including:

- Fracture of the sternum and ribs _____

  _____
- Pneumothorax _____

  _____
- Haemothorax _____

  _____
- Cuts and bruises to the lungs _____

  _____
- Lacerations to the liver _____

  _____

Most of these complications are rare. Take care to use proper technique. Remember that even if CPR results in complications, the alternative is death.

11.4 Mistakes in Performing CPR

Mistakes in Performing CPR	
Problem	**Result**
Patient is not on a hard surface	Compressions are not effective
Patient is not in horizontal position	If patient's head is higher than the rest of the body, there is insufficient blood flow to reach the brain
Head-tilt chin-lift manoeuvre improperly performed	Open airway not ensured
Incomplete seal around the patient's mouth and/or nose	Ventilations are not effective
Nostrils not completely pinched and the patient's mouth is not fully open during mouth-to-mouth ventilation	Ventilations are not effective
Hands not in correct position or compressions incorrectly placed	Fractured ribs; fractured sternum; lacerated liver, spleen, lungs or injured pleura as a result of fractured ribs
Compressions too deep or frequent	Insufficient amount of blood is pumped
Improper compression/ventilation ration	Inadequate oxygenation of blood

11

Special Considerations Regarding CPR (Cont.)

11.5 Interrupting CPR

Once you begin CPR, you should not interrupt for more than a few seconds to check for breathing, or to reposition yourself or the patient. In addition, you interrupt CPR to:

- Move the patient onto a stretcher _____

  _____

- Move the patient down a flight of stairs or through a hallway _____

  _____

- Loading or unloading the patient into the ambulance _____

  _____

- Allow for defibrillation or ACLS (Advance cardiac life support) measures to be initiated _____

  _____

- Recover from physical exhaustion _____

  _____

MFR LESSON 7

CPR FOR ADULTS, CHILDREN AND INFANTS

Age	Above 9 years	1 to 9 years	Birth to 1 year
Recognition	Unresponsive (for all ages)		
	No breathing or only gasping		
	No pulse palpated within 10 seconds for all ages		
Compression Sequence	**C–A–B**		
Compression Depth	At least 2 in (5 cm)	At least 1/3 anterior - posterior diameter or about 2 in (5 cm)	At least 1/3 anterior - posterior diameter or about 1½ in (4 cm)
Compression Rate	100 - 120 /minute		
Each ventilation	1 second	1 second	1 second
Pulse check location	carotid artery (throat)	carotid artery (throat)	brachial artery (upper arm)
One-rescuer CPR compressions-to-ventilations ratio	30 : 2	30 : 2	30 : 2
Two-rescuer CPR compressions-to-ventilations ratio	30 : 2	15 : 2	15 : 2
When working alone: Call emergency medical services	After establishing unresponsiveness — before beginning resuscitation	After establishing unresponsiveness —before beginning resuscitation	After 2 minutes of resuscitation

Based on 2010 AHA Guidelines for CPR and ECC

Defibrillation:-

Defibrillation is the application of an electric shock to a patients heart in an attempt to convert a lethal rhythm into a normal one.

Automated External Difbrilation:-

AED is a device which can assess a hearts rhythm , determine if defibrillation is necessary , and deliver an electrical shoch when needed.

Attaching the AED: -

Assess the patient to confirm that he or she is in cardiac arrest.

Have your partner or someone else trained in Basic Life Support (BLS) begin CPR while you set up the AED. If you are alone, make sure EMS has been called and immediately attach the AED.

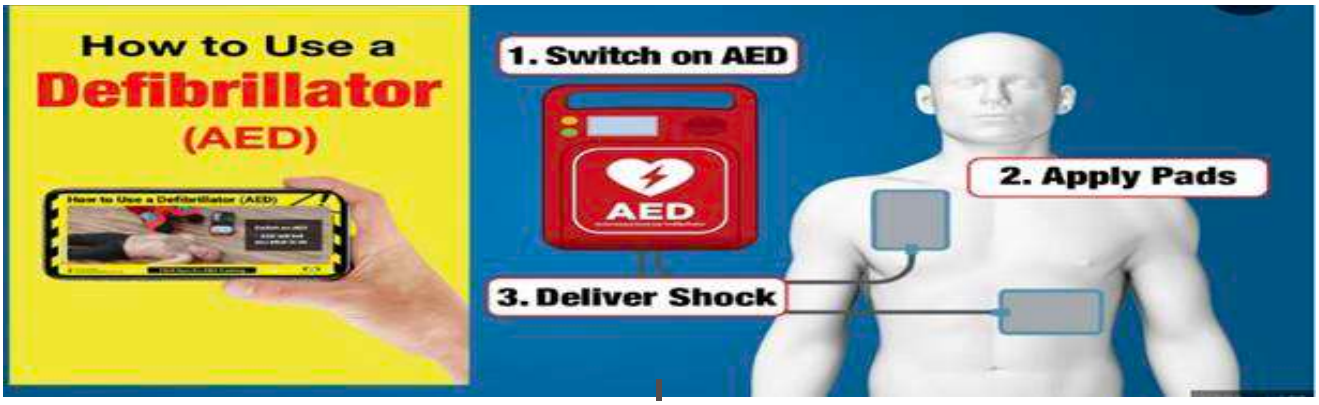
Turn ON the AED and attach the pads. Once the pads are in place, the AED will begin to analyze the patient's rhythm. Some devices may require you to press the 'analyze' button. Make certain no one is touching the patient while the device analyzes.

If a shockable rhythm is detected, the AED will advise so and charge to the appropriate energy level. When needed, the AED will prompt you to push the 'shock' button.

After you push the shock button, the AED will deliver one shock.

Following the shock, immediately begin CPR. (The most current AEDs are programmed to pause for two minutes after each shock to allow you to perform CPR).

After two minutes, the AED will advise you to stop CPR. It will then reanalyze the heart rhythm and, if indicated, advise the rescuer to deliver another shock.This sequence of one shock and two minutes of CPR should continue until more highly trained provider arrive.



12

Foreign Body Airway Obstruction (FBAO)

12.1 Causes of Airway Obstruction

There are upper and lower airway obstructions. An upper airway obstruction is anything that blocks the back of the mouth or throat, or the nasal passages. A lower airway obstruction is caused by breathing in a foreign body or by severe spasm of the bronchial passages, such as asthma. Airway obstruction can be caused by the following:

Tongue _____

_____

Epiglottitis _____

_____

Foreign body _____

_____

Tissue damage _____

_____

Illness _____

_____

The most common airway obstruction in a responsive patient is _____ , and in the Unresponsive patient it is the _____. The focus of this lesson is primarily on removing upper foreign body airway obstruction.

12

Foreign Body Airway Obstruction (FBAO) - Cont.

12.2 Recognizing FBAO

The key to successful treatment is early recognition. Suspect FBAO in any victim who suddenly stops breathing, becomes cyanotic, and loses consciousness for no apparent reason.

There are two types of FBAO – **partial** and **complete**.

- **Partial:** An object caught in the throat that does not totally block breathing. A patient with partial obstruction may have **adequate** or **poor** air exchange. With **adequate** air exchange, the patient may cough forcefully, though there may be wheezing between coughs. Do not interfere with patient's attempt to clear the airway. With **poor** air exchange, the patient will exhibit a weak, ineffective cough, high-pitched noise while inhaling, increased respiratory difficulty and possible cyanosis. Treat this situation as a **complete** airway obstruction.

  Notes: _____

  _____

  _____

  _____

  _____

- **Complete:** The patient is unable to speak, breathe or cough. May clutch the neck with thumb and finger – this gesture is known as the _____ _____. Air movement will be absent.

  Notes: _____

  _____

  _____

  _____

  _____

13

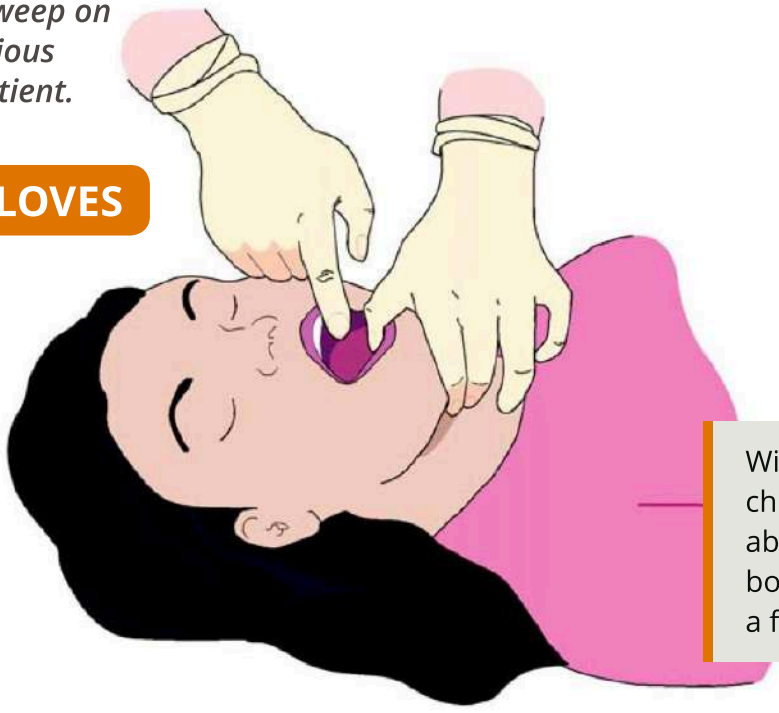
Managing FBAO in Adults and Children

The method recommended for relieving FBAO with poor air exchange or complete obstruction is the **abdominal thrust (Heimlich manoeuvre)**. Each individual thrust should be administered with the intent of relieving the obstruction. It may be necessary to perform several thrusts. It is possible to damage internal organs with this method. To minimize the possibility of injury to the patient, never place your hands on the xiphoid process or on the lower edges of the rib cage. Your hands should be below this area but above the navel.

Manage a complete airway obstruction in children the same way you would for adults, except that you **never use a blind finger sweep in children and infants**. Airway obstructions in children may also be caused by infections such as epiglottitis or croup, which produce airway oedema. Suspect this condition if an infant or child has a fever with congestion, hoarseness or drooling. A patient with any of these conditions must be transported to the emergency facility. It is dangerous to the patient to attempt to relieve this form of obstruction

▸ *Finger sweep on unconscious adult patient.*

USE GLOVES



With infants and children you must be able to see the foreign body first before using a finger sweep.

13

Managing FBAO in Adults and Children (Cont.)

13.1 Responsive Adult/Child (patient standing or sitting)

1) **Take BSI precautions.** Introduce yourself and ask permission.

2) **Determine if the obstruction is complete or partial obstruction with poor air exchange.** Ask, "Are you choking?" or "Can you speak?"

3) **If partial obstruction**, encourage the patient to cough, if unable to cough, go to step 4.

4) **Get in position.** Stand behind the patient. Place one leg between the patient's legs to obtain a stable position.

5) **Position your hands.** Reach around with one hand to locate the patient's navel. Make a fist with one hand, place the thumb-side of the fist against the patient's abdomen, slightly above the navel and below the xiphoid process.

6) **Perform an abdominal thrust.** Grasp your fist with the first hand and pull in and up with swift firm thursts.

7) **Repeat thrusts** until the object is expelled from the airway or the patient becomes unconscious.

If the patient becomes unresponsive before you are able to clear the airway obstruction, direct someone to call EMS and begin CPR.

13.2 Unresponsive Adult or Child / Obese or pregnant (patient lying down)

1) **Position the patient** _____ (supine).

2) Tap and shout to assess responsiveness. If unresponsive, activate EMS.

3) **Get in position (as in CPR). Begin CPR** (without a pulse check).

4) **After 30 compressions, open airway using appropriate technique.** If object is seen, remove object from patient's mouth by finger sweep. Use the tongue-jaw lift to open the patient's mouth. Insert the index finger of the other hand along the inside of the cheek into the throat, using a hooking action to dislodge the foreign body and lift it out.
DO NOT use finger sweep on unresponsive patients who have a gag reflex.

5) **Attempt to give ventilations.** Give 2 ventilations.

6) **Perform CPR until effective.**

13

Managing FBAO in Adults and Children (Cont.)

13.3 Pregnant or Obese Responsive Adult (patient standing or sitting)

Chest thrusts are to be used only with patients in late stages of pregnancy or with the markedly obese, when abdominal thrusts cannot be applied effectively.

1) Determine if the obstruction is complete or partial obstruction with poor air exchange. Ask, "Are you choking?" or "Can you speak?". If partial obstruction, encourage the patient to cough. If unable to cough, go to next step.

2) **Get in position.** Stand behind the patient, with your arms directly under the patient's armpits, and encircle the patient's chest.

3) **Position your hands.** Place the thumb-side of your fist along the patient's sternum, avoiding the xiphoid process and margins of the rib cage.

4) **Perform a chest thrust.** Grab your fist with the other hand and perform 5 chest thrusts in rapid succession. Oserve for evidence that the object has been removed.

5) If the patient's airway remains obstructed, repeat the thrusts until the object is expelled from the airway or the patient becomes unconscious.

6) If the patient becomes unresponsive before you are able to clear the airway obstruction, activate the EMS and begin CPR.

13

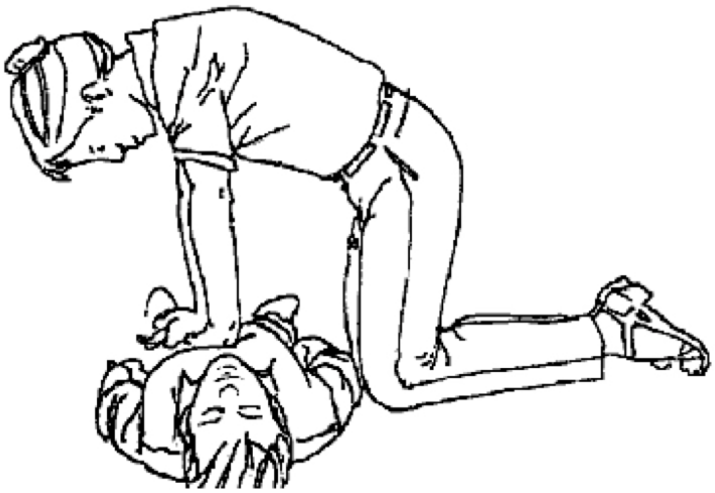
Managing FBAO in Adults and Children
(Cont.)

FBAO TECHNIQUES FOR ADULTS

- *Abdominal thrusts applied to a conscious patient*

- *Chest thrust applied to a pregnant conscious patient*

- *Chest thrust applied to an unconscious patient*



14

Managing FBAO in Infants

Always suspect foreign body airway obstruction in infants who demonstrate a sudden onset of respiratory distress associated with gagging, coughing or wheezing. Most common causes are _____ or _____. As mentioned earlier, airway obstructions may also be caused by _____ . Suspect this condition if the infant has a fever with congestion, hoarseness or drooling. Do not attempt to relieve this form of obstruction and transport the patient immediately.

_____

_____

14.1 Removing FBAO in a Conscious Infant

Perform the following procedures only if the infant has a complete obstruction or partial obstruction with poor air exchange, and **only** if you suspect a foreign object.

1) **Verify complete airway obstruction.** Serious breathing difficulty, ineffective cough, no strong cry.

_____

2) **Position the infant.** Straddle the infant **face-down** over one of your forearms, head _____ _____ than the body. Support the infant's head by holding the jaw with your hand.

_____

3) **Deliver 5 back blows.** Use the heel of your hand between the shoulder blades. If foreign object is not expelled, position the infant _____ on your arm, head lower than the body.

_____

4) **Deliver 5 chest thrusts.** Position your middle and ring fingers in the middle of the infant's sternum, just below the imaginary line between the infant's nipples. Use a quick downward motion.

_____

5) Repeat steps 2 to 4 until effective, or until infant becomes unconscious.

_____

6) Begin CPR when the infant becomes unconscious.

_____

14.2 Removing FBAO in an Unconscious Infant

1) **Establish unresponsiveness.** If unresponsive, direct someone to activate EMS. If you are alone, provide _____of rescue support before stopping to call EMS.

2) **Begin CPR with chest compressions.**

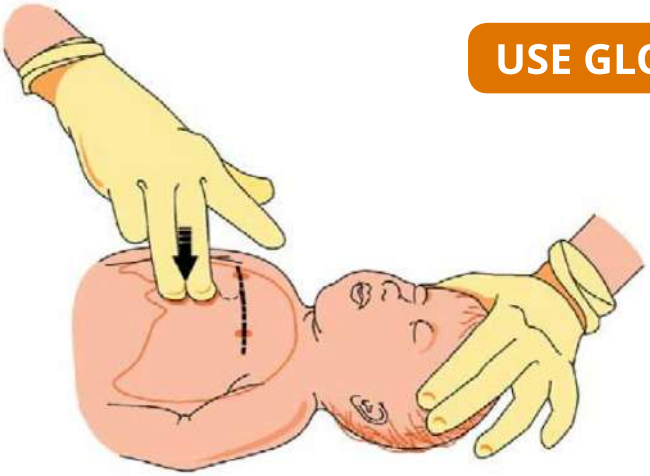
3) **Open airway and remove object if seen (finger sweep).**

4) **Attempt to give 2 ventilations.**

5) **Perform CPR until effective or until 2 min and activate EMS** (if rescuer is alone).

FBAO TECHNIQUES FOR INFANTS

▾ *Chest compressions*



USE GLOVES

▾ *Back blows to infant*

Adult/Child — One-Rescuer CPR

Stations 1, 2, 3 or 4

Student Name: _____ **Dates:** _____

Instructions: Check the box showing on which attempt the participant was able to perform the step successfully. UTP indicates unable to perform successfully within four attempts.

Performance Guidelines	Successful on Attempts				UTP
	1	2	3	4	
1. Proper use of PPE					
2. Establish unresponsiveness and briefly assess breathing (no breathing or only gasping). Activate the EMS system.					
3. Check carotid pulse. If pulse is present but no breathing, provide rescue breathing (1 breath every 5 seconds, or about 12 breaths per minute).					
4. If no pulse, give cycles of 30 chest compressions (rate 100-120 compressions/minute).					
5. Open airway (head-tilt/chin-lift or jaw-thrust).					
6. Give 2 ventilations, watch chest rise, allow for exhalation between breaths (1.5 to 2 seconds per breath).					
7. After 5 cycles of 30:2 (or about 2 minutes), recheck pulse. If no pulse, continue 30:2 cycles beginning with chest compressions.					

If the victim is breathing or resumes adequate breathing, place in recovery position and continue to monitor.

Comments: _____

_____

_____

Overall Performance: ☐ Outstanding ☐ Successful ☐ Needs Improvement

Instructor: _____

Adult/Child — Two-Rescuer CPR

Stations 5 or 6

Student Name: _____ **Dates:** _____

Instructions: Check the box showing on which attempt the participant was able to perform the step successfully. UTP indicates unable to perform successfully within four attempts.

Performance Guidelines	Successful on Attempts				UTP
	1	2	3	4	
1. Proper use of PPE					
2. Establish unresponsiveness and briefly assess breathing (no breathing or only gasping). Activate the EMS system.					
Rescuer 1					
3. Check carotid pulse for not more than 10 sec. If pulse is present but no breathing, provide rescue breathing (one every 5 secs or about 12 breaths per minute). If no pulse is detected, inform Rescuer 2 to start chest compressions.					
4. Open airway (head-tilt/chin-lift or jaw-thrust). Performed after set of chest compressions.					
5. Give 2 ventilations (1.5 to 2 seconds per breath), watch chest rise, allow for exhalation between breaths.					
6. Check carotid pulse for not more than 10 sec.					
Rescuer 2					
7. **Adult Patient:** If no pulse, give cycles of 30 chest compressions (at least 100 compressions per minute); followed by 2 ventilations by Rescuer 1. **Child Patient:** If no pulse, give cycles of 15 chest compressions followed by 2 ventilations by Rescuer 1.					
8. For child 2-rescuer CPR, the ratio is 15:2. After 2 minutes of rescue support or 5 cycles, recheck pulse (by Rescuer 1). If no pulse , continue 15:2 cycles. For adult 2-rescuer CPR, the ratio is 30:2. After 2 minutes of rescue support or 5 cycles, recheck pulse (by Rescuer 1). If no pulse , continue 30:2 cycles.					

If the victim is breathing or resumes adequate breathing, place in recovery position and continue to monitor.

Comments: _____

_____

Overall Performance: ☐ Outstanding ☐ Successful ☐ Needs Improvement

Instructor: _____

Infant — One-Rescuer CPR

Stations 7 or 8

Student Name: _____ **Dates:** _____

Instructions: Check the box showing on which attempt the participant was able to perform the step successfully. UTP indicates unable to perform successfully within four attempts.

Performance Guidelines	Successful on Attempts				UTP
	1	2	3	4	
1. Proper use of PPE					
2. Establish unresponsiveness. If second rescuer is available, ask him or her to activate the EMS system. If rescuer is alone, continue through Step 3 to 6 for 2 minutes then activate EMS.					
3. Check brachial pulse. If breathing is absent but pulse is present, provide rescue breathing (one breath every 3 seconds, or about 20 breaths per minute).					
4. If no pulse, give 30 chest compressions (at least 100 compressions per minute).					
5. Open airway (head-tilt/chin-lift or jaw-thrust).					
6. Give 2 ventilations (1 to 1.5 seconds per breath), watch chest rise, allow for exhalation between breaths.					
7. After 2 minutes (about 5 cycles of 30 compressions : 2 ventilations) of rescue support, check pulse for not more than 10 sec. If no pulse, continue 30:2 cycles beginning with chest compressions.					

If the victim is breathing or resumes adequate breathing, place in recovery position and continue to monitor.

Comments: _____

_____

_____

Overall Performance: ☐ Outstanding ☐ Successful ☐ Needs Improvement

Instructor: _____

Infant FBAO — Conscious/Unconscious

Stations 1 and 2

Student Name: _____ **Dates:** _____

Instructions: Check the box showing on which attempt the participant was able to perform the step successfully. UTP indicates unable to perform successfully within four attempts.

	Performance Guidelines	Successful on Attempts				UTP
		1	2	3	4	
1.	Proper use of PPE					
2.	Confirm airway obstruction.					
3.	Position the infant.					
4.	Give 5 back blows followed by 5 chest thrusts.					
5.	Repeat Step 4 until effective or victim becomes unconscious.					
	Victim becomes unconscious					
6.	Activate the EMS system (if rescuer is not alone).					
7.	Begin CPR with 30 compressions.					
8.	Open airway, remove object if seen (finger sweep).					
9.	Attempt to give 2 ventilations.					
10.	Perform CPR (30:2) until effective or until 2 min and activate EMS (if rescuer is alone)					

If the victim is breathing or resumes adequate breathing, place in recovery position and continue to monitor.

Comments: _____

_____

_____

Overall Performance: ☐ Outstanding ☐ Successful ☐ Needs Improvement

Instructor: _____

Adult FBAO — Conscious/Unconscious

Stations 3 and 4

Student Name: _____ **Dates:** _____

Instructions: Check the box showing on which attempt the participant was able to perform the step successfully. UTP indicates unable to perform successfully within four attempts.

Performance Guidelines	Successful on Attempts				UTP
	1	2	3	4	
1. Proper use of PPE					
2. Ask the patient, "Are you choking?"					
3. Give 5 abdominal thrusts (chest thrusts for pregnant or obese patient).					
4. Repeat thrusts until effective or victim becomes unconscious.					
Victim becomes unconscious					
5. Activate the EMS system. Place patient in supine position.					
6. Begin CPR with 30 chest compressions.					
7. Open airway, remove object if seen (finger sweep).					
8. Attempt to give 2 ventilations.					
9. Perform CPR (30:2) until effective.					

If the victim is breathing or resumes adequate breathing, place in recovery position and continue to monitor.

Comments: _____

_____

_____

Overall Performance: ☐ Outstanding ☐ Successful ☐ Needs Improvement

Instructor: _____

MFR LESSON 7 EVALUATION

Course Location: _____ **Dates:** _____

Do not write your name on this form. Please complete a copy of this form at the end of every lesson. Your evaluations are very valuable towards improving the course. Please use the ratings below.

1 VERY POOR	2 POOR	3 AVERAGE	4 GOOD	5 EXCELLENT

Please fill in the required information.	**Lesson Number :**	**Lesson Name :**	
	Instructor's Name		
Use a scale from 1 to 5 as described above to rate the various lesson components.	**Lesson Rating (rate 1 to 5)**		
	Content	Instructor	Method
	Workbook	Interaction	
Mark your selection with an "**X**"	**Instruction Level** ☐ Too basic	☐ Appropriate	☐ Too advanced
	Duration ☐ Too short	☐ Appropriate	☐ Too long
	Usefulness Was this lesson useful to you?	☐ Yes	☐ No
Rate from 1 to 5	**Overall Lesson Rating** Taking all the above into consideration, I rate this lesson: _____		
If you need additional space, please use the back of the sheet.	**Comments and Observations**		

Thank you for your help. Your input is valuable. Please turn in this completed form to the instructor.

LESSON

08

OXYGEN THERAPY

Duration 07 Periods
(Lecture-02 Periods and Practical-05 Periods)

LESSON OBJECTIVES

Upon completion of this lesson, you will be able to:

1. Name five situations in which the application of oxygen is indicated.
2. Describe an oropharyngeal airway, a CPR mask, a bag valve mask and demonstrate their uses.
3. List four key pieces of equipment used in an oxygen delivery system.

1 Indications for Oxygen Use

Oxygen is a colourless, and non-combustible gas and is also used for medical purposes. The air we breathe contains 21% oxygen. The oxygen generally is also used for medical purposes and has a concentration of 100%.

Notes: _____

_____

A patient can require oxygen for a variety of medical needs. There are five typical examples in which the application of oxygen is indicated:

- _____
- _____
- _____
- _____
- _____

1 Indications for Oxygen Use (Cont.)

Hazards Associated with Oxygen Use

- **Fire:** Do not allow smoking or the use of a flame when using oxygen. Oxygen is not combustible, but it does increase the intensity of a fire and will cause fire to flare up.

- **Explosion:** Never use oil or grease around an oxygen cylinder. Oil and grease near high concentrations of oxygen can cause an explosion.

- **Valve damage:** Avoid dropping or placing a cylinder where it can fall. The regulator or valve can be damaged and the cylinder can become a projectile.

Oxygen Toxicity: -

Oxygen toxicity is also known as oxygen poisoning, observed when a person breathes higher than normal concentrations of oxygen at depth.

Sign & Symptoms :-

1. Pleuritic chest pain
2. Substernal heaviness
3. Coughing
4. Convulsions.
5. Trouble with breathing.
6. Euphoria
7. Nausea & Vertigo

2 Oxygen Delivery System

An oxygen delivery system consists of the following parts:

- Oxygen cylinder with valve
- Low pressure regulator with humidifier
- Appropriate oxygen delivery device

2.1 Oxygen cylinder with valve

When providing oxygen in the field, the standard source is a seamless steel or lightweight alloy cylinder filled with pressurized oxygen. A green (steel) or gray (aluminum) cylinder identifies oxygen. In India oxygen cylinder are black with white neck.

The cylinders should be inspected daily and pressure-tested annually due to the high-pressure contents (2,000 psi).

Valve: The control located at the top of the cylinder, used to turn the bottle on and off. Keep in mind that a certain valve type might not work with different types of regulators.

CYLINDER TYPES

Most common cylinder types:

Cylinder D — contains 350 liters

Cylinder E — contains 625 liters

Cylinder M — contains 3000 liters

Size	Capacity (L)	Pressure (psi)	Tare Wt. (kg)
B	200	1900	2.27
D	400	1900	3.4
E	660	1900	5.4
F	1360	1900	14.5
G	3400	1900	34.5
H	6900	2200	53.2
M	3450	2200	29.0

<Cylinder size and types of regulators may vary.

2

Oxygen Delivery System (Cont.)

2.2 Low Pressure Regulators and Flow meters

Regulators reduce the high pressure (2,000 psi) from the oxygen cylinder and decrease it to between 40 and 70 psi.

Flowmeters control the flow of oxygen, which is usually administered at between 2 and 20 litres per minute.

Duration of Flow Formula

$$\frac{\text{Tank Pressure X Conversion Factor}}{\text{Liters per Minute (LPM)}}$$

2.3 Precautions When Giving Oxygen

- The pressure in a full cylinder is between 2,000 and 2,200 psi. Reduce the pressure to 40-70 psi before administering the oxygen to the patient.
- The appropriate delivery of oxygen to the patient is achieved by the use of a flow meter and regulator. They are usually connected as one piece.

Oxygen is considered a medication.

2.4 Accessories for Ventilation

▸ **Oropharyngeal Airway**

Device usually made of plastic, can be inserted into the patient's mouth and curves back into the throat. The airway holds down the patient's tongue and creates an air passage. Airways come in several sizes, from 0 for new borns to number 7 for adults.

CYLINDER SIZE	CONVERSATION FACTOR
D	0.16
E	0.28
M	1.56
H	3.14

(As per Indian Medical Association)

Medical Oxygen Cylinders

Medical Oxygen is stored as a compressed gas in cylinders. Oxygen cylinder size varies as per the capacity to hold water & amount of compressed gas or liquid oxygen, ranging from portable 1 liter to Jumbo cylinders.

The cylinders are produced in various sizes designated by a capital letter code. Homecare domiciliary oxygen cylinders are smaller though. These cylinders are identified according to color For color code identification, all oxygen cylinders have their shoulders painted with white color. Commonly used oxygen cylinder types are B, C, D, E & G In India, commonly used oxygen cylinders in hospitals are B type, D type & Dura LMO Cylinders. A type oxygen cylinders are for anesthesia purpose.

B Type & 0 Type oxygen cylinders.
B Type are used as bed-side cylinders
0 Type are used for Central Oxygen Supply system.

Approximate Specifications of Oxygen Cylinders

O2 Cylinder	B Type	D Type	Dura - 200	Dura - 208	Dura - 247
Type	Ward Cylinder	Jumbo	LMO	LMO	LMO
Capacity	1320 L Compressed Gas	7000 L Compressed Gas	1,67,000 Liters	1,74,000 Liters	2,10,000 Liters
Wastage – Approximate 15-20%					

Duration for which Cylinders will last as per oxygen use. (after excluding wastage)

1 L/min	17 hours	95 hours	-	-	-
2 L/min	8.5 hours	50 hours	-	-	-
5 L/min	3.5 hours	20 hours	-	-	-
8 L/min	2 hours	12 hours	350 hours	365 hours	437 hours
10 L/min	1.7 hours	9.5 hours	275 hours	290 hours	350 hours
15 L/min	1 hour	6 hours	185 hours	195 hours	233 hours
This is the approximate time that cylinder will last for 1 bed. Time may shorten due to leakage or if the cylinder is not completely filled.					

2.5 Low Pressure Regulators and Flow meters

Regulators reduce the high pressure (2,000 psi) from the oxygen cylinder and decrease it to between 40 and 70 psi.

Flowmeters control the flow of oxygen, which is usually administered at between 2 and 20 litres per minute.

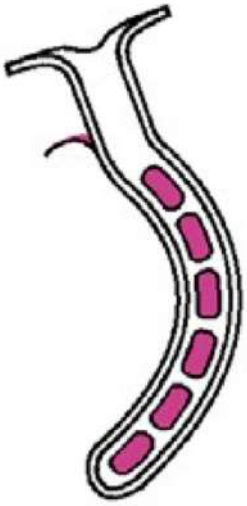
2.6 Precautions When Giving Oxygen

- The pressure in a full cylinder is between 2,000 and 2,200 psi. Reduce the pressure to 40-70 psi before administering the oxygen to the patient.

- The appropriate delivery of oxygen to the patient is achieved by the use of a flow meter and regulator. They are usually connected as one piece.

Oxygen is considered a medication.

2.7 Accessories for Ventilation



▸ Oropharyngeal Airway

An oropharyngeal airway is a device usually made of plastic, which can be inserted into the patient's mouth, and curves back into the throat. The airway holds down the patient's tongue and provides an air passage. The airway comes in several sizes, from 0 for newborns, to number 7 for adults. **Use the following procedure for inserting an oropharyngeal airway:**

1) Select proper size. If the patient is a child, use a tongue depressor to help insert the device.

2) Open the patient's mouth.

3) Insert the adjunct upside-down (tip facing the roof of the mouth).

4) Advance the adjunct gently until you encounter slight resistance (when the adjunct touches the back of the roof of the mouth).

5) Turn the airway 180 degrees.

6) Advance the adjunct until the flange rests on the patient's teeth, then secure it with tape.

If the patient exhibits a gag reflex during or after insertion, remove the adjunct immediately.

Notes: _____

2 Oxygen Delivery System (Cont.)

▸ CPR Mask

The pocket face mask is designed to aid the rescuer when providing ventilations during CPR. It is made of a soft plastic that conforms to the patient's face. The mask can come both with or without an oxygen inlet. Its use avoids direct contact with the patient's mouth and decreases the chance of contamination.

Notes: _____

_____

_____

_____

▸ Bag-Valve-Mask (BVM) (manual resuscitator)

Many different types are available. The bag-valve-mask is a hand-held device you squeeze to ventilate a patient. It comes in adult, child and infant sizes. All have the same basic parts: face mask, non-rebreather patient valve, a bag (rubber or vinyl), intake valve/oxygen reservoir valve, oxygen supply connection tube, and oxygen reservoir.

Notes: _____

_____

_____

_____

2.8 Adjunct Equipment for Oxygen Administration

▸ Nasal Cannula

Description:
Has two stems that are placed into the patient's nostrils. Used most often in the hospital setting. Most patients tolerate it well and it is the best accessory for administration of give low-concentration oxygen.

Flow Rate: _____lpm

O_2 Delivered:
Approximately _____% oxygen concentration.

Notes: _____

_____

▸ Non-Rebreather Mask

Description:
Face mask with an oxygen reservoir bag and one-way valves. Requires a tight seal to ensure high oxygen concentration delivery.

Flow Rate: _____lpm

O_2 Delivered:
Approximately _____% oxygen concentration.

Notes: Reservoir must always contain enough oxygen so that it does not deflate by more than one third when patient inhales (must maintain proper flow rate).

_____

_____

▸ Humidifier

Description:
Non-breakable jar of water attached to the flowmeter. Provides moisture to the dry oxygen coming from the supply cylinder.

Notes: Must be kept clean. Can become a breeding ground for algae, harmful bacteria and fungal organisms.

_____

_____

Pulse Oximeter:- Pulse oximeter is a small, non invasive device that measure the amount of oxygen in blood and heart rate without using needles or taking blood samples.

2.9 Mechanical Suction

- Maintain airway at all times – keep free of blood, vomit, secretions and other liquids or objects. Use mechanical suction to remove these substances or objects.

- Solid objects such as food, teeth or very thick secretions cannot always be removed with suction, and may require alternative equipment or a finger sweep.

- Suction should be performed rapidly to decrease the chance of blood or other foreign matter from moving into the lungs, which may cause pneumonia or complete airway obstruction.

Suction Equipment

A suction unit consists of a suction source, a collection container, tubing and suction tips. May be portable or truck-mounted.

- Suction devices use negative pressure. Manual or electrically powered, air or oxygen- powered.

- Must have wide bore, thick walls, non-kinking tubing to fit a suction catheter.

- Several disposable catheters should be available, made of either rigid or flexible plastic.

- Unbreakable collection container with water for rinsing and cleaning.

- Enough vacuum power and flow to be effective.

Stations 1 and 2 –or– 3 and 4

Student Name: _____ **Dates:** _____

Instructions: Check the box showing on which attempt the participant was able to perform the step successfully. UTP indicates unable to perform successfully within four attempts.

Performance Guidelines		Successful on Attempts				UTP
		1	2	3	4	
Station 1	Use of PPE.					
	Prepare oxygen cylinder.					
	Assemble regulator and cylinder.					
	Attach oxygen mask and adjust flow meter.					
	Attach nasal cannula and adjust flow meter.					
Station 2	Use of PPE.					
	Select and insert oropharyngeal airway.					
	Place, seal and ventilate with CPR mask.					
	Place, seal and ventilate with bag-valve mask.					
Station 3	Use of PPE.					
	Prepare oxygen cylinder.					
	Assemble regulator and cylinder.					
	Attach oxygen mask and adjust flow meter.					
	Attach nasal cannula and adjust flow meter.					
Station 4	Use of PPE.					
	Select and insert oropharyngeal airway.					
	Place, seal and ventilate with CPR mask.					
	Place, seal and ventilate with bag-valve mask.					

Overall Performance	
Station 1 ☐ Outstanding ☐ Successful ☐ Needs Imp. Instructor:	**Station 2** ☐ Outstanding ☐ Successful ☐ Needs Imp. Instructor:
Station 3 ☐ Outstanding ☐ Successful ☐ Needs Imp. Instructor:	**Station 4** ☐ Outstanding ☐ Successful ☐ Needs Imp. Instructor:

Please write applicable comments on reverse, and check box: ☐

POST-TEST | LESSON 8

Oxygen Therapy

1. **Name five situations in which the application of oxygen is indicated.**

- _____
- _____
- _____
- _____
- _____

2. **Briefly describe the following devices and explain their uses (1-2 sentences for each):**

- Oropharyngeal airway _____

  _____

- CPR Mask _____

  _____

- Bag-Valve-Mask _____

  _____

3. **List four key pieces of equipment used in an oxygen delivery system.**

- _____
- _____
- _____
- _____

MFR LESSON 8 EVALUATION

Course Location: _____ **Dates:** _____

Do not write your name on this form. Please complete a copy of this form at the end of every lesson. Your evaluations are very valuable towards improving the course. Please use the ratings below.

1 VERY POOR	2 POOR	3 AVERAGE	4 GOOD	5 EXCELLENT

Please fill in the required information.	**Lesson Number :**	**Lesson Name :**	
	Instructor's Name		
Use a scale from 1 to 5 as described above to rate the various lesson components.	**Lesson Rating (rate 1 to 5)**		
	Content	Instructor	Method
	Workbook	Interaction	
Mark your selection with an "**X**"	**Instruction Level** ☐ Too basic	☐ Appropriate	☐ Too advanced
	Duration ☐ Too short	☐ Appropriate	☐ Too long
	Usefulness Was this lesson useful to you?	☐ Yes	☐ No
Rate from 1 to 5	**Overall Lesson Rating** Taking all the above into consideration, I rate this lesson: _____		
If you need additional space, please use the back of the sheet.	**Comments and Observations**		

Thank you for your help. Your input is valuable.
Please turn in this completed form to the instructor.