

International Medical Guide for Ships

3rd edition



World Health
Organization

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Including the ship's medicine chest



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Preface

Seafaring has always been a dangerous occupation. Long voyages, extreme weather conditions, illnesses and accidents can take a heavy toll on the health of crew members. Not only are they exposed to greater risk, seafarers are also isolated from the usual sources of medical care and assistance available to people on shore.

WHO has consistently strived to improve the health of people at their place of work. When people also live in their work environment – as seafarers must – they face particular risks to their health. Practical guidance is essential for those who must provide assistance when seafarers fall ill or are injured. Since its first publication by WHO in 1967, the *International Medical Guide for Ships* has been the standard source of such guidance.

The second edition, written in 1988, was translated into more than 30 languages, and has been used in tens of thousands of ships. This, the third edition, contains fully updated recommendations aimed to promote and protect the health of seafarers. This edition is also consistent with the latest revisions of both the *WHO Model List of Essential Medicines* and the *International Health Regulations (2005)*.

The International Labour Organization (ILO) *Maritime Labour Convention 2006* stipulates that all ships shall carry a medicine chest, medical equipment and a medical guide. The *International Medical Guide for Ships* supports a main principle of that Convention: to ensure that seafarers are given health protection and medical care as comparable as possible to that which is generally available to workers ashore, including prompt access to the necessary medicines, medical equipment and facilities for diagnosis and treatment and to medical information and expertise.

The Convention states that ships carrying 100 or more persons and ordinarily engaged on international voyages of more than three days' duration shall carry a qualified medical doctor who is responsible for providing medical care. Ships which do not carry a medical doctor shall be required to have either at least one seafarer on board who is in charge of medical care and administering medicine as part of their regular duties or at least one seafarer on board competent to provide medical first aid. Persons in charge of medical care on board who are not medical doctors shall have satisfactorily completed training in medical care that meets the requirements of the *International Convention on Standards of Training, Certification and Watchkeeping for Seafarers*. The *International Medical Guide for Ships* is a standard reference for these training courses, and is designed for use by all crew members charged with providing medical care on board.

The *ILO Maritime Labour Convention 2006* stipulates that the competent authority shall ensure by a prearranged system that medical advice by radio or satellite communication to ships at sea is available 24 hours a day – the *International Medical Guide for Ships* explains when it is essential to seek such advice.

By carrying this guide on board ships, and following its instructions, countries can both fulfill their obligations under the terms of the *Maritime Labour Convention 2006*, and ensure the best possible health outcomes for their seafaring population. WHO is pleased to be able to contribute to this goal by presenting the third edition of the *International Medical Guide for Ships*.

Maria Neira

Director, Department of Protection of the Human Environment

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Introduction

How to use this guide

The *International Medical Guide for Ships* is easy to read and understand. It tells you how to diagnose, treat and prevent health problems in seafarers, with a focus on the first 48 hours after injury.

It should be kept in the ship's medicine chest, and you should familiarize yourself with the content before a medical emergency occurs. This way, when there is a case of illness or injury on board, you can immediately turn to emergency medical advice on the topic at hand.

Chapters 1–24 follow this structure:

- general description of symptom or disease
- explanatory notes when necessary
- signs and symptoms
- key questions to ask
- what to do
- what not to do.

These chapters also contain information on how to prevent specific injuries or illness, by action that can be taken on board. General prevention and health promotion is covered in [Chapter 30](#).

Since immediate response is essential for life-threatening conditions, the first 11 chapters cover the principals of first aid, and how to respond to choking, bleeding, shock, pain, injuries, wounds, burns, and poisoning.

[Chapter 12](#) outlines the general principles of physical examination and the necessity of obtaining consent for examination and treatment.

[Chapter 25](#) describes how to use external assistance and seek medical advice by radio, and includes a general recommendation on the use of digital photographs to assist in obtaining diagnostic and treatment advice in this context. It includes a form for obtaining and transcribing such advice.

[Chapter 32](#) contains the relevant articles of the revised *International Health Regulations (2005)*.

[Chapter 33](#) lists the necessary medicines for stocking the ship's medicine chest, including those which should only be used with radio medical advice. This list is consistent with WHO's essential drugs list, and provides indications, doses, and specific precautions for each entry.

Annex A contains medical referral and evacuation forms which should be copied and stored with the medical supplies.

This guide is designed to be used in conjunction with the most recent versions of the *Guide to Ship Sanitation*, and the IMO's *Medical First Aid Guide and Emergency Procedures for Ships Carrying Dangerous Goods*.

First aid

FIRST AID ON BOARD

First aid is treatment aimed at preventing the death or further damage to health of an ill or injured person perceived to be in a life-threatening condition. All crew members should receive training in first aid.

Step 1 Assess the situation: what do think happened and is there still danger?

- (a) If giving first aid will expose you to danger, do not do it: call or go for help.
- (b) If a person is still in danger, remove the danger or the person before giving first aid.
- (c) If bystanders are in danger, warn them.

Step 2 If you are alone, shout for help.

Step 3 Choose the best place for first aid.

- (a) On the spot?
 - Not if fire is present.
 - Not if there are potentially dangerous gases in the atmosphere.
 - Not if there are other risks at the site of the accident.
- (b) In the ship's infirmary (sick-bay) or in a cabin?
 - Not if the delay in moving the person is dangerous.

Step 4 If there are several injured people, prioritize.

- (a) Attend first to any unconscious person.
- (b) If there is more than one unconscious person:
 - check each for pulse and breathing;
 - begin resuscitation of a person who is not breathing or has no detectable heart beat (see below, *Cardio-pulmonary resuscitation*).
- (c) Attend to conscious patients:
 - treat bleeding by applying pressure to the wound;
 - wait until the patient has been moved to the sick bay before dealing with other injuries, **UNLESS** you suspect spinal injury (see below, *What to do in the case of spinal injury*).

✗ What not to do when giving first aid

- DO NOT GIVE FIRST AID if you have doubts about your ability to do so correctly.
- DO NOT ENTER AN ENCLOSED SPACE unless you are sure it is safe.
- DO NOT MOVE THE PERSON without checking for:
 - spinal injuries
 - fractured long bones.
- DO NOT GIVE THE PATIENT ANYTHING TO EAT OR DRINK (especially alcohol).

THE ABC SEQUENCE OF BASIC LIFE SUPPORT

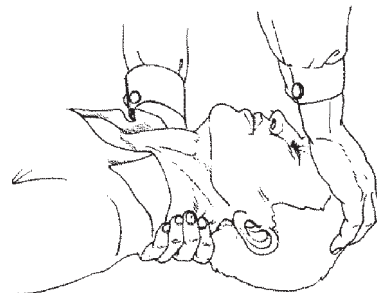
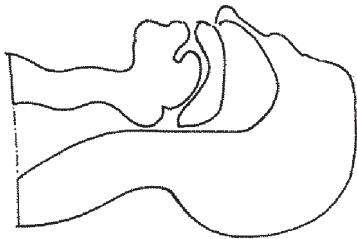
Note

- **Basic life support** is a sequence of actions aimed at resuscitating a person whose life is in danger.

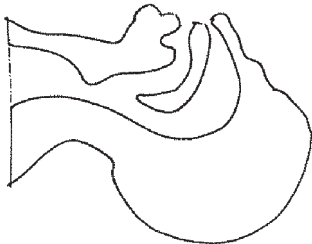
First aid



A. Closed



B. Open



- **A person's life is in danger** when one or more of the two vital functions – breathing (respiratory function) and blood circulation (cardiac function) – have ceased or are about to cease and death is likely if proper action is not taken immediately.
- Basic life support restores the two vital functions: breathing and blood circulation. It uses an **“ABC” sequence** of actions to ensure an open **A**irway aimed at restoring **B**reathing and blood **C**irculation.
- **Cardio-pulmonary resuscitation (CPR)** is the main component of basic life support: it consists of artificial respiration and external cardiac compression.

SHAKE AND SHOUT

- Before starting basic life support, shake the patient vigorously by the shoulder or leg and at the same time shout or call the patient's name if you know it.

AIRWAY – IF BLOCKED, OPEN IT

- Remove any loose-fitting dentures.
- Check for obvious spinal injury.
- Tilt the patient's head back by exerting pressure on the upper forehead with one hand (Figure 1.1).
- Use two fingers of the other hand to raise the chin.
- If spinal injury is suspected, tilt the head back, but only enough to keep the airway open, and pull the lower jaw forward rather than raising the chin.
- Prepare for the possibility of mouth-to-mouth rescue breathing by making sure the thumb and index finger of your hand that is on the patient's forehead are free to pinch the patient's nose.
- Use your fingers to remove any visible obstructions from the patient's mouth and throat.

BREATHING – IF STOPPED, RESTART IT

- Nook, listen, and feel for signs of regular breathing:
 - **nook** for chest movements;
 - **listen** for sounds of breathing at the patient's mouth (Figure 1.2);
 - **feel** for exhaled air on your cheek.
- If there are no signs of regular breathing:
 - send or shout for help;
 - give two rescue breaths (see below).
- If normal breathing resumes:
 - place the patient in the recovery position (Figure 1.3).
- If normal breathing does not resume:
 - check again for obstruction to the airway;

Figure 1.1 Establishing an open airway.

First aid



Figure 1.2 Unconscious patient: listen for breathing.

- check that the head is tilted enough and the chin raised enough;
- try again to restore breathing with two strong rescue breaths (see below).
- If normal breathing still does not resume, check the blood circulation (see next section).

CIRCULATION – IF STOPPED, RESTART IT

- Check the patient's pulse (Figure 1.4).
- If there is no detectable pulse, give chest compressions and rescue breaths (see below).
- When giving chest compression, do rescue breathing at the same time, since breathing stops when the heart stops.

Note

- **Once breathing and circulation have been restored, place the patient in the recovery position** (see below).

A BASIC LIFE SUPPORT SEQUENCE



Figure 1.3 The recovery position for an unconscious patient.

- RESPONDS TO SHAKE AND SHOUT – NO.
- BREATHES – YES.
- HEART BEATS – YES:
 - put patient in recovery position (Figure 1.3)
 - check for other life-threatening conditions.
- RESPONDS TO SHAKE AND SHOUT – NO.
- BREATHES – NO.
- HEART BEATS – YES:
 - clear airway
 - apply rescue breathing.
- RESPONDS TO SHAKE AND SHOUT – NO.
- BREATHES – NO.
- HEART BEATS – NO:
 - apply cardio-pulmonary resuscitation (CPR).

↪ **How to perform rescue breathing (artificial respiration)**

MOUTH-TO-MOUTH RESCUE BREATHING

- With one hand under the patient's neck, keep the patient's head tilted as far back as it will go – unless you suspect spinal injury, in which case use minimal tilt.
- Place the heel of your other hand on the patient's forehead with the thumb and index finger facing towards the nose.
- Pinch the patient's nostrils with your thumb and index finger to prevent air from escaping.
- Open the patient's mouth, take a deep breath, then form a tight seal with your lips over and around the patient's mouth (Figure 1.5).

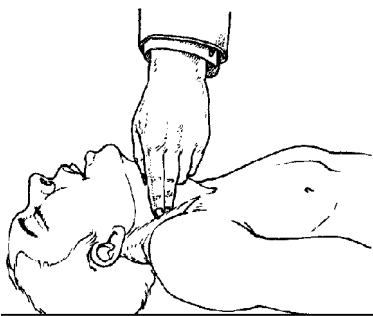


Figure 1.4 How to feel the carotid pulse.

First aid



Figure 1.5 Mouth-to-mouth rescue breathing: form a tight seal around the patient's mouth and blow forcefully.

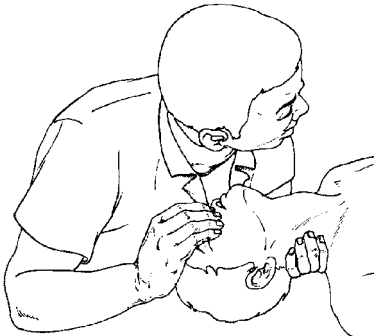


Figure 1.6 Mouth-to-mouth rescue breathing: remove your mouth and allow the patient to exhale.



Figure 1.7 Mouth-to-nose rescue breathing.

- Use a Guedel airway if available.
- Insert the Guedel airway between the patient's jaws with the concave curve facing upwards (towards the patient's head).
- Push the airway gently into the mouth while rotating it 180° so that the concave curve faces downwards and the airway points towards the patient's lungs. Leave the airway flange outside the teeth.
- If it is not possible to open the patient's mouth or to form a seal around it with your mouth, apply mouth-to-nose rescue breathing (see below).
- Breathe into the patient's mouth at a rate of one breath every five seconds or 12 breaths a minute, completely refilling your lungs after each breath.
- Continue until the patient's chest rises and falls with each rescue breath and you feel the patient's exhaled breath on your cheek (Figure 1.6).
- If you feel no air on your cheek, check if there is a foreign body in the patient's throat and, if so, remove it with your fingers before resuming rescue breathing.

MOUTH-TO-NOSE RESCUE BREATHING

- Use mouth-to-nose rescue breathing if any one of the following conditions applies:
 - the patient's mouth cannot be opened;
 - a tight seal cannot be obtained around the patient's lips;
 - an obstruction cannot be removed from the patient's mouth;
 - the patient has been rescued from water and the rescuer needs to use one hand to support the body and is therefore unable to use that hand to close the nose for mouth-to-mouth rescue breathing.
- Keep the patient's head tilted back with one hand: use the other hand to lift the patient's lower jaw to seal the lips.
- Take a deep breath, seal your lips around the patient's nose and breathe into it forcefully and steadily until the patient's chest rises (Figure 1.7).
- Remove your mouth and allow the patient to exhale passively.
- Repeat the cycle 10–12 times per minute.

USING A BAG AND MASK RESUSCITATOR

- A bag and mask resuscitator can be used for rescue breathing to replace mouth-to-mouth or mouth-to-nose breathing.
- The advantages of a bag and mask resuscitator are that a rescuer can use it for longer before becoming exhausted, and oxygen tubing can be attached to the bag.
- To use a bag and mask resuscitator:
 - lay the patient on his back;
 - check that the mask is approximately the right size for the patient;
 - insert a Guedel airway (see above);
 - send someone to bring an oxygen cylinder and attach oxygen tubing to the resuscitator: do not spend time doing this yourself, and do not wait until it has been done;
 - with one hand under the patient's neck, keep the patient's head tilted as far back as it will go – unless you suspect spinal injury, in which case use minimal tilt;

First aid

- place the mask over the patient's nose and mouth;
- hold the mask in place with your right hand, by clamping your thumb over the mask and using your fingers to hook under the patient's jaw and pull it up towards the mask;
- use your left hand to compress the bag, forcing air into the patient's lungs;
- there is a valve which allows air to escape from the lungs when you release the bag: DO NOT take the mask off the patient's face between breaths;
- inflate the patient's lungs at a rate of about 12 per minute;
- check with each breath that there is little or no leak of air around the mask: common causes of a leak are the patient's head being turned to one side, and the jaw not being pulled upward firmly enough.

↪ **How to administer oxygen**

- Note that:
 - oxygen is given to a patient who is breathing spontaneously but has difficulty breathing or has a disorder that impairs the uptake of oxygen into the lungs or the delivery of oxygen to the tissues;
 - spontaneous combustion can occur in the presence of oxygen: smoking, naked lights or fires must not be allowed where oxygen is being administered;
 - if an illness is serious enough to warrant the use of oxygen it is serious enough to seek medical advice;
 - oxygen delivered through valve and bag resuscitation kits – used primarily for victims who are not breathing – should be given only by trained personnel.
- Ensure that the airway is open.
- If the patient is unconscious, insert a Guedel airway (see above under *Mouth-to-mouth rescue breathing*).
- Check that the oxygen cylinder is not empty and that the regulator and flow meter are properly attached to the cylinder and turned off.
- Turn the main oxygen cylinder valve fully on.
- Fit the mask snugly over the patient's nose and mouth.
- Set the flow meter to the chosen rate.

↪ **How to perform chest compression**

- Note that chest compression should always be performed in conjunction with rescue breathing: ideally, one rescuer gives chest compression and a second rescuer gives rescue breathing.
- Place the patient on a solid surface, if it is possible to do this without delay.
- Kneel at the patient's side and place your hand (**hand A**) that is closest to the patient's feet on the lower half of the patient's sternum (Figure 1.8).
- Keep the index and middle fingers of **hand A** together and with the middle finger locate the bottom edge of the lowest rib nearest to you.
- Slide both fingers medially (inwards) along this rib to the point where the rib joins the sternum.
- Place your middle finger on this point and your index finger on the sternum.

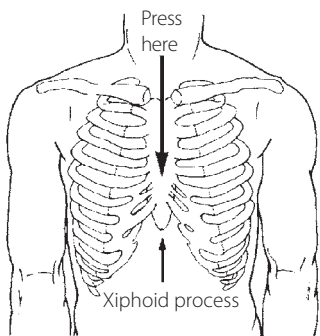


Figure 1.8 Where to press when doing chest compression.

First aid

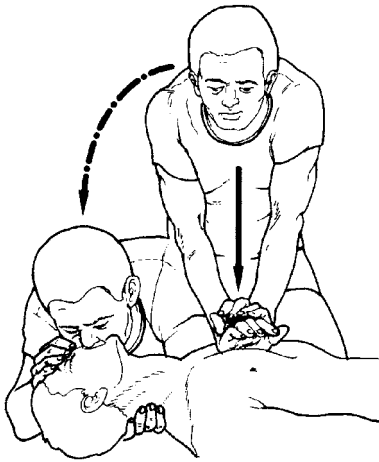


Figure 1.9 How to do chest compression with one rescuer.

- Slide the heel of your other hand (**hand B**) down the sternum until it reaches the index finger of **hand A**: this should bring **hand B** to the middle of the lower half of the sternum or about 4 cm above the lower tip of the sternum (xiphoid process).
- Place the heel of **hand A** on top of **hand B**.
- Extend or lock together the fingers of both hands and lift them to check that you are not going to press on the patient's ribs.
- Rock forwards so that your shoulders are almost directly above the patient's chest.
- Keep your arms straight and push down on the sternum so as to depress it by 4–5 cm.
- Release the pressure but keep your hand in contact with the patient's chest.
- If you are the only rescuer, you should give 100 chest compressions per minute (one to two compressions a second) with two very quick rescue breaths after every 15 chest compressions (Figure 1.9).
- Count compressions aloud.
- Do not wait for the patient to exhale before resuming chest compressions.
- If there are two rescuers one should be at the patient's head giving one rescue breath after every five compressions, in which case chest compressions should be given at a rate of 60 per minute (if the victim is an adult): chest compressions should be continuous, with no pause for rescue breaths (Figure 1.10).
- Check the reaction of the patient's pupils:
 - if the pupils narrow (contract) when exposed to light (the light of a pocket lamp, for example), the brain is receiving adequate blood and oxygen;
 - if the pupils remain widely dilated and do not react to light, serious brain damage is imminent or has occurred.
- Check the carotid (neck) pulse after the first minute of heart compression/rescue breathing and every five minutes thereafter to see if the heart is beating spontaneously.
- If there are two rescuers they should change roles every few minutes.
- Look for other positive signs, such as:
 - expansion of the chest each time air is forced into the patient's lungs;
 - a detectable pulse each time the chest is compressed;
 - return of colour to the skin;
 - a spontaneous gasp for breath.

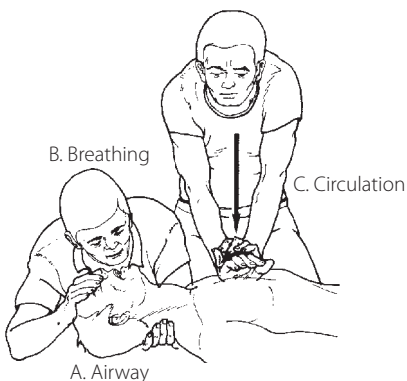


Figure 1.10 How to do chest compression with two rescuers.

X What not to do when giving chest compression

- **DO NOT START CHEST COMPRESSIONS** if the patient shows any evidence of a heart beat or pulse, even if the heart beat is very slow or very weak: in such cases, chest compression could cause dangerous abnormal heart rhythms and further complications.
- **DO NOT EXERT PRESSURE** on the lower tip of the sternum (xiphoid process) in case you tear the liver and cause severe internal bleeding.
- **DO NOT PRESS** on the patient's ribs: you risk causing rib fractures.
- **DO NOT STOP GIVING CHEST COMPRESSIONS UNTIL:**

- a physician tells you to; **OR**
- the patient's heart beat and breathing have returned; **OR**
- you are too exhausted to continue.

USE OF AUTOMATIC EXTERNAL DEFIBRILLATORS

Defibrillation is the use of a direct-current electrical shock to restore normal heart rhythm to a person whose heart has stopped pumping because it is in the abnormal rhythm ventricular fibrillation (cardiac arrest or sudden cardiac death). The Automatic External Defibrillator (AED) is a battery-powered device that detects the electrocardiogram of a person, uses a computer programme to determine whether the person's heart rhythm is ventricular fibrillation, then prompts the operator to trigger an electrical shock whose intensity is automatically adjusted by the AED.

AEDs can be used safely by people without medical training, and **if** used within 2 or 3 minutes of a cardiac arrest **and** followed up by hospital care, can improve short-term outcomes.

AEDs are not appropriate equipment for the majority of vessels. Vessels which often carry elderly passengers (who are much more likely to suffer cardiac arrest than younger people) and vessels whose operations expose crew to a risk of electrocution should consider carrying one or more AEDs. If AEDs are carried crew should be trained in their use, and in the care of patients surviving cardiac arrest.

✓ **What to do in the case of spinal injury (for a more detailed action checklist see [Chapter 6, Bone, joint, and muscle injuries, under Neck \(cervical spine\) injuries](#))**

- Remember that in a patient whose spine is injured any movement, particularly extension of the neck, can cause permanent damage to the spinal cord.
- To move a patient with suspected spinal injury onto a stretcher, use the “log-rolling” manoeuvre: gently roll the patient onto the stretcher, keeping the patient's back and neck straight (Figure 1.11).
- Suspect a spinal injury if the patient meets any one of the following conditions:
 - is unconscious;
 - has fallen from a height of more than five metres;
 - has fallen on the head or heels;
 - has been struck on the head or neck;
 - has been rescued after diving into shallow water;
 - cannot move the toes when asked to;
 - complains of:
 - › neck pain; **OR**
 - › tingling or absence of sensation in the feet or legs.
- If any of the above conditions is met:
 - seek medical advice;
 - take particular care in handling and resuscitating the patient;
 - keep the patient's head, neck, and chest aligned;
 - use a spinal board and/or cervical collar, if available;

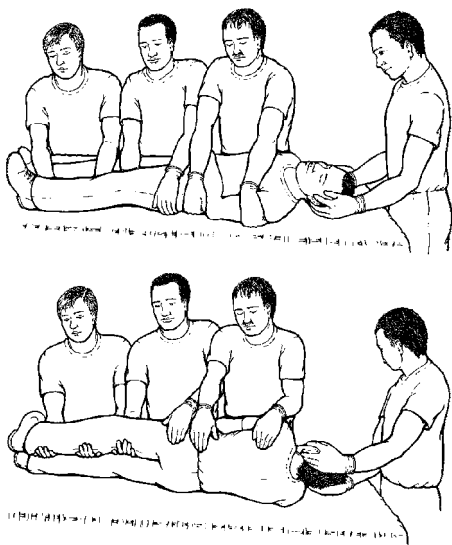


Figure 1.11 How to move a patient with a suspected spinal injury.

- keep the patient horizontal during the rescue procedure in order to minimize the consequences of low blood pressure, which is common in spinal injury.



How to apply the recovery position

- Use the recovery position for unconscious patients who are breathing and whose heart is beating: it prevents the tongue from blocking the airway and promotes drainage of fluids (blood or vomit) from the mouth, thereby reducing the risk of choking (see below).
- Make sure there are no pillows under the patient's head.
- Kneel at the side of the patient.
- Remove any fragile or potentially dangerous objects, such as glasses and loose-fitting dentures.
- Straighten the patient's legs.
- Take the patient's arm that is nearest to you and place it at right angles to the body, with the elbow bent and the hand with the palm facing up.
- Take the patient's other arm and place it across the chest so that the hand rests palm down on the cheek nearest to you.
- Place one of your hands on the patient's far shoulder, keeping the patient's hand on the cheek, and with your other hand grasp the patient's far leg just above the knee and roll the patient towards you.
- Adjust the patient's upper leg so that both the hip and the knee are bent at right angles (see [Figure 1.3](#)).
- Tilt the head back to make sure the airway remains open: use minimal tilt if you suspect a spinal injury.
- If necessary, adjust the position of the patient's hand under the cheek to keep the head tilted.
- Check regularly for breathing.
- Check blood circulation in the lower arm.
- To prevent bedsores, from time to time turn the patient gently onto the opposite side (see [Chapter 26, Nursing care and medical procedures](#)).
- After 12 hours of unconsciousness, administer fluid intravenously.
- Check now and again to ensure that all limbs are in mid-position – neither completely straight nor fully bent.
- Check that the eyelids remain closed at all times: if not, tape them shut to avoid damage to the eyeballs.
- Every two hours moisten the eyes with saline solution (0.9% sodium chloride) by opening the eyelids slightly and letting some saline solution drip gently into the corner of each eye.
- Every three hours moisten the mouth, cheeks, tongue, and teeth with a small swab moistened with water.

X What not to do when rescuing an unconscious patient

- DO NOT LEAVE THE PATIENT ALONE.
- DO NOT ALLOW THE PATIENT'S HEAD TO BEND FORWARDS with the chin sagging.

- DO NOT FORGET TO CHECK REGULARLY FOR BREATHING.
- DO NOT PULL, STRAIN, OR STRETCH ANY JOINTS.
- DO NOT GIVE ANYTHING BY MOUTH.



How to take the pulse

- Note that the best pulse to take in an emergency is the carotid (neck) pulse (see [Figure I.4](#)).
- Use your index and middle fingers, not your thumb.
- To take the carotid (neck) pulse:
 - keep the patient's head tilted back and place your index and middle fingers on the larynx (Adam's apple);
 - slide your fingers down into the groove of the neck to the far side of the larynx.
- If you cannot feel the pulse for at least five seconds, there is too little or no blood circulation.

CHOKING

Choking is the result of an obstruction in the upper airway, either in the larynx (voice box) or trachea (windpipe). Choking prevents air from reaching the lungs and, as a result, oxygen from reaching the brain. Without immediate action, the patient loses consciousness. A complete obstruction of the airway is immediately life-threatening: if the obstruction or constriction is not removed, the patient will suffer brain damage and die within four to six minutes.

An obstruction of the upper airway may be caused by:

- a solid or semi-solid object, such as food, a foreign body, or a blood clot:
 - an inadequately chewed piece of meat is a very common cause of choking: in a third of cases the meat lodges above the vocal cords; in two thirds of cases it passes through the vocal cords and lodges in the trachea;
- an external constricting force, as in strangulation or hanging;
- swelling of the tissue lining the upper airway: this can be due to:
 - an allergic mechanism, as occurs with asthma or an insect sting;
 - the irritant or burning effect of gas fumes or smoke.

✓ What to do

- Suspect choking in a person:
 - whose skin turns blue or purple; **OR**
 - who cannot speak or breathe but only gasp; **OR**
 - who clutches the throat with one or both hands (a universal sign for choking), especially in mid-meal; **OR**
 - whose attempts to breathe in or out produce coughing or wheezing or whistling sounds.
- If you suspect that food or a foreign body is blocking the airway:
 - try to unblock the airway (see above, under *Basic life support*);
 - encourage the patient to cough;
 - if the patient cannot cough, perform the Heimlich manoeuvre (see below);

First aid

- do not attempt to hook the obstructing body out with a finger: you are likely to push it in further and worsen the obstruction.

✚ How to perform the Heimlich manoeuvre (abdominal thrusts)

IN A CONSCIOUS PATIENT

- Stand behind the patient and wrap your arms around the patient's waist.
- Make a fist with one hand and place it on the patient's abdomen between the navel and the rib cage (Figure 1.12).
- Grasp your fist with your other hand and bend the patient slightly forwards (if need be, using for support the back of a chair, corner of a table, or other protruding object).
- Keeping your arms away from the patient's rib cage, give four or five quick inward and upward thrusts to make the patient cough.
- Repeat these abdominal thrusts until the obstructing object is coughed out.

IN AN UNCONSCIOUS PATIENT

- Lay the patient down face up, head to one side.
- Kneel astride the patient's hips.
- Place one of your hands on top of the other, with the palm of the lower hand on the patient's abdomen, just above the navel (Figure 1.13).
- With the heel of the lower hand, make rapid inward and upward thrusts.
- Repeat this sequence until the obstructing object is ejected.

ON YOURSELF

- Put your fist on your upper abdomen, just above the navel.
- Grasp your fist with the other hand.
- Thrust your fist inwards and upwards; **OR**:
 - bend over a hard object with a protruding point (chair, wash-basin, etc.) and force your fist upwards into your upper abdomen.

✓ What to do in a case of hanging or strangulation

- Cut the rope and lay the patient on a firm, flat surface.
- If breathing has stopped, start cardio-pulmonary resuscitation (see above).
- Give oxygen, six litres per minute, using a non-rebreathing mask.
- Seek medical advice.



Figure 1.12 How to do the Heimlich manoeuvre on a standing patient.

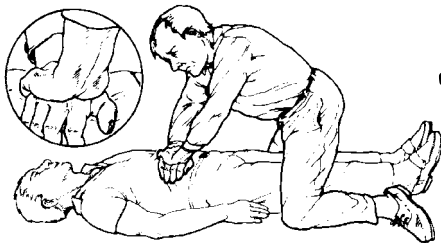


Figure 1.13 How to do the Heimlich manoeuvre on an unconscious patient.

BLEEDING

Bleeding is the result of damage to blood vessels. The damage can be due to trauma or disease, such as peptic ulcer. Breaks in very small blood vessels occur all the time in healthy people and if the clotting system is abnormal there can be spontaneous bleeding.

KEY QUESTIONS

- Where is the bleeding coming from?
- What effect is the bleeding having on the patient?
- What can be done to stop the bleeding?

BLEEDING WOUNDS

✓ **What to do**

- Put on gloves and eye protection, if possible.
- Apply direct pressure to the wound with a dressing or piece of cloth or just the palm of your hand (Figure 1.14).
- Maintain the pressure for 10 minutes, the time it takes for the blood clotting process to produce a stable plug that stops the bleeding.
- If bleeding is from the arm or leg, elevating the limb above the level of the heart will slow the bleeding.
- When the bleeding has stopped, move the patient to a place with good lighting and facilities for closing and dressing the wound.
- Take the patient's pulse and blood pressure with the patient lying down and then standing up.
- If bleeding restarts, the blood clot has probably been displaced: reapply pressure and wait 10 minutes for more clot to form.
- Clean up the blood, and dispose of all contaminated personal protective equipment in an appropriate container marked for bio-hazardous waste.
- Seek medical advice if there is a rapid pulse that persists after the bleeding has stopped or a fall in blood pressure when the patient stands up: the patient may be developing hypovolaemic shock (see [Chapter 2, Shock](#))
- Remember that faintness can be due to pain and fear as well as to blood loss.

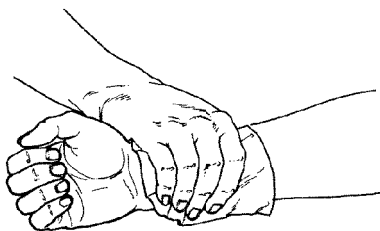


Figure 1.14 How to apply pressure to the wound.

✗ **What not to do**

- Do not stop pressing on the wound during the first 10 minutes to see if it has stopped bleeding.
- Do not remove a dressing if blood is seeping through it: place another dressing on top of the first one.
- Do not use a tourniquet or attempt to apply pressure to large arteries (at so-called pressure points).
- Do not attempt to clip bleeding arteries with forceps: you will not succeed in stopping the bleeding because the process of contraction that narrows the vessel also pulls it back into the wound and you are likely to damage surrounding structures, such as nerves.
- Do not try to estimate the volume of blood loss by looking at the puddle of blood: blood on the floor always looks alarmingly copious.

BLEEDING FROM THE NOSE

Although in most cases the diagnosis is obvious, in some cases, the blood from a nose bleed passes into the throat, is swallowed, and may be vomited.

First aid

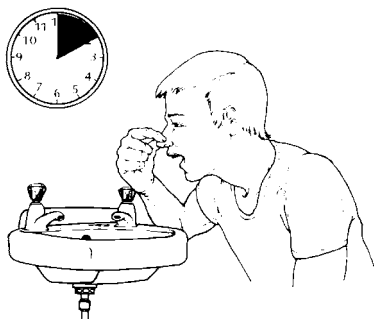


Figure 1.15 How to treat a nose bleed.

Causes of nose bleed include:

- a blow to the face from a fist or blunt object;
- nose picking, usually in children;
- local infection and allergy;
- high blood pressure;
- hardening of an artery (arteriosclerosis) in older patients.

✓ **What to do**

- Moisten a small gauze square with nasal decongestant spray and place it gently into the bleeding nostril.
- Have the patient compress the soft part of the nose firmly for 10 minutes without stopping: the fingers and thumb should cover the whole area below the bony parts (Figure 1.15).
- Have the patient sit bending forwards, so as not to swallow blood, and spit into a bowl any blood that drips into the throat.
- Seek medical advice if:
 - bleeding lasts more than 30 minutes; **OR**
 - bleeding is profuse; **OR**
 - bleeding cannot be stopped by the above measures; **OR**
 - the patient's blood pressure begins to fall; **OR**
 - the patient cannot sit up because of faintness.
- When the bleeding has stopped take the patient's blood pressure; if it is over 160 systolic seek medical advice.