

MODULE 7

First aid and its practice

1. OBJECTIVES

- ◆ Become acquainted with first aid techniques
- ◆ Be able to provide emergency care in the workplace
- ◆ Know how to decide to refer cases to a hospital or a specialized health centre
- ◆ Know how to perform and practise health education
- ◆ Learn how to keep records and write reports.

2. IMPORTANCE OF FIRST AID

First aid is the immediate care given to victims of accidents before trained medical workers arrive. Its goal is to stop and, if possible, reverse harm. It involves rapid and simple measures such as clearing the air passageway, applying pressure to bleeding wounds or dousing chemical burns to eyes or skin. The critical factors which shape first aid facilities in a workplace are work-specific risk and availability of definitive medical care, e.g. the care of a high-powered saw injury is obviously radically different from that of a chemical inhalation.

First aid is a fluid concept not only in what must be done (how long, how complex) but in who can do it. Although a very careful attitude is required, every worker can be trained in the top 10 crucial steps of first aid. In some situations immediate action can save life, limb or eyesight. Co-workers of victims should not remain paralysed while waiting for trained personnel to arrive. The top 10 crucial steps will vary with each workplace and must be taught accordingly.

First aid personnel are persons on the spot, generally workers who are familiar with the specific conditions of work. They might not be medically qualified but they must be trained and prepared to perform very specific tasks. First aid personnel should be selected carefully, taking into account attributes such as reliability, motivation and the ability to cope with people in a crisis situation.

3. INJURIES

3.1 Definitions

Injury: a physical damage to body tissues caused by an accident or by exposure to environmental stressors.

Wound: a break in the continuity of body tissue or opening in the skin. A wound may be an injury but not all injuries are wounds.

3.2 Head injuries

Crucial steps

1. Maintain an airway.
2. Control bleeding.
3. Protect against infection.
4. Prevent further injury.

Then:

- ◆ In cases of shock, look for other injuries which may be causing blood loss.
- ◆ In case of closed brain injuries, look for symptoms such as unusual behaviour, loss of memory, drowsiness, excitability or delirium.
- ◆ Be aware that bruising to the brain may cause convulsion, drowsiness or loss of consciousness.
- ◆ Be aware that bleeding from the ears, nose and throat is a result of a fracture at the base of the skull.
- ◆ Do not attempt to remove foreign objects embedded in the head as this may cause uncontrollable bleeding.
- ◆ Apply head dressings in such a manner that they will not slip off during transportation to hospital.
- ◆ Place the patient on his/her side to allow proper drainage.
- ◆ In cases of respiratory centre damage, apply mouth-to-mouth resuscitation to ensure an adequate supply of oxygen.

3.3 Facial injuries

Crucial steps

1. Check for obstructed airway as facial injuries may cause external bleeding resulting in blockage of airway. The bleeding from the oral cavity can be particularly heavy.
2. Control bleeding by realigning the jaw, i.e. by grasping the chin and pulling it straight out.
3. Maintain the airway by turning the victim on his/her side.

3.4 Chest injuries

Crucial steps

1. Seal the chest wound from the outside as quickly as possible.
2. Never extract foreign objects from the chest wound.

3. Maintain airway.
4. Administer oxygen.
5. Apply mouth-to-mouth resuscitation and external heart massage if necessary.
6. Transport the patient in a sitting position unless he/she is in shock.

3.5 Abdominal injuries

Crucial steps

1. Cover the wound with a sterile dressing; apply a compression binder to control haemorrhaging.
2. Look for any penetrating wounds and other symptoms such as vomiting, abdominal pain and tenderness.
3. Never attempt to replace protruding organs, cover them with sterile gauze and keep the cloth moist.
4. Place the patient in a semi-sitting position unless he/she is in shock.
5. Keep the patient warm with blankets.
6. Never give the patient anything to drink or eat.

3.6 Eye injuries

- ◆ Do not interfere with eye injuries except in minor cases. Refer the victim to hospital immediately.
- ◆ Symptoms of serious eye injury are:
 - blurred vision that does not clear with blinking
 - loss of all or part of the visual field of an eye
 - sharp stabbing or deep throbbing pain
 - double vision.
- ◆ Signs of eye injury that require ophthalmological evaluation are:
 - black eye
 - red eye
 - an object on the cornea
 - one eye that does not move as completely as the other
 - one eye protruding more than the other
 - one eye with an abnormal pupil size, shape or reaction to light
 - a layer of blood between the cornea and the iris (hyphaema)
 - laceration of the eyelid, especially if it involves the lid margin
 - laceration or perforation of the eye.

Crucial steps

1. Any chemical splashed into the eye(s) must be considered a vision-threatening emergency. Forcibly keep the patient's eyelids open while irrigating with water

for at least five minutes, then refer the patient to an ophthalmologist. Inform the ophthalmologist of the nature of the chemical contaminant.

2. Patch the injured eye lightly with a dry, sterile eye pad. If laceration of the eye is suspected, add a protective shield over the sterile eye pad. Instruct the patient not to squeeze the eye tightly shut because it greatly elevates the intraocular pressure. Calmly transport the patient to the ophthalmologist.
3. Conjunctivitis, with normal vision and a clear cornea, may be treated with an antibiotic eye ointment for several days. If there is no improvement, referral to the ophthalmologist is indicated.
4. Never put eye ointment in an eye about to be seen by the ophthalmologist. The ointment makes clear visualizations of the retina very difficult.
5. Never give a patient a topical anaesthetic to relieve pain, such as from a flash burn. The prolonged use of topical anaesthetic can result in blindness from corneal breakdown.
6. Never treat a patient with a topical steroid unless directed by the ophthalmologist. Topical steroids can make several conditions much worse, such as herpes simplex, keratitis, fungal infections and some bacterial infections.
7. If in doubt as to how severe an ocular symptom sign is, always err on the side of caution and refer the employee to an ophthalmologist for diagnosis and treatment.

4. FRACTURES

4.1 Definitions

Fracture: any break in a bone.

Simple fracture (closed fracture): the skin covers the fracture.

Compound fracture (open fracture): the skin is broken and the bone has direct contact with the open air.

It is essential to remember the following:

1. Do not harm. Unwise attempts by the patient to continue to use a fractured extremity may cause laceration of the soft tissues and may lead to the broken bone penetrating the skin or to the onset of shock.
2. Protect and immobilize. Apply a splint to the fracture so the victim can be moved more comfortably and without causing any further injuries.

4.2 Fractures of the extremities

Crucial steps

1. Place the injured limb in as natural a position as possible before padding and splinting.

2. If the broken bone is not protruding above the skin, apply traction to overcome the muscle and to straighten the limb with minimum pain. If the broken bone is protruding above the skin, do not apply traction to avoid contaminating deep tissues.
3. To control bleeding, apply gentle pressure by covering the wound with a sterile dressing and wrapping with an elastic bandage.
4. Never attempt to set an open fracture. Apply the proper splint before moving the patient.

4.3 Fracture of the spine and pelvis

A spinal fracture may occur in the neck and upper or lower spine and may affect the spinal cord. Symptoms of fracture to the spine include severe back pain and numbness and tingling in the arms and legs. Pelvic fractures are common but hard to spot. They are usually associated with other injuries which may be severe and cause shock. A fractured pelvic bone may pierce the bladder and may cause intestinal obstruction.

Crucial steps

Unless you have been trained in the correct way to move a suspected spinal fracture, do not attempt to move the victim unless leaving him would expose him to further danger.

1. Ensure that the victim has an adequate airway.
2. Transport a patient with a (suspected) broken neck on his/her back on a rigid support.
3. The patient must be moved as a unit by 3-5 men, one of whom must firmly hold the patient's head.
4. To prevent unnecessary movement, place blanket rolls or pillows along the side of the patient.
5. Place a patient with a (suspected) fractured pelvis gently on his/her back on a firm stretcher.
6. Immobilize the pelvic region by bandaging the knee and ankle together firmly with padding placed between the knees for comfort.
7. Wrap a broad bandage or folded blanket around the patient's hips from just above the hip bone to approximately 5 cm down on the thighs.
8. Prevent shock.

5. THERMAL INJURIES

5.1 Burns

- ◆ There are three main types of burn: thermal, electrical and chemical.

- ◆ Estimate the seriousness of the burns by using the Rule of Nine: the head and neck comprise 9% of the skin area; the chest, 18%; the back, 18%; each arm, 9%; and each leg 18% (for the sake of completeness the genitals/perineum comprise 1%).
- ◆ First degree burns are superficial with reddening of the skin.
- ◆ Second degree burns extend deeply into the skin with redness.
- ◆ Third degree burns involve the entire thickness of the skin.

Crucial steps

1. Prevent shock.
2. Do not attempt to remove patient's clothes except in case of a chemical burn.
3. Wrap the patient in a clean sheet to prevent infection.
4. Maintain body temperature.
5. Neutralize the chemical agent if a neutralizer is available.
6. Determine what chemical agents have been the cause of the burns before transferring the patient to hospital.

5.2 Cold

Long exposure to extreme cold results in hypothermia and coma. The initial symptoms of frostbite are tingling, numbness, pain, violated red skin followed by a constant burning and itching sensation and then loss of all sensation in the affected area. Prolonged exposure to extreme cold results in the onset of hypothermia and ultimately, the victim will lapse into a coma.

Crucial steps

1. Immerse the affected part in water heated to between 40 °C and 42 °C.
2. Do not attempt to thaw the affected area.
3. Do not place the victim close to fire.
4. Do not massage the affected area.

5.3 Heat stroke

Factors contributing to heat stroke are: workload, thermal environment, stress, non-acclimatization, poor work conditions, overweight, unsuitable clothing, poor ventilation, dehydration or shortage of water, alcohol consumption, history of cardiovascular diseases or recent prickly heat.

Crucial steps

1. Confirm suspected cases of heat stroke by measuring the body temperature. A person with a temperature between 40 °C and 43 °C would be considered a victim of heat stroke.

2. Sponge with cool water, wrap in cool sheets or towels or blow cool air over patient.

6. POISONING

Crucial steps

1. Induce vomiting as quickly as possible by administering a tablespoon of ipecac syrup except in instances of ingestion of acids, alkalis and petroleum products. Administer water, milk or universal antidotes; water should be used if there is nothing else available. Do not give fluid to an unconscious person.
2. In instances of ingestion of acids, alkalis, petroleum products and other caustics: attempt to identify the specific product, the concentration of the active ingredients and the estimated volume ingested. The product container or labels may be available. A diluent may be beneficial if given within 30 minutes of a solid or granular alkaline ingestion. Water or milk may be administered, dosages of 250 ml in adults and 15 ml/kg in children. **Induced emesis and attempts at neutralizing the substance by using a weak acid or alkali are absolutely contraindicated.**
3. Administer mouth-to-mouth or mechanical resuscitation if there is difficulty in breathing.
4. If poison is in contact with the skin, remove all contaminated clothing and flood the affected area with water.
5. If poison is in contact with the eyes, irrigate both eyes with large quantities of water.
6. Identify the poisoning material or collect all vomited material in a container and transport it to the hospital with the patient for laboratory analysis.

7. HAEMORRHAGE

Haemorrhage may be arterial, venous or capillary.

Crucial steps

1. Apply pressure with fingertips to the pressure points and a bandage as necessary.
2. Apply tourniquet **only** when other methods fail and in the case of a life-threatening haemorrhage.
3. A tourniquet should consist of a flat band at least one inch wide such as a tie, handkerchief, towel, scarf or belt. Never use rope or wire. It should only be applied in two places depending on the site of the injury:
 - the arm, a hand's width below the elbow; or
 - the leg, a hand's width below the groin.

8. SHOCK

Shock means there is not enough blood circulating through the body. Symptoms of shock include: pale, cold and moist skin, shallow breathing, bluish fingernails and lips, thirst and restlessness.

Crucial steps

1. Treat shock by removing the cause: stop the bleeding, relieve the pain, splint the fracture.
2. Prevent infection and maintain body heat.
3. Lay the patient flat.
4. Burn victims suffering from shock should be given liquids in small amounts.

9. IMPAIRED BREATHING

Mouth-to-mouth resuscitation

1. Clear the mouth and the throat of any dentures, mucus, food, blood or other obstructions.
2. Tilt the head back as far as possible and stretch the neck.
3. Lift the lower jaw forward.
4. Pinch the nose.
5. Open your mouth wide sealing your lips over those of the victim, take deep breath and blow forcefully until you see the victim's chest rise.
6. Remove your mouth when you see the victim's chest rise; listen for exhalation.
7. Continue the same procedure 12-20 times per minute.

10. TASKS FOR TRAINEES

1. Familiarize yourself with the theory of first aid.
2. Practise first aid procedures with the workers.
3. Know how to perform first aid techniques and artificial respiration.
4. Know how to decide to refer cases to the hospitals or emergency health centres when required.
5. Keep health records of individual workers.