C.3 BLEEDING

Blood circulates in blood vessels (arteries, veins, and capillaries). When a blood vessel is damaged, several mechanisms are activated to control blood loss: the vessel constricts, and a series of chemical reactions occur to form a blood clot as a "plug" over the damaged area. If blood vessels are torn or severed, uncontrolled blood loss may occur before clotting can take place, and *shock* may develop.

C.3.1 TYPES OF BLEEDING

A bleeding can be classified by the type of the blood vessel that has been damaged:

- Arterial bleeding.

Arteries carry bright red oxygen rich blood under pressure from the heart. If an artery is damaged, the bleeding may be profuse. The blood will spurt out of it in time with the heartbeat. If a main artery is severed, the blood may jet several feet high. In this case, the volume of the circulating blood will fall rapidly.

- Venous bleeding.

The blood in the veins, having given up its oxygen into the tissues, is dark red. The blood flows under less pressure than arterial blood, but the vein walls can widen greatly and the blood can 'pool' inside them. If a major vein is damaged, the blood may gush from it profusely.

- Capillary bleeding.

Bleeding from the capillaries occurs with any wound. At first the bleeding may be brisk, but blood loss is usually slight. A blow may rupture capillaries under the skin, causing bleeding into the tissues (bruising).

A bleeding can also be classified by its location:

- External bleeding.

  If the bleeding is from the surface of the body, it is called an external bleeding.

- Internal bleeding.

  If the bleeding is within the skull, chest and abdomen or inside the body, it is called an internal bleeding. These bleedings might not been noticed immediately. At a later stage, blood might ooze out of the nose or ears (bleeding inside the head), be coughed up (bleeding inside the lungs), vomited or defecated (bleeding inside the digestive tract) or urinated out (bleeding inside the urinary tract).

C.4 FIRST AID FOR BLEEDING (IN GENERAL)

C.4.1 WHAT DO I SEE AND ENQUIRE?

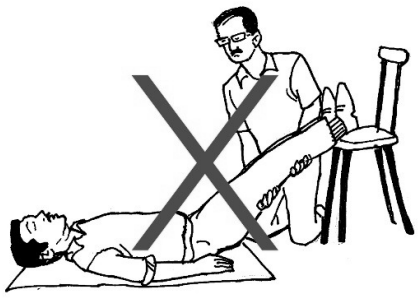
A person who has an injury which is bleeding severely is in a life-threatening situation and needs immediate help. Therefore, stopping the bleeding is a core first aid activity. In addition, bleeding in the face or neck may impede the air flow to the lungs.

There might be an open wound that is bleeding.

- The bleeding might be profuse.
- There might be an object stuck in the wound. Even if you cannot see an object, there might be something stuck in the wound if:
  - the injured feels pain in a specific area;
  - the injured person reveals a painful lump;
  - the injured person feels there is something stuck in the wound;
  - there is a discoloured area where the pain is.

Suspect bleeding inside the body if the injured person:

- is losing blood from body cavities (nose, ear(s), mouth, sex organs, anus);
- is breathing rapidly;
- has a cold and clammy skin that is pale or turns blue;
- has a rapid heartbeat (pulse);
- is behaving in an irritated or unusual way;
- has pain or complains about tenderness; sometimes there is also swelling in the abdomen or chest at the place of the suspected internal bleeding;
- becomes sleepy or falls unconscious.



Do not raise an injured person's legs if you suspect an injury to the legs or moving the legs is painful. The effect of raising the leg is only limited and moving the legs might cause harm.

C.4.2 WHAT DO I DO?

C.4.2.1 SAFETY FIRST AND CALL FOR HELP

1. Make sure there is no danger to you and the person.
2. The person urgently needs help. Shout or call for help if you are alone but do not leave the person unattended. Ask a bystander to seek help or to arrange urgent transport to the nearest healthcare facility. Tell him to come back to you to confirm if help has been secured.

C.4.2.2 HYGIENE

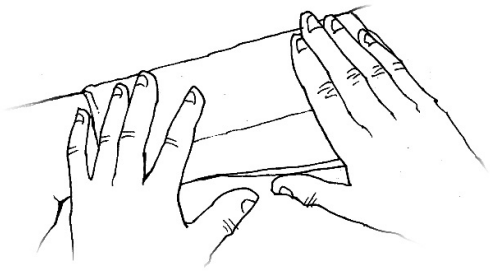
3. Wash your hands before and after taking care of the patient. Use soap and water to wash your hands. If no soap is available, you can use ash to wash your hands. Alcohol-based sanitizers can also be used, if available.
4. Put on gloves if available. You can also use a clean plastic bag. Try not to come in contact with the person's blood.

C.4.2.3 STOP THE BLEEDING

5. Ask the injured to sit or lie down or put him in comfortable position.
6. Comfort the person and explain what is happening to him. Tell the person to relax and rest. He should not try to exert.

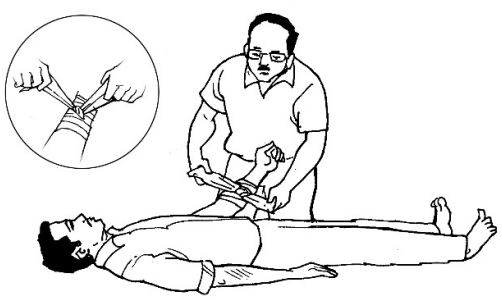
7. Try to stop or slow down the bleeding; press with both hands on the wound with a clean cloth or bandage.

Alternatively, if possible, ask the injured to press on the bleeding wound himself to stop the bleeding.



8. If you have a piece of clean (cotton) cloth, then cover the wound with it.

   If you have no bandages, improvise with other materials.



9. You can also wrap a bandage around the wound to slow down the bleeding, but continue to apply pressure until the bleeding stops.

   Make sure the bandage is firm enough so it stops the bleeding but doesn't cut off all the blood flow.

   If the part of the body below the bandage changes colour or is swelling or the injured person says he is losing any feeling there, loosen the bandage a little but do not remove it. If the blood flow to a limb is stopped an injured person can lose his limb.

10. Do not apply a tourniquet or fix a bandage above the wound, except in special situations (as specified below)!

Only apply a tourniquet:

- if the bleeding of an external limb cannot be stopped by putting direct pressure on the wound, or
- if there are many casualties you have to give help to, and
- the first aider has been well trained on how to apply a tourniquet.

If a tourniquet is applied on a bleeding limb:

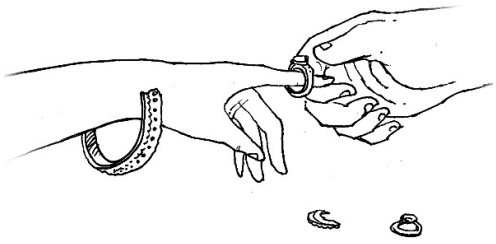
a. apply it above the wound,

b. note down the time when the tourniquet is applied,

c. maximally have a tourniquet applied for 2 hours,

d. transfer the casualty as quickly as possible to a healthcare facility for further treatment.

11. If the bandage becomes soaked in blood, do not remove it, but add another bandage on top of it and continue to apply pressure.



12. Take off jewels or anything else in the area of the wound that may cut off blood flow because of swelling. Keep the jewels and belongings with the owner or in a safe place.

13. Keep the injured person warm by taking off wet clothing, covering him with a blanket or other covering, taking care not to overheat him.
14. Keep checking for the bleeding and also check that the person is conscious and breathing properly.

15. Stay with the person until medical help is available.
16. Do not give the injured person anything to eat or drink.
17. Arrange transport to the nearest healthcare facility.

C.4.2.3.1 WHAT DO I DO IF THE VICTIM LOSES CONSCIOUSNESS, BUT IS STILL BREATHING?

1. If the person is breathing, put him in the recovery position and cover him with a blanket or coat to keep him warm.
2. Continue to put pressure on the wound to stop the bleeding.
3. Do not leave the victim alone and continue to observe the breathing.

C.4.2.3.2 WHAT DO I DO IF THE VICTIM STOPS BREATHING?

Start CPR.

Do not interrupt the resuscitation until:

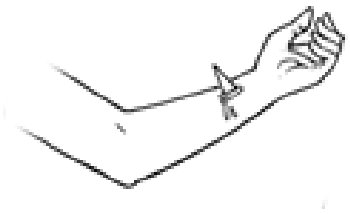
- the victim starts to wake up, moves, opens eyes and breathes normally;
- help (trained in CPR) arrives and takes over;
- you become too exhausted to continue, or
- the scene becomes unsafe for you to continue.

C.4.2.4 HYGIENE

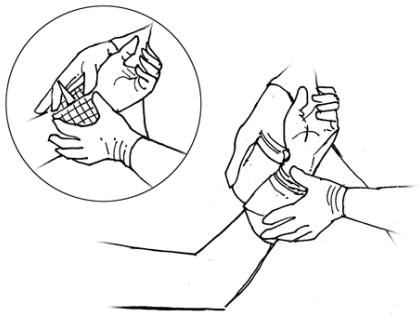
Always wash your hands after taking care of a person. Use soap and water to wash your hands. If no soap is available, you can use ash to wash your hands. Alcohol-based sanitizers can also be used, if available.

C.4.3 WHAT DO I DO IF AN OBJECT IS STUCK IN THE WOUND?

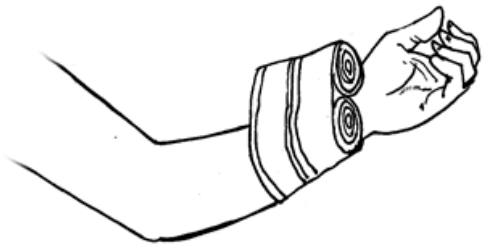
1. Do not remove the object.



2. Check if the object caused an additional exit wound if it passed through; try to stop the protruding object from moving (do not remove the object) with bulky material and bandages.



3. Build up padding around the object until you can bandage over it without pressing down.



4. Bandage the material above and below the object with a piece of clean (cotton) cloth or improvise with other materials.

   Make sure the bandage is firm enough so it stops the bleeding but doesn't cut off all the blood flow.

   If the part of the body below the bandage changes colour or is swelling or the injured person says he is losing any feeling there, loosen the bandage a little but do not remove it. If the blood flow to a limb is stopped an injured person can lose his limb.

5. Do not apply a tourniquet or fix a bandage above the wound, except in special situations (see below)

   Only apply a tourniquet:

   - if the bleeding of an external limb cannot be stopped by putting direct pressure on the wound, or
   - if there are many casualties you have to give help to, and
   - the first aider has been well trained on how to apply a tourniquet.

   If a tourniquet is applied on a bleeding limb:

   a. apply it above the wound,
   b. note down the time when the tourniquet is applied,
   c. maximally have a tourniquet applied for 2 hours,
   d. transfer the casualty as quickly as possible to a healthcare facility for further treatment.

6. If the bandage becomes soaked in blood, do not remove it, but add another bandage on top of it and continue to apply pressure.
7. Take off jewels or anything else in the area of the wound that may cut off blood flow because of swelling. Keep the jewels and belongings with the owner or in a safe place.

C.4.4 WHAT DO I DO WHEN I SUSPECT AN INTERNAL BLEEDING?

1. Ask the injured person to sit or lie down or make him comfortable.
2. Check the airway, breathing and circulation.
3. If there is also external bleeding: try to stop or slow down the external bleeding; press with both hands on the wound with a clean cloth or bandage.

4. Keep the injured person warm by taking off wet clothing, covering him with a blanket or other covering, taking care not to overheat him.
5. Keep checking that the person is conscious and breathing properly.
6. If the person stops breathing, start CPR.
7. Do not apply hot water bottles or ice bags to the chest or the abdomen.
8. The person needs to be transported urgently to the nearest healthcare facility.

C.4.5 WHEN TO REFER TO A HEALTHCARE FACILITY?

Always urgently transport the casualty to the nearest healthcare facility when you suspect he may be suffering an internal bleeding.

After giving first aid, a casualty should always be referred to the healthcare facility for further follow-up or treatment.

However, you also must seek medical help in the following situations:

- the wound is large and/or bleeding profusely;
- you cannot stop the bleeding;
- the injured person lost a lot of blood;
- an object is in the wound;
- the wound has an irregular shape;
- the wound is open;
- the injured person is losing feeling or has problems moving the body part;
- the injured person feels sick, has fainted or lost consciousness;
- the condition of the person worsens;
- the wound is on the face, is on or near the eyes, or in the area of the sex organs;
- the wound has dirt in it and cannot be cleaned properly;
- the colour of the wound or limb changes;
- the person experiences a problem with movement;
- the wound has faeces or urine in it;
- the wound was caused by a bite (from a human or an animal);
- the wound was caused by a stabbing or a bullet;
- the injured person has diabetes or immunity affecting disease;
- the injured person is 65 years old or older; or
- it is more than 10 years since the injured person last had a tetanus toxoid injection or if there is any doubt about when the injured person last had a tetanus toxoid injection. Even small wounds can cause tetanus and it is a very safe injection.

D. WOUNDS AND INJURIES

A wound is an injury in which the skin or another surrounding surface is torn, pierced, cut or otherwise broken. Wounds can be external or internal in the body. Each type of wound carries specific risks associated with the surrounding tissue damage and infection.

D.1 TYPES OF WOUNDS

- Abrasions

These wounds are superficial wounds in which the top most layers of the skin are scraped off, leaving a raw, tender area. These wounds appear often when experiencing a sliding fall (e.g. of a bike). The wounds often contain embedded foreign particles which may result in infections. Abrasions do not bleed much, but are usually very painful.

- Incisions

Incised wounds are caused by sharp instruments such as a knife, razor, etc. The blood vessels show a straight cut and bleeding may be profuse. Other structures such as tendons and nerves may be damaged too.

- Contusions (bruises)

Contused wounds are caused by blows, by blunt instruments or by punching. The capillaries are ruptured by the punch and blood leaks into the tissues. Severe contusion might be an indication of a deeper damage, like a fracture or internal injury.

- Lacerations

Lacerated wounds are caused by crushing, ripping forces by machinery, or clawing of animals resulting in tears or lacerations. The edges are mostly irregular in shape. There is usually more underlying tissue damage. These wounds are often contaminated with germs; the risk of infection is high. This type of wound sometimes has less bleeding, but is usually very painful.

- Puncture wounds

Puncture wounds are caused by stabs or sharp instruments like knifes, daggers or nails. These wounds typically have a smaller opening, but may reach deep into the tissue. These may not be very painful.

A *stab wound* is a puncture wound by a knife or sharp blade. A *gunshot wound* is the wound caused by a bullet or missile driven into the body. The entry wounds of gunshot wounds are mostly small and neat. If the projectile also exits the body, the exit wound may be large and ragged.

- Amputations

Amputation is the removal of a limb by trauma. Re-attachment of amputated limbs, fingers or toes might be possible if the injured and the amputated part(s) arrive at the hospital as soon as possible.

D.1.1 COMPLICATIONS OF WOUNDS

Wounds can cause two great dangers:

- Bleeding, and
- Infection

D.1.1.1 BLEEDING

Bleeding is the immediate complication of a wound and must be treated immediately.

D.1.1.2 INFECTION

Germs are tiny, not visible to the human eye, organisms that can cause diseases. Germs are *bacteria, viruses, fungi* and *protozoa*.

An *infection* is caused by germs getting into the body through the broken skin. The germs multiply in the wound and make it 'infected', also called as '*septic*'. Germs may later get into the bloodstream and cause a *septicaemia*.

A wound is initially not infected, even though it may be contaminated by dirt or materials that contain germs. An infection occurs after a lapse of time when the germs have time to multiply and invade the tissues. This time varies with the number of germs and their virulence and the body's resistance to fight back. Pus formation is part of the body's method to fight an infection.

The prevention of infection is very important. The first step consists of personal hygiene and the washing of your hands prior and after taking care of a person.

D.2 SMALL CUTS AND ABRASIONS

Even if the injured person has a small cut or abrasions, you will still need to take care of the wound to stop the bleeding and to prevent infection.

D.2.1 WHAT DO I SEE AND ENQUIRE?

You might observe the following signs on a person with a cut or abrasions:

- the skin or the tissue is damaged,
- open skin or tissue might be bleeding,
- the bleeding might be minor or profuse,
- the skin might be discoloured, or
- the casualty might feel pain.

D.2.2 WHAT DO I DO?

D.2.2.1 HYGIENE

1. Wash your hands before giving care. Use soap and water to wash your hands. If no soap is available, you can use ash to wash your hands. Alcohol-based sanitizers can also be used, if available.

D.2.2.2 STOP THE BLEEDING AND BANDAGE THE WOUND

2. Try to stop or slow down the bleeding: press on the wound with a clean cloth or bandage. If possible, ask the injured person to press on the cut or graze himself to stop the bleeding.

3. Rinse out the wound with clean water. You can also use boiled and cooled water.

Pour water on the wound until you cannot see any foreign material left in the wound. If necessary, wash out the wound under running water. Foreign material means dirt or anything else that comes from outside the injured person's body.

> ⓘ In the event the wound is bleeding profusely, do not waste time cleaning it. Your priority is to stop the bleeding by applying pressure on the wound.

4. If you have a piece of clean (cotton) cloth, then cover the wound with it. Use adhesive strips to close a clean cut. If no strips are available, use a bandage. Bandage the dressing to the wound.

   Do not apply the bandage too firmly. If the part of the body below the bandage changes colour, is swelling or is feeling numb, loosen the bandage a little bit.

5. Tell the injured person or the person caring for him to keep the wound dry after cleaning with water or getting wet. Every 2 or 3 days, the wound should be cleaned and the dressing changed.

6. If a dressing needs to be changed, do not tear the old one off as this can damage the healing wound. Instead, put enough water (preferably saline water if available) on the old dressing so that it comes off easily.
7. If the wound is infected, then always refer him to a healthcare facility for further care.

Even small wounds need attention to prevent infection. Even if the injured person has received appropriate medical care, there is a need to watch out for infection in the wound.

The following signs might indicate an infection:

- pain that is getting worse;
- swelling, hot or red skin around the wound;
- the wound shows discharge, or
- person having fever or feeling unwell.

In these cases the injured should seek further medical help.

D.2.2.3 HYGIENE

Wash your hands after taking care of the patient. Use soap and water to wash your hands. If no soap is available, you can use ash to wash your hands. Alcohol-based sanitizers can also be used, if available.