

Mine Foreman Training

First Aid & CPR

Unit 8 – Part 1

Power Point Program and Training
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Office of Mine Safety & Licensing
2005



First aid is the immediate emergency care or treatment provided to an ill or injured person. Adequate first-aid treatment requires the identification of life-threatening conditions, taking action to prevent death or further injury, and counteracting shock until medical assistance is obtained.



Properly administered, first aid can restore breathing and circulation, control bleeding, reduce the severity of shock, protect injuries from infection and complications, and conserve the victim's strength. Any one or the appropriate combination of these measures can greatly improve a victim's chances for recovery.



To provide for appropriate and immediate first- aid care for miners, each coal mine must employ a certified mine emergency technician (MET) or an emergency medical technician (EMT) as required by KRS 351.127 and 805 KAR 7:080.



Human Anatomy



For first-aid purposes, the body is divided into three parts: the head, the trunk, and the extremities.



The skeleton is the strong, flexible framework of the body. Its purpose is to support and carry the soft parts. Protect vital organs from injury and give attachment to the muscles.



The skull is a bony case enclosing and protecting the brain.



**The spinal column, ribs,
breastbone and the pelvis
form the trunk.**



The spinal column is a flexible column composed of vertebrae, held together by strong ligaments, which encloses and protects the spinal cord.



The pelvis is a basin-shaped bony structure at the base of the trunk.



The upper extremity consists of the collarbone, shoulder blade, arm, forearm, wrist, and hand.



The lower extremity consists of the thigh, leg , ankle, and foot.



A joint is where two or more bones come together and there is movement.



The bones that form a joint are held in position by strong ligaments and bands of fibrous tissue.



Muscles are fleshy fibers which give shape to the body and by lengthening and shortening their fibers, cause movements of the parts to which they are attached.



Tendons are strong, fibrous cords by which muscles are attached to bones.



The skin is the protective covering of the body and in it are special organs , the sense of touch, and the glands that assist in getting rid of body heat and certain impurities.



The diaphragm is a strong muscular partition that divides the trunk into two parts.



The upper portion of the trunk is called the the chest cavity, which contains the heart, lungs, esophagus (gullet or food pipe), trachea (windpipe), and several large blood vessels.



The lower portion of the trunk is called the the abdominal cavity, which contains the liver, stomach, spleen, pancreas, small intestine, large intestine, bladder, and several large blood vessels.



The principal excretory systems are the bowels, kidneys, lungs, and sweat glands.



Body Substance Isolation (BSI)



Before beginning scene size-up, which is the first step of the patient assessment process, the first aid person needs to consider the use of body substance isolation (BSI).



Taking BSI precautions will help to prevent the spread of infectious diseases caused by pathogens (tiny organisms we call germs).



The injured or ill person may be suffering from an infectious disease which can be hazardous to the first-aid person.



An infectious disease is one that can be passed from person to person.



An infectious disease is transmitted by way of tiny organisms called germs or pathogens.



Germs or pathogens can be found in body fluids, including saliva, mucus, blood, and urine.



The body fluids of an injured or ill person can spread disease by droplet infection through sneezing or coughing, through blood-to-blood contact, and by body fluid contact with another person's mucous membranes or open wounds.



**Some of the most common
infectious diseases are:
Tuberculosis (TB), Hepatitis B,
HIV, and AIDS.**



Because you cannot determine whether or not an injured or ill person is carrying an infectious disease, the first aid person should assume that all persons are carrying infectious diseases and take body substance isolation (BSI) precautions.



Universal BSI precautions consist of using barrier devices that are designed to prevent the spread of disease.



Barrier devices used by first aid people are: disposable latex or vinyl gloves, goggles or safety glasses with side shields, disposable surgical masks (respirators) and gowns, face shields, and masks for performing artificial respiration. This is some of the equipment used when taking universal precautions.



The universal BSI precaution equipment should be located in the first-aid or first responder kit



The first-aid person or responder should take universal precautions by donning protective equipment before or during scene size-up, but always before administering first aid.



To further prevent the spread of disease, you should wash your hands thoroughly after treating an injured person, even if gloves have been worn.



All equipment that has been exposed to body fluids should be washed and disinfected and all contaminated materials must be discarded.



Scene Size – up



Prior to administering first aid and emergency care the first-aid person or responder should first size up the accident scene and determine if any hazards still exist.



Some possible environmental hazards that the first-aid responder may be exposed to are: adverse roof conditions, electrical hazards, pinch-point areas, and other unsafe conditions.



The scene should be made safe and the injured or ill person must be removed to a safe location, and all safety precautions and procedures must be followed before rendering first aid.



If the scene cannot be made safe, call for help and stay clear until help arrives.



After the scene has been made safe or determined to be safe, the first aid person should try to determine the mechanism of injury (what caused the injury) or the nature of the illness.



Identifying the mechanism of injury will help determine the type of first aid treatment needed and whether or not the scene is safe.



Note the number of patients and if there are several patients, call for help immediately. Be sure to consider access and extrication – can you gain access to the patient(s).



Identifying the mechanism of injury will also help determine the need for spinal immobilization to prevent further injury to the spine.



When a spinal injury is suspected, a cervical collar should be applied to the injured. When an “emergency move” is required, every effort must be made to move the injured with their head in line with their torso.



An “emergency move” is required when there is an immediate danger to the patient because of his or her location.



An “emergency move” may also be required because of fire or danger of fire, explosion or danger of explosion, or other life threatening hazards. The patient may also have to be moved to gain access to other patients who need life-saving care.



The greatest danger in performing an “emergency move” is the possibility of causing further injury to your patient’s spine. However, realize that protecting a patient’s spine won’t matter if he dies from a potential fire, explosion, rock fall, or some other life-threatening hazard.



In an emergency, make every effort to protect the spine by pulling your patient in the direction of the long axis of his body.



Three emergency moves to use when patients are at ground level are the *shirt drag*, *blanket drag*, and *shoulder drag*.



In the shirt drag, pull the patient's clothing in the neck and shoulder area. In the blanket drag, place the patient on a blanket and drag the blanket. For the shoulder drag, get behind the patient, put your hands under the armpits, and grasp the patient's forearms.



After determining that the scene is safe or after moving the patient to a safe place and there is no danger of exposure to environmental hazards while administering first aid, the first aid person should perform an initial assessment.



Initial Assessment



The initial assessment is performed to determine whether any life-threatening problems exist to the injured or ill person.



The initial assessment begins at the scene where you quickly form an impression about the condition of the injured or ill person.



The first step or contact with the patient in the initial assessment is to establish responsiveness. Ask the injured or ill person if he is all right while lightly tapping his shoulder.



If there is no response, you must then assess the airway and breathing.



Let's assume the injured or ill person is not breathing and you have to perform Cardio Pulmonary Resuscitation (CPR).



The instructor who is administering this “foreman training” should now begin the segment on CPR training.



The mine foreman class participants should now be trained in CPR and certified by the American Heart Association (AHA) or by the Office of Mine Safety & Licensing (OMSL).



Stop this power point program and show the American Heart Association's video titled: Watch Then Practice Rescue Program for BLS Healthcare Providers, and/or administer appropriate training for CPR certification.



This power point training program should be paused while the training segment on CPR is conducted by the instructor.



**Resume power point
training program
after the CPR
training has been
completed.**



Oral Review

**Human Anatomy, Infectious
Diseases, Scene Size – up, Initial
Assessment &
CPR**



For first-aid purposes the body is divided into three parts, what are they called?



**The head, the trunk, and the
extremities.**



The flexible framework of the body that supports and carries the soft parts and protects the vital organs from injury and gives attachment to the muscles is called what?



The skeleton



What encloses and protects the spinal cord, is flexible, and is composed of vertebrae, held together by strong ligaments?



The spinal column



**What covers the body,
provides a sense of touch,
and has glands that assist in
getting rid of body heat and
certain impurities?**



The skin



What precautions should be taken by the first aid person to prevent the spread of infectious diseases?



Body Substance Isolation (BSI)



What is an infectious disease?



**One that can be passed
from person to person.**



**Infectious diseases can
be transmitted by way
of tiny organisms
called _____ or**

_____.



Germs or pathogens



**Germs or pathogens
can be found in what
body fluids?**



**Saliva, mucous, blood
and urine.**



What are the ways that the body fluids of an injured or ill person can spread disease?



By droplet infection through sneezing or coughing, through blood-to-blood contact, and by body fluid contact with another person's mucous membranes or open wounds.



**Name some of the most
common infectious
diseases?**



**Some of the most common
infectious diseases are:
Tuberculosis (TB), Hepatitis B,
HIV, and AIDS.**



TRUE or FALSE

Because you cannot determine whether or not an injured or ill person is carrying an infectious disease, the first aid person should assume that all persons are carrying infectious diseases and take body substance isolation (BSI) precautions.



TRUE



The first-aid person or responder should take universal precautions by donning protective equipment before or during _____, _____, but always before administering first aid.



scene size-up



What else should the first-aid person do after treating an injured person, to prevent the spread of disease, even if gloves have been worn?



To further prevent the spread of disease, you should wash your hands thoroughly after treating an injured person, even if gloves have been worn.



All equipment that has been exposed to body fluids should be _____ and _____ and all contaminated materials must be discarded.



**Washed and
disinfected**



Prior to administering first aid and emergency care the first-aid person or responder should first _____ the accident scene and determine if any hazards still exist.



size up



Name some environmental hazards that the first-aid person may be exposed to?



**Adverse roof conditions,
pinch-point areas, and other
unsafe areas.**



**Should the first aid person
render aid to an injured
person if the injured is
located in an area that would
be dangerous to the first aid
person?**



No



If the scene cannot be made safe, what should you do?



Call for help and stay in the clear until help arrives.



After the scene has been made safe or determined to be safe, what should the first aid person do?



The first aid person should try to determine the mechanism of injury (what caused the injury) or the nature of the illness.



What is the benefit in identifying the mechanism of injury?



Identifying the mechanism of injury will help determine the type of first aid treatment needed and whether or not the scene is safe.



After identifying the mechanism of injury during scene size-up, what else should the first aid person do?



Note the number of patients and if there are several patients, call for help immediately. Be sure to consider access and extrication - can you gain access to the patient(s).



Identifying the mechanism of injury during scene size-up, will also help the first aid person determine the need for _____ to prevent further injury to the spine.



Spinal Immobilization



What should be applied to the patient's neck when spinal injury is suspected?



A cervical collar



Sometimes it may be necessary to perform an “emergency move” on a patient to remove him from a dangerous area or location. When performing the emergency move, what effort must be made?



Every effort must be made to move the patient's head in line with the his torso to prevent spinal injury.



**What are some other reasons
for performing an
emergency move?**



Because of fire or danger of fire, an explosion or danger of explosion, or any other life-threatening hazards.



**What is the greatest danger
in performing an emergency
move?**



The possibility of causing further injury to the patient's spine.



However, realize that protecting a patient's spine won't matter if he dies from a potential fire, explosion, rock fall, or some other life-threatening hazard.



In an emergency, make every effort to protect the spine by pulling your patient in the direction of the long axis of his body.



Name three emergency moves that can be used at ground level?



Three emergency moves to use when patients are at ground level are the *shirt drag*, *blanket drag*, and *shoulder drag*.



**Describe how you would
correctly use the three
emergency moves.**



In the shirt drag, pull the patient's clothing in the neck and shoulder area. In the blanket drag, place the patient on a blanket and drag the blanket. For the shoulder drag, get behind the patient, put your hands under the armpits, and grasp the patient's forearms.



After determining that the scene is safe or after moving the patient to a safe place and there is no danger of exposure to environmental hazards while administering first aid, what is the next step that the first aid person should perform?



**The first aid person should
perform an initial
assessment.**



What is the purpose of performing an initial assessment?



The initial assessment is performed to determine whether any life-threatening problems exist to the injured or ill person.



Where should you begin an initial assessment?



The initial assessment begins at the scene where you quickly form an impression about the condition of the injured or ill person.



What is the first step or contact with the patient in the initial assessment?



The first step or contact with the patient in the initial assessment is to establish responsiveness.



How do you establish patient responsiveness?



Ask the injured or ill person if he is all right while lightly tapping his shoulder.



If there is no response from the patient, what is your next step?



Activate the emergency response system – call 911. If someone is with you, have them activate the emergency response system and get the AED (automatic external defibrillator)



If there is no response and you have activated the emergency response system, what do you do next?



**You must assess the patient's
airway and breathing.**



How do you assess the patient's airway and breathing?



By placing your face close to the injured/ill person's mouth and nose and determining if the patient is breathing. Watch the chest area for movement which would signify breathing.



**How long should you check
for breathing?**



Three to five seconds.



**What is the normal
breathing rate of an adult at
rest?**



The normal breathing rate of an adult at rest is 12 to 20 times per minute.



When an unresponsive injured/ill person is prone (face down), what must be done to assess breathing and provide basic life support?



The patient should be placed in a supine (face up) position quickly and carefully.



What method can be used to place the patient in a supine (face up) position?



One way is to perform a log roll. It protects the suspected spine-injured person from twisting motions that can cause injury.



How many persons are required to perform the log roll method?



**Two rescuers can do it, but
three or more are preferred.**



If an unconscious person is lying on his back, what may happen to the tongue or the epiglottis, preventing air from reaching the trachea (windpipe)?



When an unconscious person is lying on his back, the tongue may fall back into the throat and prevent the epiglottis from opening.



What should be done for an unconscious person whose breathing has stopped due to the tongue falling against the epiglottis?



The airway should be maintained (opened) by using the head-tilt/chin-lift method or by the jaw-thrust method if spinal injuries are suspected.



How should an airway be cleared if a spinal injury is suspected?



**The jaw-thrust maneuver
should be used.**



**After opening the breathing
airway, what's next?**



**Look, listen, and feel for
three to five seconds.**



You have looked, listened and felt for a breath for three to five seconds and the patient is not breathing. What is your next step?



Give two full slow breaths into the air passage, watching for the chest to rise after each breath. Breathe directly into the nose and/or mouth (through a mask, if one is available), with the air passage not being used sealed off tightly.



If unsuccessful, re-position the airway and try again. If still unsuccessful, perform the foreign body airway obstruction procedure.



After giving two breaths and seeing the chest expand with each breath, what do you do next?



**Check for a carotid pulse for
5 to 10 seconds.**



**You've properly checked
the patient and he does have
a pulse, what should you do
next?**



You should continue with rescue breathing at the rate of 10 to 12 breaths per minute (give one breath every five seconds). During this process, you should watch for the patient's breathing to be restored and continuously check the patient's pulse – always ready to begin CPR, if necessary.



If you have given two breaths and your patient has no pulse, what should you do next?



**You should administer
cardio pulmonary
resuscitation (CPR).**



**CPR is a combination of
what two skills?**



Chest compressions and artificial respiration (rescue breathing)



Where should the first-aid person's hand be located during chest compressions?



You should locate the lower margin of the ribs with your middle finger and run your finger up the rib margin until you reach the xyphoid process. Place the heel of one hand on the lower sternum about two finger-widths above the notch.



**Describe the proper method
and location for applying
chest compressions?**



Position yourself directly over the patient, with arms firm and straight, and depress the sternum using a straight downward thrust.



**How far should the sternum
be depressed for an adult
person?**



**The sternum should be
depressed 1 ¹/₂ to 2 inches**



**What should be the
compression rate?**



The compression rate should be at the rate of about 100 times per minute.



During CPR, how many chest compressions should be given?



**15 chest compressions
should be given at the rate of
about 100 times per minute,
followed by two slow rescue
breaths.**



After four cycles of 15 chest compressions and two breaths (about a minute or so) check again for signs of circulation and a pulse.



If there are none, continue compressions and ventilations and check for signs of circulation every few minutes.



What maneuver is recommended for relieving foreign body airway obstructions in a conscious person?



The Heimlich Maneuver



Initial assessment continued:



Control of Bleeding



After breathing and circulation has been restored, the first aid person should assess and control severe bleeding. A loss of blood can lead to shock and death in a very short time, so bleeding is a condition that must be assessed and controlled immediately.



Normally when bleeding occurs, the body works to control it. Blood vessels contract, and clots develop at the bleeding site. Eventually, bleeding stops. Serious injury can cause the body's bleeding control mechanisms to fail. Uncontrolled bleeding can lead to severe blood loss, shock, and death.



To manage life-threatening bleeding you've got to recognize it early and treat it aggressively. External bleeding is easy to see. Internal bleeding is not so easy. Recognizing it often depends on noticing signs and symptoms, like changes in skin condition, mental status, and pulse rate and quality.



Remember: patients with life-threatening bleeding can be a threat to your life, too. Keep in mind that blood and body fluids can transmit infectious diseases. Always take all appropriate BSI precautions before approaching the patient!



The first aid person should visually sweep the body for severe external bleeding and physically check the voids of the body where bleeding cannot be visually checked. The voids are located under the ankles, knees, lower back, and neck.



External bleeding may be caused by injury to an artery, vein, or capillary. Each type of bleeding may be recognized by it's own characteristics.



In *arterial bleeding*, bright, oxygen-rich red blood spurts from a wound because it's under high pressure. This makes it most difficult to manage. As blood pressure drops, spurting may become less.



In *venous bleeding*, dark, oxygen-poor blood flows from a wound in a steady stream. It's under much less pressure, so it's easier to manage. Venous bleeding is more common than arterial bleeding, because veins generally are closer to the surface of the skin.



In *capillary bleeding* dark red blood tends to ooze from a wound because it's under very low pressure. This type of bleeding tends to be easy to control and, in fact, tends to clot spontaneously.



Bleeding should be controlled by using direct pressure, elevation, and/or pressure points when needed.



A pressure point is a point where an artery comes close to the surface of the skin. It is adjacent to a bony structure, which permits pressure to be applied upon the artery against the bone.



Digital pressure is that exerted by the finger or thumb against an artery at a pressure point.



Apply direct pressure. Use the flat part of your fingertips to apply direct pressure to the point of bleeding. If the wound is large and gaping and fingertip pressure isn't controlling bleeding, you may need to use sterile gauze and direct hand pressure.



Elevate the extremity. However, do so only if there's no major injury to the underlying muscle or bone. Continue to apply direct pressure at the same time.



Reassess the wound if bleeding doesn't stop. If the dressing is soaked, apply additional dressings. If there's more than one bleeding site, apply additional pressure as needed.



Use pressure points for bleeding in the upper and lower extremities. If bleeding in the extremities doesn't stop with direct pressure and elevation, use a pressure point. For the arm, compress the brachial artery.



For the leg, compress the femoral artery. Use the flat part of your fingers or the palm of your hand. Do this while you maintain direct pressure and elevation of the wound site.



The key process to effective management of external bleeding is: *Assess* the wound and bleeding point. *Intervene* by using direct pressure, elevation, and pressure points. *Reassess* the bleeding to determine if your bleeding control methods are effective.



If you are unable to control bleeding by applying direct pressure, elevating the injury, and use of pressure points, you should apply a tourniquet.



A tourniquet is a device that constricts all blood flow to and from an extremity.



*Applying a
tourniquet is a last
resort.*



Apply a tourniquet only when all other methods to control bleeding have failed.



The use of a tourniquet is a “life or limb” situation. The use of the tourniquet will stop the life-threatening bleeding, but it often results in the loss of the limb the tourniquet is applied to.



But keep in mind, it is better for the injured to lose a limb(s), than to lose a life.



Tourniquets are used only for wounds of the extremities. Do not apply a tourniquet directly over the knee or elbow.



The tourniquet should be made of a wide material, preferably 2 to 3 inches in width. There are commercially made tourniquets, or a makeshift device may be made from a cravat, a wide belt, or other wide, soft material. A pencil, stick, rod, or other similar object, can be used to tighten the bandage and cut off blood flow.



Among the items that should never be used as a tourniquet are ropes, wires, and other narrow items that may cut into the patient's skin.

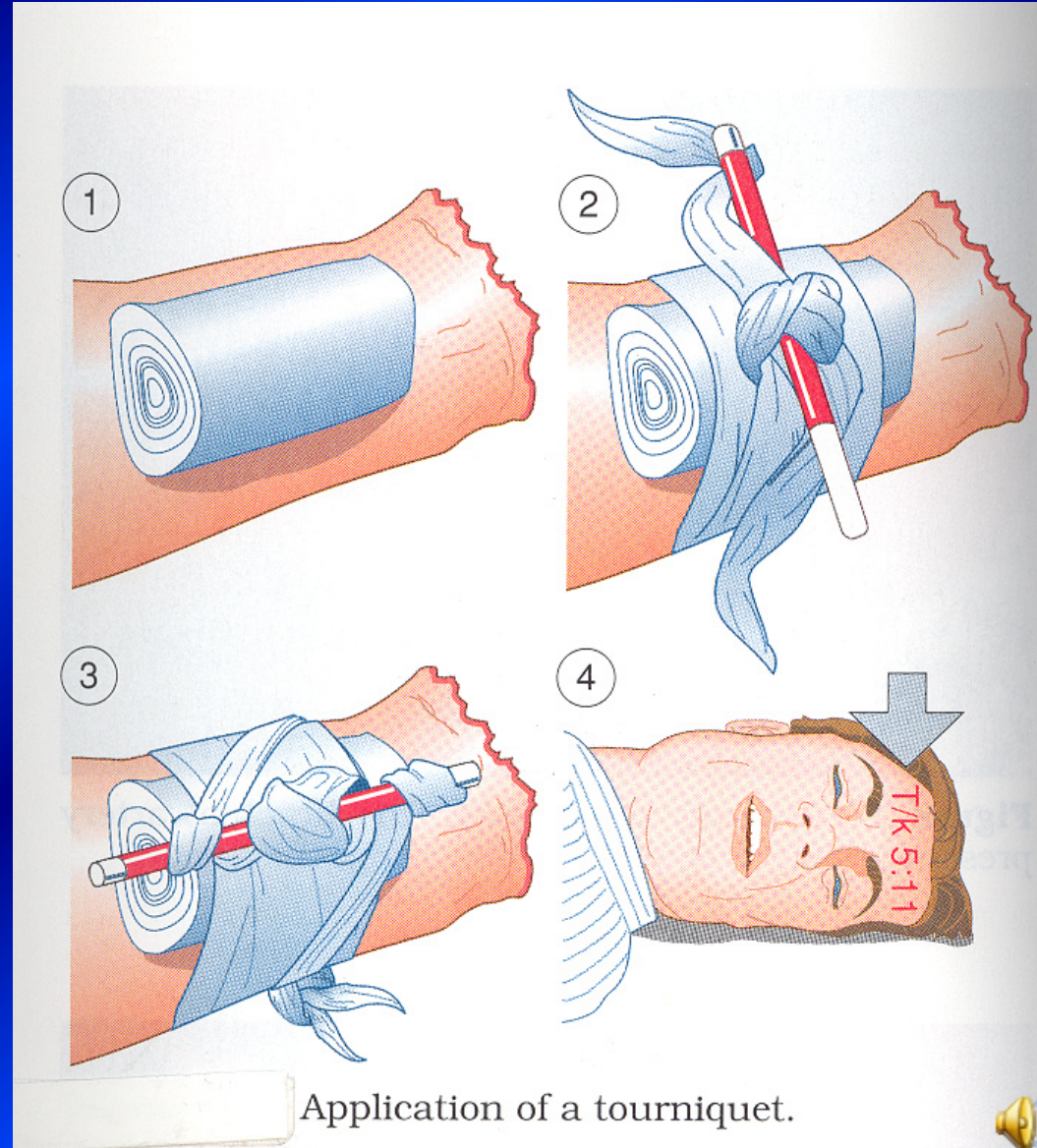


**The following slide
shows how a
tourniquet should be
applied.**



Tourniquet

1. Select a place between the heart and the wound, close to the edge, but not on a joint.
2. Place a pad, made from a dressing (roll of gauze) or a folded handkerchief over main supplying artery, before applying constricting band.
3. Place tourniquet around the limb at site and tighten tourniquet to where bleeding is controlled.
4. Attach a notation to the patient to indicate that a tourniquet has been applied and time of application



While you are applying a tourniquet, you may have another rescuer apply direct pressure and pressure point techniques. This may slow the bleeding and reduce blood loss until the tourniquet is in place.



Once a tourniquet is in place, it should not be removed or loosened. Loosening of the tourniquet may dislodge clots and cause bleeding to resume. Keeping the tourniquet in place will give the patient a better chance of survival, even if it means the loss of a limb.



Remember: The tourniquet is only to be used as a last resort. The device itself should be made of a wide material that will not cut into a patient's skin. The devices are only to be used on extremities but not directly over a joint. Once a tourniquet has been applied, it should not be loosened or removed in the field.



Internal bleeding is not easy to see.
Recognizing it often depends on noticing signs and symptoms, like changes in skin condition, mental status, and pulse rate and quality.



When the internal organs of the body are injured or damaged, internal bleeding may occur. Painful, swollen, deformed extremities also may lead to serious internal blood loss. Whatever the cause, internal bleeding is often hidden.



The signs and symptoms of internal bleeding are: discolored, tender, swollen, or hard tissues, faintness, cold skin, pale face, dilated pupils, thirst, feeble and irregular breathing, sighing, clouded vision, weak and rapid pulse, dizziness, mental status changes, and loss of consciousness.



The treatment for internal bleeding: have the patient recline with head lower than the body, except for fractured skull or apoplexy (stroke), in which case the head should be raised. Cover the patient with a blanket to prevent the loss of body heat.



Comfort, calm and reassure the patient while waiting for transport. Maintain the patient's airway and breathing and provide oxygen if trained and equipped to do so. Do not give food or drink.



Control of Shock



Many of the signs and symptoms of shock are the body's attempt to compensate for problems with the heart, blood supply, or blood vessels. For example, when a patient's tissues don't receive enough oxygen due to blood loss, the body responds by increasing respiration and pulse rate.



The body also shunts blood from the patient's extremities and skin to where it's needed most: the brain, heart, liver, kidneys, and other vital organs. Because the brain is very sensitive to any decrease in its oxygen supply, too little oxygen can cause a person's mental status to range from slightly confused to completely unresponsive. Most patients become unresponsive after losing 35% to 40% of their blood supply.



Physical shock is defined as a state of collapse or prostration in which the normal action of the heart, respiration, and circulation are interfered with.



Physical shock can be caused by severe or extensive injuries, severe pain, loss of blood, surgical operations, severe burns, accidents due to electricity or gas, certain illnesses, poisons taken internally, exposure to extremes of heat or cold, seeing own injuries or injuries of others, fright, anger, and joy.



Physical shock may develop rapidly or may be delayed and manifest itself hours later.



Physical shock occurs to some degree after every injury. It may be so slight as not to be noticed.



In many injuries, physical shock is an extremely serious condition and patients may die from its effects where the injuries received ordinarily would not prove fatal.



Physical shock should be treated immediately after the first evidence of its presence and after bleeding is controlled.



The predominant symptoms of physical shock are: a pale face, anxious or dull expression, or skin covered with cold clammy perspiration.



Other symptoms of physical shock are drooping eyelids, large pupils of the eyes, a weak and rapid pulse if it can be felt, shallow and irregular breathing, extreme thirst, restlessness, anxiety, mental status changes, sickness, and vomiting.



The head of the patient suffering from shock should be lowered. However, when the patient has a head injury or has severe bleeding, their head should be raised.



Fainting is a temporary loss of consciousness due to an insufficient supply of blood to the brain – it is a mild form of physical shock.



The treatment for physical shock is:

1. Place patient in a comfortable (lying down) position, with head and body level; if the patient is on a stretcher or body splint, elevate the feet end of the stretcher or body splint about 8 to 12 inches. However, if the patient has a head injury or is severely bleeding, the patient's head should be raised.



Treatment for physical shock continued :

- 2. Remove all foreign bodies from the mouth and maintain the patient's airway and breathing.**
- 3. Loosen tight clothing from the waist and neck.**
- 4. If nausea and vomiting are present, turn patient's head to one side so that the vomited matter will flow from the mouth.**



Treatment for physical shock continued :

5. Permit patient to have plenty of fresh air.
6. Wrap the patient in blankets or other suitable covering. Care should be taken that the material placed around patient does not contaminate open wounds.
7. Oxygen should be administered if rescuer is trained to do so. Do not give food or drink.
8. Comfort, calm, and reassure patient while waiting for transport.



Oral Review

Questions and Answers

Control of Bleeding & Shock



After breathing and circulation has been restored, the first aid person should assess and control severe _____.



Answer : bleeding



True or False

A loss of blood can lead to shock and death in a very short time, so bleeding is a condition that must be assessed and controlled immediately.



True



Can patients with life-threatening bleeding be a threat to your life, too?



Yes, because blood and body fluids can transmit infectious diseases. Always take all appropriate BSI precautions before approaching the patient!



True or False

Serious injury can cause the body's bleeding control mechanisms to fail. Uncontrolled bleeding can lead to severe blood loss, shock, and death.



True



If you are unable to control bleeding by applying direct pressure, elevating the injury, and use of pressure points, what should be applied?



A tourniquet



**What is a
tourniquet?**



A tourniquet is a device that constricts all blood flow to and from an extremity.



**What are
tourniquets
used for?**



Tourniquets are used only for wounds of the extremities. But you must not apply a tourniquet directly over the knee or elbow. It must be applied just above the edge of the wound, toward the heart.



While applying a tourniquet, should another rescuer be applying direct pressure and pressure point techniques?



Yes, this may slow the bleeding and reduce blood loss until the tourniquet is being applied.



**What
materials
can be used
for making a
tourniquet?**



The tourniquet should be made of a wide material, preferably 2 to 3 inches in width. There are commercially made tourniquets, or a makeshift device may be made from a cravat, a wide belt, or other wide, soft material. A pencil, stick, rod, or other similar object, can be used to tighten the bandage and cut off blood flow.



**What materials
should never be
used for making a
tourniquet?**



**Ropes, wires, and
other narrow items
that may cut into the
patient's skin.**



**Is there a danger in
using a tourniquet?**



Yes, the use of a tourniquet is a ‘life or limb’ situation. The use of the tourniquet will stop the life-threatening bleeding, but it often results in the loss of the limb the tourniquet is applied to.



But keep in mind, it is better for the injured to lose a limb(s), than to lose a life.



Once applied, should a tourniquet ever be loosened by the rescuer in the field?



Once a tourniquet is in place, it should not be removed or loosened. Loosening of the tourniquet may dislodge clots and cause bleeding to resume. Keeping the tourniquet in place will give the patient a better chance of survival, even if it means the loss of a limb.



**When should a
tourniquet be
applied?**



**As a last resort –
when the injured
may die if bleeding is
not controlled?**



**External bleeding is easy to see.
Internal bleeding is not so easy.
Recognizing it often depends on
noticing signs and symptoms.**

**Name some signs and symptoms
that may result from internal
bleeding?**



The signs and symptoms of internal bleeding are: discolored, tender, swollen, or hard tissues; faintness, cold skin, pale face, dilated pupils, thirst, feeble and irregular breathing; sighing, clouded vision, weak and rapid pulse, dizziness, mental status changes, and loss of consciousness.



What can cause internal bleeding?



When the internal organs of the body are injured or damaged, internal bleeding may occur. Painful, swollen, deformed extremities also may lead to serious internal blood loss. Whatever the cause, internal bleeding often is hidden.



What is the treatment for internal bleeding?



The treatment for internal bleeding: have the patient recline with head lower than the body, except for fractured skull or apoplexy (stroke), in which case the head should be raised. Cover the patient with a blanket to prevent the loss of body heat.



Comfort, calm and reassure the patient while waiting for transport. Maintain the patient's airway and breathing and provide oxygen if trained and equipped to do so. Do not give food or drink.



External bleeding may be caused by injury to an artery, vein, or capillary. Each type of bleeding may be recognized by it's own characteristics.



In _____ bleeding, bright, oxygen-rich red blood spurts from a wound because it's under high pressure.



arterial



In _____ bleeding, dark, oxygen-poor blood flows from a wound in a steady stream. It's under much less pressure, so it's easier to manage.



venous



In _____ bleeding dark red blood tends to ooze from a wound because it's under very low pressure. This type of bleeding tends to be easy to control and, in fact, tends to clot spontaneously.



capillary



True or False

Venous bleeding is more common than arterial bleeding, because veins generally are closer to the surface of the skin.



True



**What are the methods used
for controlling bleeding?**



Direct pressure

Elevating the injury

Using digital pressure points

**Applying a tourniquet (as a
last resort only)**



What is a pressure point?



It is a point where an artery comes close to the surface of the skin. It is adjacent to a bony structure, which permits pressure to be applied upon the artery against the bone.



**How is digital pressure
applied?**



By pressing the finger or thumb against an artery at a pressure point.



How does one apply direct pressure?



Use the flat part of your fingertips to apply direct pressure to the point of bleeding. If the wound is large and gaping and fingertip pressure isn't controlling bleeding, you may need to use a sterile gauze and use direct hand pressure.



When should you elevate the injury?



When there is no major injury to the underlying muscle or bone. You should continue to apply direct pressure at the same time.



After applying direct pressure, digital pressure and/or elevating the injury, what should you always do?



***Reassess the wound!* If bleeding hasn't stopped and the dressing is soaked, apply additional dressings. If there's more than one bleeding site, apply additional pressure as needed.**



If bleeding in the extremities doesn't stop with direct pressure and elevation, use a pressure point. For the arm, compress the _____ artery.



brachial



**For the leg, compress the _____
artery. Use the flat part of your
fingers or the palm of your hand.
Do this while you maintain direct
pressure and elevation of the
wound site.**



femoral



The key process to effective management of external bleeding is: *Assess* the wound and bleeding point. *Intervene* by using direct pressure, elevation, pressure points, and as a last resort – apply a tourniquet. *Reassess* the bleeding to determine if your bleeding control methods are effective.



Are some of the signs and symptoms of shock in a patient actually the body's attempt to compensate for problems with the heart, blood supply, or blood vessels?



Yes, for example, when a patient's tissues don't receive enough oxygen due to blood loss, the body responds by increasing respiration and pulse rate.



The body also shunts blood from the patient's extremities and skin to where it's needed most: the brain, heart, liver, kidneys, and other vital organs.



Because the brain is very sensitive to any decrease in its oxygen supply, too little oxygen can cause a person's mental status to range from slightly confused to completely unresponsive. Most patients become unresponsive after losing 35% to 40% of their blood supply.



Whenever the normal action of the heart, respiration, and circulation are interfered with - the body suffers from a condition called _____.



physical shock



True or False

Physical shock may develop rapidly or may be delayed and manifest itself hours later.



True



**Name some conditions that can
cause physical shock?**



Physical shock can be caused by severe or extensive injuries, severe pain, loss of blood, surgical operations, severe burns, and accidents due to electricity or gas.



Physical shock can also be caused by certain illnesses, poisons taken internally, exposure to extremes of heat or cold, seeing own injuries or injuries of others, fright, anger, and joy.



How long does it take for physical shock to develop?



Physical shock may develop rapidly or may be delayed and manifest itself hours later.



Does physical shock occur to some degree after every injury?



Yes, physical shock occurs to some degree after every injury. It may be so slight as not to be noticed.



Is it possible for patients to die from physical shock caused by an injury that in itself would not prove to be fatal?



Yes, in many injuries, physical shock is an extremely serious condition and patients may die from its effects where the injuries received ordinarily would not prove fatal.



When should a patient suffering from physical shock be treated?



Physical shock should be treated immediately after the first evidence of its presence and after bleeding is controlled.



What are the predominant symptoms of shock?



The predominant symptoms of physical shock are: a pale face, anxious or dull expression, or skin covered with cold clammy perspiration.



What are some other symptoms of shock?



Other symptoms of physical shock are drooping eyelids, large pupils of the eyes, a weak and rapid pulse if it can be felt, shallow and irregular breathing, extreme thirst, restlessness, anxiety, mental status changes, sickness, and vomiting.



What is a mild form of shock called in which the patient has a temporary loss of consciousness due to an insufficient supply of blood to the brain?



Fainting



What is the treatment for physical shock?



The treatment for physical shock is:

- 1. Place patient in a comfortable (lying down) position, with head and body level; if the patient is on a stretcher or body splint, elevate the feet end of the stretcher or body splint about 8 to 12 inches. However, if the patient has a head injury or is severely bleeding, the patient's head should be raised.**



Treatment for physical shock continued :

- 2. Remove all foreign bodies from the mouth and maintain the patient's airway and breathing.**
- 3. Loosen tight clothing from the waist and neck.**
- 4. If nausea and vomiting are present, turn patient's head to one side so that the vomited matter will flow from the mouth.**



Treatment for physical shock continued :

5. Permit patient to have plenty of fresh air.
6. Wrap the patient in blankets or other suitable covering. Care should be taken that the material placed around patient does not contaminate open wounds.
7. Oxygen should be administered if rescuer is trained to do so. Do not give food or drink.
8. Comfort, calm, and reassure patient while waiting for transport.



End of Part 1 of Unit 8