MECHANISMS OF INJURY

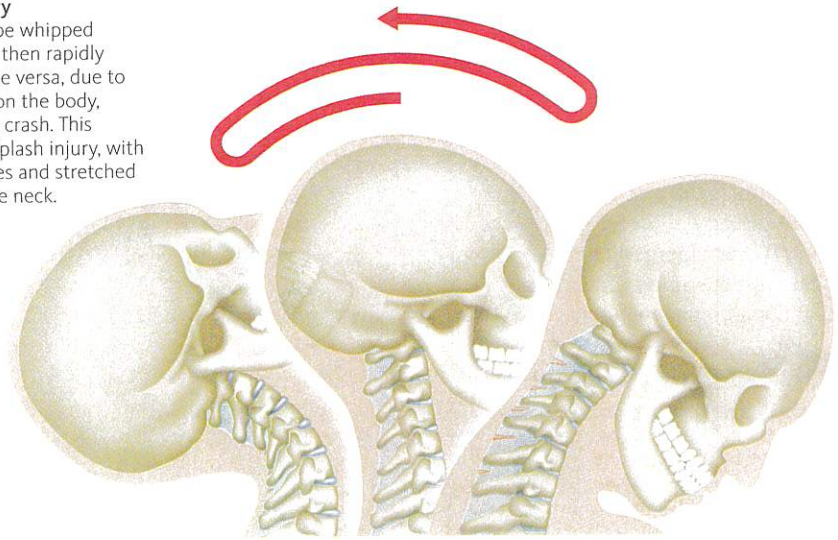
The injury that a person sustains is directly related to how it is caused. In addition, whether a casualty sustains a single or multiple injury is also determined by the mechanisms that caused it. This is the reason why a history of the incident, and therefore the injury mechanism is important. In many situations, this vital information can only be obtained by those people who deal with the casualty at the scene – often first aiders. Look, too, at the circumstances in which an injury was sustained and the forces involved.

The information is useful because it also helps the emergency services and medical team predict the type and severity of injury, as well as the treatment required. This therefore helps the diagnosis, treatment and likely outcome for the casualty.

CIRCUMSTANCES OF INJURY

The extent and type of injuries sustained due to impact – for example, a fall from a height or the impact of a car crash – can be predicted if you know exactly how the incident happened. For example, a car occupant is more likely to sustain serious injuries in a side-impact collision than in a frontal collision at the same speed. This is because the side of the car provides less protection and cannot absorb as much energy as the front of the vehicle. For a driver wearing a seatbelt whose vehicle is struck either head-on or from behind, a specific pattern of injuries can be suspected. The driver's body will be suddenly propelled one way, but the driver's head will lag behind briefly before moving. This results in a "whiplashing" movement of the neck (below). The casualty may also have injuries caused by the seatbelt restraint; for example, fracture of the breastbone and collarbone and possibly bruising of the heart or lungs. There may also be injuries to the face due to contact with the steering wheel or an inflated airbag.

Whiplash injury
The head may be whipped backwards and then rapidly forwards, or vice versa, due to sudden forces on the body, such as in a car crash. This produces a whiplash injury, with strained muscles and stretched ligaments in the neck.



FORCES EXERTED ON THE BODY

The energy forces exerted during an impact are another important indicator of the type or severity of any injury. For example, if a man falls from a height of 1m (3ft 3in) or less on to hard ground, he will probably suffer bruising but no serious injury. A fall from a height of more than 2m (6ft 6in), however, is likely to produce more serious injuries, such as a pelvic fracture and internal bleeding. An apparently less serious fall can mask a more dangerous injury. If a person falls down the stairs, for example, she may tell you that she injured her ankle. If she has fallen awkwardly on to a hard surface, however, she may have sustained a spine and/or head injury. A fall down more than five stairs is associated with a greater risk of injury, than a fall down fewer than five stairs. Be aware too that the elderly or those suffering from bone disorders such as osteoporosis are at greater risk of serious injury from minor knocks or falls.

Most serious injury may be hidden
A first aider should keep the casualty still, ask someone to support her head and **call 999/112 for emergency help.**

QUESTIONS TO ASK AT THE SCENE

When you are attending a casualty, ask the casualty, or any witnesses, questions to try to find out the mechanism of the injury. Witnesses are especially important if the casualty is unable to talk to you. Possible questions include:

- **Was the casualty ejected from a vehicle?**
- **Was the casualty wearing a seat-belt?**
- **Did the vehicle roll over?**
- **Was the casualty wearing a helmet?**
- **How far did the casualty fall?**
- **What type of surface did he land on?**
- **Is there evidence of body contact** with a solid object, such as the floor or a vehicle's windscreen or dashboard?
- **How did he fall?** (For example, twisting falls can stretch or tear the ligaments or tissues around a joint such as the knee or ankle.)

Pass on all the information that you have gathered to the emergency services (pp.21 and 23).

PRIMARY SURVEY

The primary survey is a quick, systematic assessment of a person to establish if any conditions or injuries sustained are life threatening. By following a methodical sequence using established techniques, each life-threatening condition can be identified in a priority order and dealt with on a "find and treat" basis. The sequence should be applied to every casualty you attend quickly and systematically. You should not allow yourself to be distracted from it by other events.

The chart opposite guides you through this sequence. Depending on your findings you may not move on to the next stage of the assessment. Only when life-threatening conditions are successfully managed, or there are none, should you perform a secondary survey (pp.46–48).

RESPONSE

At this point you need to make a quick assessment to find out whether a casualty is responding to you or is unresponsive. Observe the casualty as you approach. Introduce yourself even if he does not appear to be responding to you. Ask the casualty some questions, such as, "What happened?" or "Are you all right?" or give a command, such as "Open your eyes!" If there is no initial response, gently shake the casualty's shoulders. If the casualty is a child, tap his shoulder; if he is an infant, tap his foot. If there is still no response, he is described as unresponsive. If the casualty makes eye contact or some other gesture, he is responsive.

Unresponsive casualties take priority and require urgent treatment (pp.54–87).

AIRWAY

The first step is to check that a casualty's airway is open and clear. If a casualty is alert and talking to you, it follows that the airway is open and clear. If, however, a casualty is unresponsive, the airway may be obstructed (p.59). You need to open and clear the airway (adult, p.63; child, p.73; infant, p.80) – do not move on to the next stage until it is open and clear.

BREATHING

Is the casualty breathing normally? Look, listen and feel for breaths. If he is alert and/or talking to you, he will be breathing. However, it is important to note the rate, depth and ease with which he is breathing. For example, conditions such as asthma (p.102) that cause breathing difficulty require urgent treatment.

If an unresponsive casualty is not breathing, the heart will stop. Chest compressions and rescue breaths (cardiopulmonary resuscitation/CPR) must be started immediately (adult, pp.66–71; child, pp.76–79; infant, 82–83).

CIRCULATION

Conditions that affect the circulation of blood can be life threatening. Injuries that result in severe bleeding (pp.114–15) can cause blood loss from the circulatory system, so must be treated immediately to minimise the risk of a life-threatening condition known as shock (pp.112–13).

Only when life-threatening conditions have been stabilised, or there are none present, should you begin to carry out a detailed secondary survey of the casualty (pp.46–48).

THE ABC CHECK

Work through these checks quickly and systematically to establish treatment priorities.

AIRWAY
Is the casualty's airway open and clear (adult, pp.62–63; child, pp.72–73; infant, p.80)?

NO

RESPONSIVE

- If the casualty is responsive, treat conditions such as choking or suffocation that cause the airway to be blocked. Go to the next stage, **BREATHING**, when the airway is open and clear.

UNRESPONSIVE

- If the casualty is unresponsive, tilt the head and lift the chin to open the airway (adult, p.63; child, p.73; infant, p.80). Go to the next stage, **BREATHING**, when the airway is open and clear.

YES

BREATHING
Is the casualty breathing normally?
Look, listen and feel for breaths.

NO

RESPONSIVE

- Treat any difficulty found; for example, asthma. Go to the next stage, **CIRCULATION**.

UNRESPONSIVE

- If the casualty is unresponsive and not breathing, **call 999/112 for emergency help.** Begin chest compressions and rescue breaths (adult, pp.66–71; child, pp.76–79; infant, pp.82–83). If this happens, you are unlikely to move on to the next stage.

YES

CIRCULATION
Are there any signs of severe bleeding?

YES

- Control the bleeding (pp.114–15). **Call 999/112 for emergency help.** Treat the casualty to minimise the risk of shock (pp.112–13).

NO

If life-threatening conditions are managed, or there are none present, move on to the **secondary survey** (pp.46–48) to check for other injury or illness.

SECONDARY SURVEY

Once you have completed the primary survey and dealt with any life-threatening conditions, start the methodical process of checking for other injuries or illnesses by performing a head-to-toe examination. This is called the secondary survey. Question the casualty as well as the people around him. Make a note of your findings if you can, and make sure you pass all the details to the emergency services or hospital, or whoever takes responsibility for the casualty (p.29).

Ideally, the casualty should remain in the position found, at least until you are satisfied that it is safe to move him into a more comfortable position appropriate for his injury or illness.

This survey includes two further checks beyond the ABC (pp.44–45).

- **Disability** This is the casualty's level of response (p.52).
- **Examine the casualty** You may need to remove or cut away clothing to examine and/or treat the injuries.

By conducting this survey you are aiming to discover the following:

- **History** What happened leading up to the injury or sudden illness and any relevant medical history
- **Symptoms** Information that the casualty gives you about his condition
- **Signs** These are what you find on examination of the casualty

HISTORY

There are two important aspects to the history: what happened and any medical history.

EVENT HISTORY

The first consideration is to find out what happened. Your initial questions should help you to discover the immediate events leading up to the incident. The casualty can usually tell you this, but sometimes you have to rely on information from people nearby so it is important to verify that they are telling you facts and not just their opinions. There may also be clues, such as the impact on a vehicle, which can indicate the likely nature of the casualty's injury. This is often referred to as the mechanism of injury (pp.42–43).

PREVIOUS MEDICAL HISTORY

The second aspect to consider is a person's medical history. While this may have nothing to do with the present condition, it could be a clue to the cause. Clues to the existence of such a condition may include a medical bracelet or medication in the casualty's possessions (p.48).

TAKING A HISTORY

- **Ask what happened;** for example, establish whether the incident is due to illness or an accident.
- **Ask about medication** the casualty is taking currently.
- **Ask about medical history.** Find out if there are ongoing and previous conditions.
- **Find out if a person has any allergies.**
- **Check** when the person last had something to eat or drink.
- **Note the presence of a medical warning bracelet** – this may indicate an ongoing medical condition, such as epilepsy, diabetes or anaphylaxis.

SYMPTOMS

These are the sensations that the casualty feels and describes to you. When you talk to the casualty, ask him to give you as much detail as possible. For example, if he complains of pain, ask where it is. Ask him to describe the pain (is it constant or intermittent, sharp or dull). Ask him what makes the pain better or worse, whether it is affected by movement or breathing and, if it did not result from an injury, where and how it began. The casualty may describe other symptoms, too, such as nausea, giddiness, heat, cold or thirst. Listen very carefully to his answers (p.20) and do not interrupt him while he is speaking.

Listen to the casualty
Make eye contact with the casualty as you talk to him. Keep your questions simple, and listen carefully to the symptoms he describes.

SIGNS

These are features such as swelling, bleeding, discoloration, deformity and smells that you can detect by observing and feeling the casualty. Use all of your senses – look, listen, feel and smell. Always compare the injured and uninjured sides of the body. You may also notice that the person is unable to perform normal functions, such as moving his limbs or standing. Make a note of any obvious superficial injuries, going back to treat them only when you have completed your examination.

Compare both sides of the body
Always compare the injured part of the body with the uninjured side. Check for swelling, deformity and/or discoloration.

QUICK REMINDER

Use the mnemonic **A M P L E** as a reminder when assessing a casualty to ensure that you have covered all aspects of the examination. When the emergency services arrive, they may ask:

A – **Allergy** – does the person have any allergies?
M – **Medications** – is the person on any medication?
P – **Previous medical history** – do you know of any pre-existing conditions?
L – **Last meal** – when did the person last eat?
E – **Event history** – what happened?

SECONDARY SURVEY

LOOK FOR EXTERNAL CLUES

As part of your assessment, look for external clues to a casualty's condition. If you suspect drug abuse, take care as he may be carrying needles and syringes. You may find an appointment card for a hospital or clinic, or a card indicating a history of allergy, diabetes or epilepsy. Horse-riders or cyclists may carry such a card inside their riding hat or helmet. Food or medication may also give valuable clues about the casualty's condition; for example, people with diabetes may carry sugar lumps or glucose gel. A person with a known disorder may also have medical warning information on a special locket, bracelet, medallion or key ring (such as a "MedicAlert" or "SOS Talisman"). Keep any such item with the casualty or give it to the emergency services.

If you need to search a casualty's belongings, always try to ask the casualty first and then carry out the search in front of a reliable witness (p.21).

MEDICAL CLUES

MEDICATION
A casualty may be carrying medication such as anti-inflammatories for back pain or glyceryl trinitrate for angina.

MEDICAL WARNING BRACELET
This may be inscribed with information about a casualty's medical history (for example, epilepsy, diabetes or anaphylaxis), or there may be a number to call.

"PUFFER" INHALER
The presence of an inhaler usually indicates that the casualty has asthma; reliever inhalers are generally blue and preventive inhalers are usually brown or white.

INSUIN PEN
This may indicate that a person has diabetes. The casualty may also have a glucose testing kit.

AUTO-INJECTOR
This contains adrenaline for use by people at risk of anaphylactic shock. The pens are colour-coded for adult and child doses.

HEAD-TO-TOE EXAMINATION

Once you have taken the casualty's history (p.46) and asked about any symptoms she has (p.47), you should carry out a detailed examination. Use all your senses when you examine a casualty: look, listen, feel and smell. Always start at the casualty's head and work down; this "head-to-toe" routine is both easily remembered and thorough. You may have to sensitively loosen, open, cut away or remove clothing where necessary to examine the casualty (p.232). Always be sensitive to a casualty's privacy and dignity, and ask her permission before doing this.

Protect yourself and the casualty by putting on your disposable gloves. Make sure that you do not move the casualty more than is strictly necessary. If possible, examine a casualty who is responding to you in the position in which you find her, or one that best suits her condition, unless her life is in immediate danger. If an unresponsive breathing casualty has been placed in the recovery position, leave her in this position while you carry out the head-to-toe examination.

Check the casualty's breathing and pulse rates (pp.52–53), then work from her head downwards (see overleaf). Initially, note any minor injuries found but continue your examination to make sure that you do not miss any concealed potentially serious conditions; only return to the minor injuries when you have completed your examination.

POSSIBLE FINDINGS ON CARRYING OUT AN EXAMINATION

METHOD OF IDENTIFICATION	SYMPTOMS OR SIGNS
The casualty may tell you of these symptoms	■ Pain ■ Anxiety ■ Heat ■ Cold ■ Loss of sensation ■ Abnormal sensation ■ Thirst ■ Nausea ■ Tingling ■ Pain on touch or pressure ■ Faintness ■ Stiffness ■ Weakness ■ Memory loss ■ Dizziness ■ Sensation of broken bone ■ Sense of impending doom
You may see these signs	■ Temporary unresponsiveness ■ Anxiety and painful expression ■ Unusual chest movement ■ Burns ■ Sweating ■ Wounds ■ Bleeding from orifices ■ Response to touch ■ Response to speech ■ Bruising ■ Abnormal skin colour ■ Muscle spasm ■ Swelling ■ Deformity ■ Foreign bodies ■ Needle marks ■ Vomit ■ Incontinence ■ Loss of normal movement ■ Containers and other circumstantial evidence
You may feel these signs	■ Dampness ■ Abnormal body temperature ■ Swelling ■ Deformity ■ Irregularity ■ Grating bone ends
You may hear these signs	■ Noisy or distressed breathing ■ Groaning ■ Sucking sounds from a penetrating chest injury ■ Response to touch ■ Response to speech ■ Grating bone (crepitus)
You may smell these signs	■ Acetone ■ Alcohol ■ Burning ■ Gas or fumes ■ Solvents or glue ■ Urine ■ Faeces ■ Cannabis

HEAD-TO-TOE EXAMINATION

WHAT TO DO

1 **Assess breathing** (p.52). Check the rate (fast or slow), depth (shallow or deep) and nature (is it easy or difficult, noisy or quiet). Check the pulse (p.53). Assess the rate (fast or slow), rhythm (regular or irregular) and strength (strong or weak).

2 **Start the physical examination** at the casualty's head. Run your hands carefully over the scalp to feel for bleeding, swelling, tenderness or depression of the bone, which may indicate a fracture. Be careful not to move the casualty if you suspect that she may have injured her neck.

3 **Speak clearly to the casualty** in both ears to find out if she responds or if she can hear. Look for bleeding, clear fluid or watery blood coming from either ear. These discharges may be signs of a serious head injury (pp.144–45).

4 **Examine both eyes.** Note whether they are open. Check the size of the pupils (the black area). If the pupils are not the same size it may indicate head injury. Look for any foreign object, blood or bruising in the whites of the eyes.

5 **Check the nose for discharges** as you did for the ears. Look for bleeding, clear fluid or watery blood coming from either nostril. Any of these discharges might indicate serious head injury.

6 **Look in the mouth** for anything that might obstruct the airway. If the casualty has dentures that are intact and fit firmly, leave them. Look for mouth wounds or burns and check for irregularity in the line of the teeth.

7 **Look at the skin.** Note the colour and temperature: is it pale, flushed or grey-blue (cyanosis); is it hot or cold, dry or damp? Pale, cold, sweaty (clammy) skin suggests shock; a flushed, hot face suggests fever or heatstroke. A blue tinge indicates lack of oxygen; look for this in the lips, ears and face.

8 **Loosen clothing around the neck,** and look for signs such as a medical warning medallion (p.48) or a hole (stoma) in the windpipe. Run your fingers gently along the spine from the base of the skull down as far as possible without moving the casualty; check for irregularity, swelling, tenderness or deformity.

9 **Look at the chest.** Ask the casualty to breathe deeply, and note whether the chest expands evenly, easily and equally on both sides. Feel the ribcage to check for deformity, irregularity or tenderness. Ask the casualty if she is aware of grating sensations when breathing, and listen for unusual sounds. Note whether breathing causes any pain. Look for any external injuries, such as bleeding or stab wounds.

10 **Feel along the collar bones,** shoulders, upper arms, elbows, hands and fingers for any swelling, tenderness or deformity. Check the movements of the elbows, wrists and fingers by asking the casualty to bend and straighten each joint.

11 **Check that the casualty** has no abnormal sensations in the arms or fingers. If the fingertips are pale or grey-blue there may be a problem with blood circulation. Look out for needle marks on the forearms, or a medical warning bracelet (p.48).

12 **If there is any impairment** in movement or loss of sensation in the limbs, do not move the casualty to examine the spine, since these signs suggest spinal injury. Otherwise, gently pass your hand under the hollow of the back and check for swelling and tenderness.

13 **Gently feel the casualty's abdomen** to detect any evidence of bleeding, and to identify any rigidity or tenderness of the abdomen's muscular wall, which could be a sign of internal bleeding. Compare one side of the abdomen with the other.

14 **Feel both sides of the hips,** and examine the pelvis for signs of fracture. Check clothing for any evidence of incontinence, which suggests spinal or bladder injury, or bleeding from orifices, which suggests pelvic fracture.

15 **Check the legs.** Look and feel for bleeding, swelling, deformity or tenderness. Ask the casualty to raise each leg in turn, and to move her ankles and knees.

16 **Check the movement** and feeling in the toes. Check that the casualty has no abnormal sensations in her feet or toes. Compare both feet. Look at the skin colour: grey-blue skin may indicate a circulatory disorder or an injury due to cold.

MONITORING VITAL SIGNS

When treating a casualty, you may need to assess and monitor his breathing, pulse and level of response. This information can help you to identify problems and indicate changes in a casualty's condition. Monitoring should be repeated regularly, and your findings recorded and handed over to the medical assistance taking over (p.21).

In addition, if a casualty has a condition that affects his body temperature, such as fever, heat stroke or hypothermia, you will also need to monitor his temperature.

LEVEL OF RESPONSE

You need to assess and monitor a casualty's level of response and make a note of any change in her condition (deterioration or improvement) while she is in your care. Any injury or illness that affects the brain may alter a person's ability to respond, and any deterioration is potentially serious. Assess the level of response using the AVPU scale (right) and repeat the assesment at regular intervals.

- **A – Is the casualty Alert?** Are her eyes open and does she respond to questions?
- **V – Does the casualty respond to Voice?** Can she open her eyes, answer simple questions and obey commands?
- **P – Does the casualty respond to Pain?** Does she open her eyes or move if you pinch her ear lobe?
- **U – Is the casualty Unresponsive** to any stimulus (unconscious)?

BREATHING

When assessing a casualty's breathing, check the rate of breathing and listen for any breathing difficulties or unusual noises.

An adult's normal breathing rate is 12–16 breaths per minute; in babies and young children, it is 20–30 breaths per minute. When checking breathing, listen for breaths and watch the casualty's chest movements. For a baby or young child, it might be easier to place your hand on the chest and feel for movement of breathing. Record the following information:

- **Rate** – count the number of breaths per minute
- **Depth** – are the breaths deep or shallow
- **Ease** – are the breaths easy, difficult or painful
- **Noise** – is the breathing quiet or noisy, and if noisy, what are the types of noise

Checking a casualty's breathing rate
Observe the chest movements and count the number of breaths per minute. Use a watch to time breaths. For a baby or young child, place your hand on the chest and feel for movement.

PULSE

Each heartbeat creates a wave of pressure as blood is pumped along the arteries (pp.108–109). Where arteries lie close to the skin surface, such as on the inside of the wrist and at the neck, this pressure wave can be felt as a pulse. The normal pulse rate for an adult is 60–80 beats per minute. The pulse rate is faster in children and may be slower in very fit adults. An abnormally fast or slow pulse rate may be a sign of illness or injury.

The pulse may be felt at the wrist (radial pulse), or if this is not possible, the neck (carotid pulse). In babies, the pulse in the upper arm (brachial pulse) is easier to find.

When checking a pulse, use your fingers (not your thumb) and press lightly against the skin. Record the following points.

- **Rate** (number of beats per minute).
- **Strength** (strong or weak).
- **Rhythm** (regular or irregular).

Brachial pulse
Place the pads of two fingers on the inner side of an infant's upper arm.

Radial pulse
Place the pads of three fingers just below the wrist creases at the base of the thumb.

Carotid pulse
Place the pads of two fingers in the hollow between the large neck muscle and the windpipe.

BODY TEMPERATURE

Although not a vital sign, you may need to record temperature to assess body temperature. You can feel exposed skin on the forehead for example, but use a thermometer to obtain an accurate reading. Normal body temperature is 37°C (98.6°F). A temperature above this (fever) is usually caused by infection, but can also be the result of heat exhaustion or heatstroke (pp.184–85). A lower body temperature may result from exposure to cold and/or wet conditions – hypothermia (pp.186–88) – or it may be a sign of life-threatening infection or shock (pp.112–13). There are different several types of thermometer, see below.

Digital thermometer
Used to measure temperature under the tongue or armpit. Leave it in place until it makes a beeping sound (about 30 seconds), then read the display.

Forehead thermometer
A heat-sensitive strip for use on a young child. Hold it against the child's forehead for about 30 seconds. The colour on the strip indicates temperature.

Ear sensor
Place the probe inside the ear. Press the measurement key and wait for a beeping sound, then read the display. This thermometer can be used while a person is asleep.

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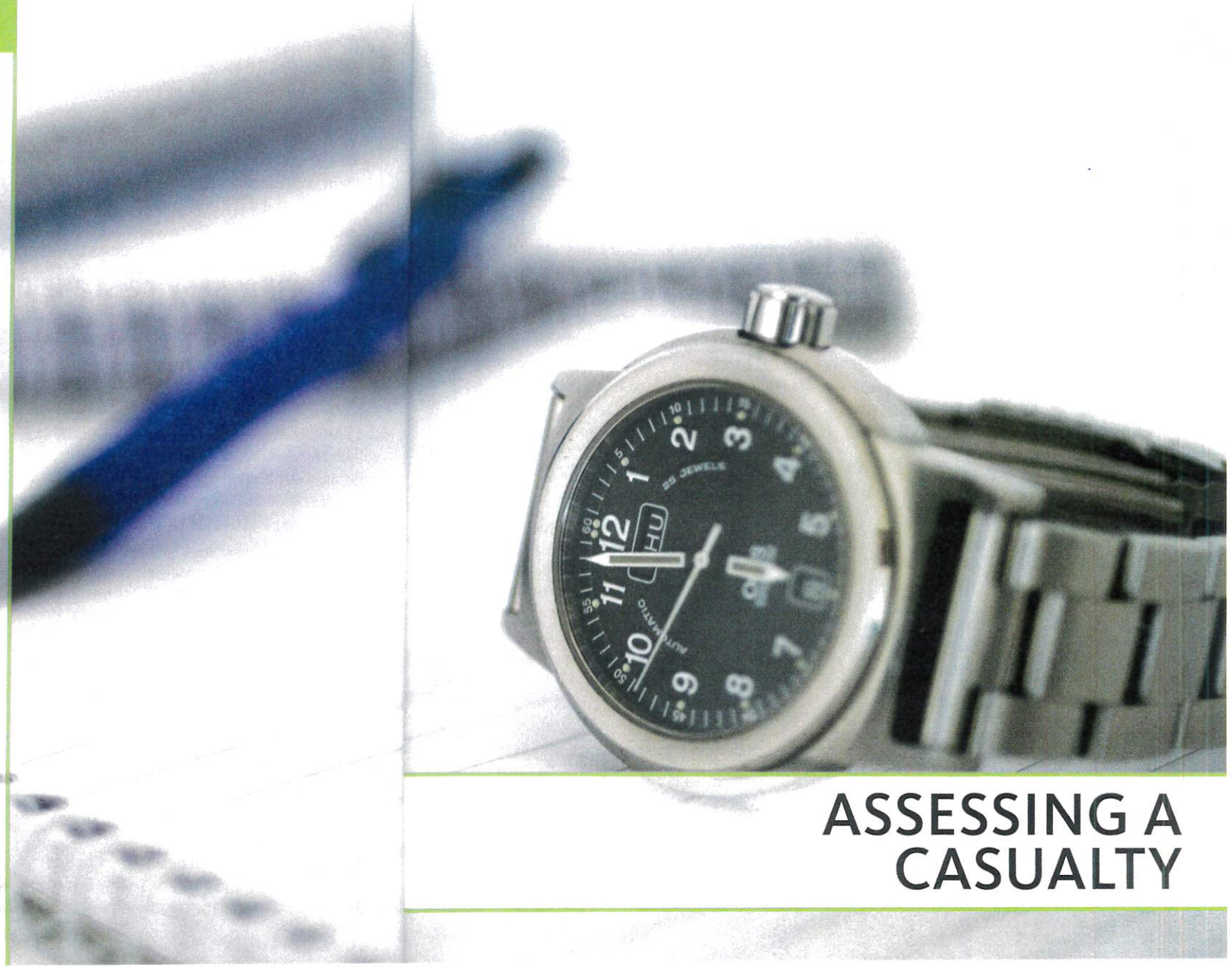
3

When a person is suddenly taken ill or has been injured, it is important to find out what is wrong as quickly as possible. However, your first priority is to make sure that you are not endangering yourself by approaching a casualty.

Once you are sure that an incident area is safe, you need to begin your assessment of the casualty or casualties. This chapter explains how to approach each casualty and plan your assessment using a methodical two-stage system, first to identify and treat life-threatening conditions according to their priority (primary survey), then to carry out a detailed assessment looking for injuries that are not immediately apparent (secondary survey). There is advice on deciding treatment priorities, managing more than one casualty and arranging aftercare. A casualty's condition may improve or deteriorate while in your care, so there is guidance on how to monitor changes in his condition.



AIMS AND OBJECTIVES

- To assess a situation quickly and calmly, while first protecting yourself and the casualty from any danger
- To assess each casualty and treat life-threatening injuries first
- To carry out a more detailed assessment of each casualty
- To seek appropriate help. **Call 999/112 for emergency help** if you suspect serious injury or illness
- To be aware of your own needs

ASSESSING A CASUALTY

ASSESSING THE SICK OR INJURED

From the previous chapters you will now know that to ensure the best possible outcome for anyone who is injured or suddenly becomes ill you need to take responsibility for making assessments. Tell those at the scene that you are a trained first aider and calmly take control. However, as indicated in Chapter 2 (pp.26–37), resist the temptation to begin dealing with any casualty until you have assessed the overall situation, ensured that everyone involved is safe and, if appropriate, have taken steps to organise the necessary help.

As you read through this chapter, look back at Chapter 1 (pp.12–25) as well and remember the following:

- **Be calm**
- **Be aware of risks**
- **Build and maintain the casualty's trust**
- **Call appropriate help**
- **Remember your own needs**

MANAGING THE INJURED OR SICK

There are three aspects to managing a sick or injured person. It is important to work quickly and systematically to avoid unnecessary delay.

- **First,** find out what is wrong with the casualty.
- **Second,** treat conditions found in order of severity – life-threatening conditions first.
- **Third,** arrange for the next step of a casualty's care. You will need to decide what type of care a casualty needs. You may need to call for emergency help, suggest the casualty seeks medical advice or allow him to go home, accompanied if necessary.

Other people at the incident can help you with this. Ask one of them to **call 999/112 for emergency help** while you attend a casualty. Alternatively, they may be able to help support injured limbs, look after less seriously injured casualties, or fetch first aid equipment.

First actions
Support the casualty; a bystander may be able to help. Ask the casualty what happened, and try to identify the most serious injury.

METHODS OF ASSESSMENT

When you assess a casualty you first need to identify and deal with any life-threatening conditions or injuries as quickly as possible with a primary survey. Deal with each life-threatening condition as you find it, working in the following order – airway, breathing, then circulation – before you progress to the next stage.

Depending on your findings you may not move on to the next stage of the assessment. If the life-threatening injuries are successfully managed, or there are none, you continue the assessment and perform a secondary survey.

THE PRIMARY SURVEY

This is an initial rapid assessment of a casualty to establish and treat conditions that are an immediate threat to life (pp.44–45).

If a casualty is suffering from minor injuries and responding to you, for example, talking, then this survey will be completed very quickly. If, however, a casualty is more seriously injured and/or not responding to you (unresponsive), the assessment may take longer.

Follow the ABC principle: Airway, Breathing and Circulation.

- **Airway** Is the airway open and clear?
  The airway is not open and clear if the casualty is unable to speak. An obstructed airway will prevent breathing, causing hypoxia (p.92) and ultimately death.
  The airway is open and clear if the casualty is talking to you.
- **Breathing** Is the casualty breathing normally?
  If the casualty is not breathing normally, **call 999/112 for emergency help,** then start chest compressions with rescue breaths (cardiopulmonary resuscitation/CPR). If this happens, you are unlikely to move on to the next stage.
  If the casualty is breathing, check for and treat any breathing difficulty such as asthma, then move on to the next stage: circulation.
- **Circulation** Is the casualty bleeding severely?
  If he is bleeding this must be treated immediately since it can lead to a life-threatening condition known as shock (pp.112–13). **Call 999/112 for emergency help.**
  If there is no bleeding, continue to the secondary survey.

SPECIAL CASE SEVERAL CASUALTIES

If there is more than one casualty, you will need to prioritise those that must be treated first according to the severity of their injuries. Use the primary survey ABC principles (above) to do this. Remember that unresponsive casualties are at greatest risk.

THE SECONDARY SURVEY

This is a detailed examination of a casualty to look for other injuries or conditions that may not be immediately apparent (pp.46–48). To do this, carry out a head-to-toe examination (pp.49–51). Your aim is to find out:

- **History** What actually happened and any relevant medical history.
- **Symptoms** Injuries or abnormalities that the casualty tells you about.
- **Signs** Injuries or abnormalities that you can see.

By checking the recognition features of the different injuries and conditions explained in the chapters of this book you can identify what may be wrong. Record your findings and pass on any relevant information to the medical team.

LEVEL OF RESPONSE

You will initially have noted whether or not a casualty is responding to you. He may have spoken to you or made eye contact or some other gesture (see p.44). Or perhaps there has been no response to your questions such as "Are you all right?" or "What happened?". Now you need to establish the level of response using the AVPU scale (p.52). This is important since some illnesses and injuries cause a deterioration in a casualty's level of response, so it is vital to assess the level, then monitor him for changes.

4

THE UNRESPONSIVE CASUALTY

To stay alive we need an adequate supply of oxygen to enter the lungs and be transferred to all cells in the body by the circulating blood. If a person is deprived of oxygen for any length of time, the brain will begin to fail. As a result, the casualty will eventually become unresponsive, breathing will cease, the heart will stop and death results.

The casualty's airway must be kept open so that breathing can occur, allowing oxygen to enter the lungs and be circulated in the body.

Therefore, the priority of a first aider when treating any collapsed casualty is to establish an open airway and maintain breathing and circulation. An AED (automated external defibrillator) may be used to "shock" a fibrillating heart back into a normal rhythm. This chapter outlines the priorities to remember when dealing with an unresponsive adult, child or infant.

There are important differences in the treatment for unresponsive infants, children and adults; this chapter gives separate step-by-step instructions for dealing with each of these groups.

AIMS AND OBJECTIVES

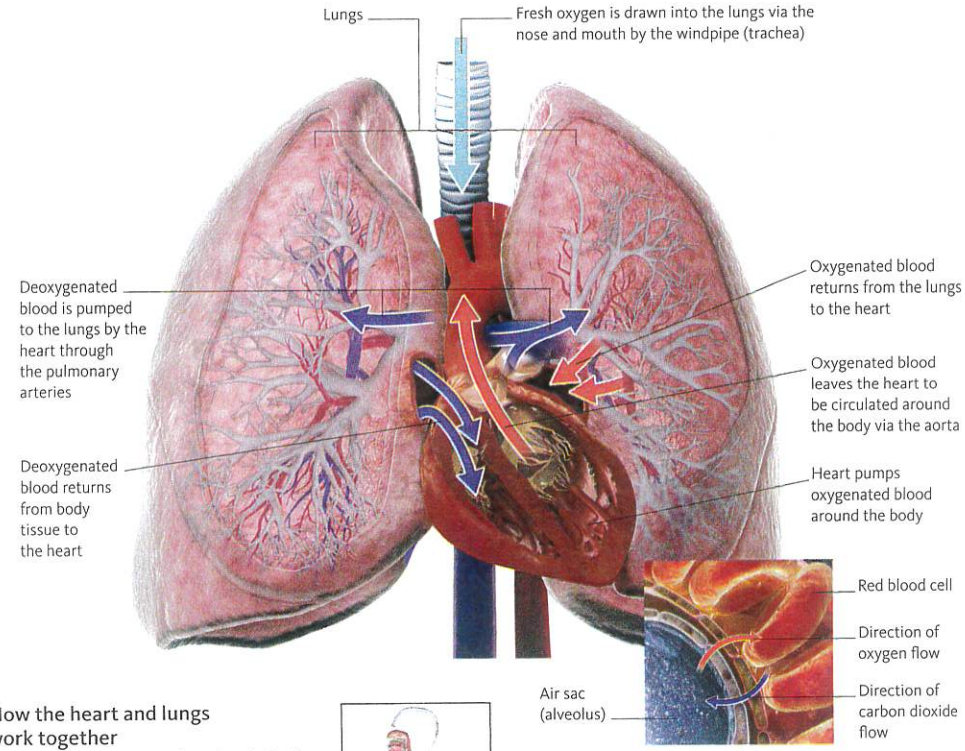
- To maintain an open airway, to check breathing and resuscitate if required
- To call 999/112 for emergency help

BREATHING AND CIRCULATION

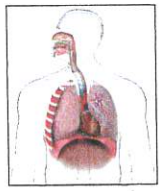
Oxygen is essential to support life. Without it, cells in the body die – those in the brain survive only a few minutes without oxygen. Oxygen is taken in when we breathe in (pp.90–91), and it is then circulated to all the body tissues via the circulatory system (p.108). It is vital to maintain breathing and circulation in order to sustain life.

The process of breathing enables air, which contains oxygen, to be taken into the air sacs (alveoli) in the lungs. Here, the oxygen is transferred across blood vessel walls into the blood, where it combines with blood cells. At the same time, the waste product of breathing, carbon dioxide, is released and exhaled in the breath. When oxygen has been transferred to the blood cells it is carried from the lungs to the heart through the pulmonary veins. The heart then pumps the oxygenated blood to the rest of the body via blood vessels called arteries.

After oxygen is given up to the body tissues, deoxygenated blood is brought back to the heart by blood vessels called veins (p.108). The heart pumps this blood to the lungs via the pulmonary arteries, where the carbon dioxide is released and the blood is reoxygenated before circulating around the body again.



How the heart and lungs work together
Air containing oxygen is taken into the lungs via the mouth and nose. Blood is pumped from the heart to the lungs, where it absorbs oxygen. Oxygenated blood is returned to the heart before being pumped around the body.



Exchange of gases in the air sacs
Carbon dioxide passes out of blood cells into air sacs (alveoli). Oxygen crosses the walls of alveoli into blood cells.

LIFE-SAVING PRIORITIES

The procedures set out in this chapter can maintain a casualty's circulation and breathing.

With an unresponsive casualty your priorities are to maintain an open airway, to maintain blood circulation (to get oxygenated blood to the tissues), and to breathe for the casualty (to get oxygen into the body). In an adult during the first minutes after the heart stops (cardiac arrest), the blood oxygen level remains constant, so chest compressions are more important than rescue breaths in the initial phase of resuscitation. After about two to four minutes, the blood oxygen level falls and rescue breathing becomes more important. The combination of chest compressions and rescue breaths is known as cardiopulmonary resuscitation, or CPR.

In addition to CPR, a machine called an AED (automated external defibrillator) can be used to deliver an electric shock that may restore a normal heartbeat (pp.84–87). In children and infants, a problem with breathing is the most likely reason for the heart to stop. Because of this they should therefore be given FIVE initial rescue breaths before the chest compressions are started.

CHEST-COMPRESSION-ONLY CPR

If you have not had any training in CPR, or you are unwilling or unable to give rescue breaths, you can give chest compressions only. The emergency services will give instructions for chest-compression-only CPR (pp.70–71).

KEY ELEMENTS FOR SURVIVAL

If all of the following elements are complete, the casualty's chances of survival are as good as they can possibly be:

- **Emergency help** is called quickly
- **CPR** is used to provide circulation and oxygen to the body tissues
- **AED** is used promptly
- **Specialised treatment** and advanced care arrive quickly

CHAIN OF SURVIVAL

EARLY HELP
Call 999/112 for emergency help so that an AED and expert help can be brought to the casualty.

EARLY CPR
Chest compressions and rescue breaths are used to "buy time" until expert help arrives.

EARLY DEFIBRILLATION
A controlled electric shock from an AED is given. This can "shock" the heart into a normal rhythm.

EARLY ADVANCED CARE
Specialised treatment by paramedics and in hospital stabilises the casualty's condition.

LIFE-SAVING PRIORITIES

IMPORTANCE OF MAINTAINING CIRCULATION

If the heart stops beating, blood does not circulate through the body. As a result, vital organs – most importantly the brain – become starved of oxygen. Brain cells are unable to survive for more than three to four minutes without a supply of oxygen.

Some circulation can be maintained artificially with chest compressions (pp.66–67). These act as a mechanical aid to the heart in order to get blood flowing around the body. Pushing vertically down on the centre of the chest increases the pressure in the chest cavity, expelling blood from the heart and forcing it into the tissues. As pressure on the chest is released, the chest recoils, or comes back up, and more blood is "sucked" into the heart; this blood is then forced out of the heart by the next compression. It is possible to find the hand position for chest compressions without removing clothing.

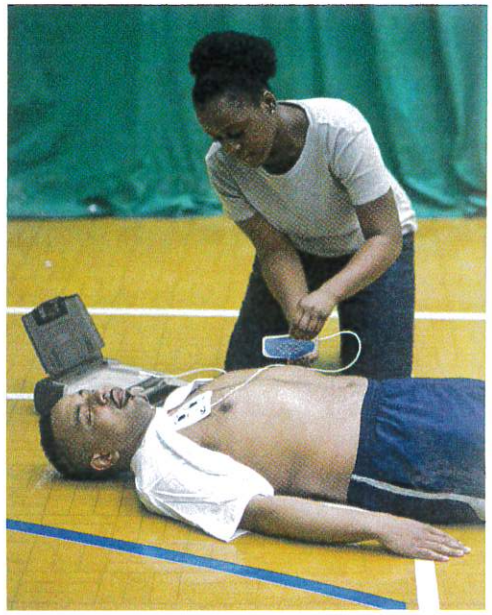
To ensure that the blood is supplied with enough oxygen, chest compressions should be combined with rescue breathing (opposite).

GIVING CHEST COMPRESSIONS

RESTORING HEART RHYTHM

A machine called an AED (automated external defibrillator) will be used to attempt to restart the heart when it has stopped (pp.84–87). The earlier the AED is used, the greater the chance of the casualty surviving. With each minute's delay, the chances of survival fall – however, do not leave a casualty to search for an AED; ask a bystander to fetch one (p.60). AEDs can be used safely and effectively without any prior training in their use.

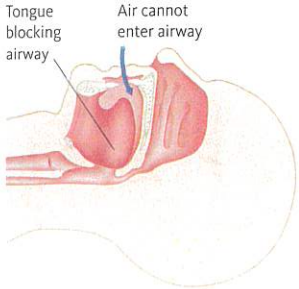
AEDs are found in many public places, such as railway stations, shopping centres, airports, coach stations and ferry ports. They are generally housed in cabinets, often marked with a recognised symbol (p.85), and placed where they can be easily accessed – on station platforms for example. The cabinets are not locked, but most are fitted with an alarm that is activated when the door is opened.



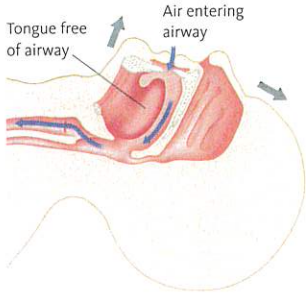
USING AN AED

AN OPEN AIRWAY

An unresponsive casualty's airway can become narrowed or blocked. This can be the result of muscular control being lost, which allows the tongue to fall back and block the airway. When this happens, the casualty's breathing becomes difficult and noisy and may stop altogether. Lifting the casualty's chin and tilting the head back lifts the tongue away from the entrance of the air passage, which allows the casualty to breathe.



Blocked airway
In an unresponsive casualty, the muscle control in the tongue is lost so it falls back, blocking the throat and airway.



Open airway
In the head-tilt, chin-lift position, the tongue is lifted from the back of the throat and the trachea is open, so the airway will be clear.

BREATHING FOR A CASUALTY

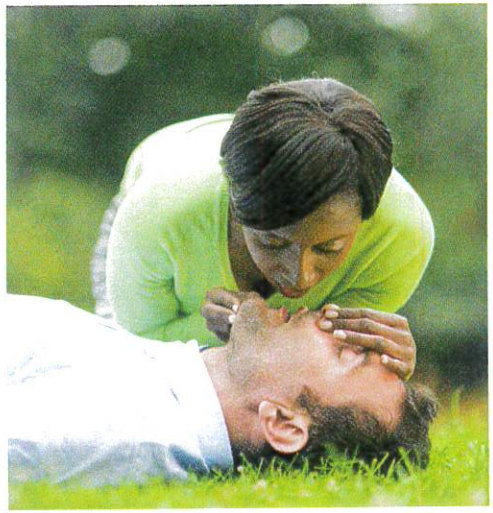
Exhaled air contains about 16 per cent oxygen (only 5 per cent less than inhaled air) and a small amount of carbon dioxide. Your exhaled breath therefore contains enough oxygen to supply another person with oxygen – and potentially keep him alive – when it is forced into his lungs during rescue breathing.

By giving a casualty rescue breaths (p.67), you force air into his air passages. This reaches the air sacs (alveoli) in the lungs, and oxygen is then transferred to the blood vessels in the lungs.

When you take your mouth away from the casualty's, his chest falls, and air containing waste products is pushed out, or exhaled, from his lungs. This process, performed together with chest compressions (pp.66–67), can supply the tissues with oxygen until help arrives.

CAUTION

AGONAL BREATHING
This type of breathing usually takes the form of short, irregular gasps for breath. It is common in the first few minutes after a cardiac arrest. It should not be mistaken for normal breathing and, if it is present, chest compressions and rescue breaths (cardiopulmonary resuscitation/CPR) should be started without hesitation.



GIVING RESCUE BREATHS

LIFE-SAVING PRIORITIES

ADULT RESUSCITATION

This action plan is a summary of the techniques to use when attending a collapsed adult. There are more detailed instructions given on the following pages. Carry out the following steps in rapid succession to minimise interruption to CPR.

CHECK CASUALTY'S RESPONSE

- Try to get a response by asking questions and gently shaking his shoulders (p.62).

Is there a response?

YES → Leave the casualty in the position found. Use the primary survey (pp.44–45) to identify the most serious injury and treat in order of priority.

NO ↓

OPEN THE AIRWAY; CHECK FOR BREATHING

- Tilt the head back and lift the chin to open the airway (p.63).
- Check for breathing (p.63).

Is he breathing normally?

YES → If possible, leave the casualty in the position found. Use the primary survey (pp.44–45) to identify the most serious injury and treat in order of priority. Place the casualty in the recovery position (pp.64–65). **Call 999/112 for emergency help.**

NO ↓

Ask a helper to **call 999/112 for emergency help** and fetch an AED
- If you are on your own, make the call yourself.

↓

BEGIN CPR

- Give 30 chest compressions (pp.66–67).
- Give TWO rescue breaths (p.67).
- Alternate 30 chest compressions with TWO rescue breaths (30:2) until help arrives; the casualty shows signs of becoming responsive, for example, coughing, opening his eyes, speaking, or moving purposefully, and starts to breathe normally; or you are too exhausted to continue.

→
- If you are on your own, start CPR straight away; do not leave the casualty in search of an AED.
- If you have not had training in CPR, or you are unwilling or unable to give rescue breaths, you can give chest compressions only (pp.70–71). The emergency services will give instructions for chest-compression-only CPR.
- If the casualty starts breathing normally, but remains unresponsive, place him in the recovery position (pp.64–65).

CHILD/INFANT RESUSCITATION

This action plan shows the order for the techniques to use when attending a child between the ages of one and puberty or an infant under one year.

CHECK CHILD'S RESPONSE

- Try to get a response by asking questions and gently tapping the child's shoulder or an infant's foot.

Is there a response?

YES → Leave the child in the position found. Use the primary survey (pp.44–45) to identify the most serious injury and treat in order of priority.

NO ↓

OPEN THE AIRWAY; CHECK FOR BREATHING

- Tilt the head back and lift the chin to open the airway (child, p.73; infant, p.80).
- Check for breathing (child, p.73; infant, p.81).

Is she breathing normally?

YES → If possible, leave the casualty in the position found. Use the primary survey (pp.44–45) to identify the most serious injury and treat in order of priority. Place the child in the recovery position (pp.74–75), or hold an infant (p.81). **Call 999/112 for emergency help.**

NO ↓

Ask a helper to **call 999/112 for emergency help** and, for a child, fetch an AED, ideally with paediatric pads.
- Do not use an AED on an infant.

↓

GIVE INITIAL RESCUE BREATHS

- Carefully remove any visible obstruction from the mouth.
- Give FIVE initial rescue breaths (child, p.76; infant, p.80).

↓

BEGIN CPR

- Give 30 chest compressions (child, p.77; infant, p.83).
- Follow with TWO rescue breaths.
- Alternate 30 chest compressions with TWO rescue breaths (30:2) until emergency help arrives; the child shows signs of becoming responsive, such as coughing, opening her eyes, speaking, or moving purposefully, and starts to breathe normally; or you are too exhausted to continue.

→
- It is better to give a combination of rescue breaths and chest compressions with infants and children. However, if you have not had training in CPR, or you are unwilling or unable to give rescue breaths, you may give chest compressions only (pp.70–71). The emergency services will give instructions for chest-compression-only CPR.
- If you are alone, carry out CPR for one minute before calling for emergency help. Take the infant or child with you to the phone if necessary – never leave a child to search for an AED.
- If the child starts breathing normally, but remains unresponsive, place her in the recovery position (child, pp.74–75; infant, p.81).

UNRESPONSIVE ADULT

The following pages describe techniques for the management of an unresponsive adult who may require resuscitation.

Always approach and treat the casualty from the side, kneeling down next to his head or chest. You will then be in the correct position to perform all the stages of resuscitation: opening the airway; checking breathing; and giving chest compressions and rescue breaths (together called cardiopulmonary resuscitation, or CPR). At each stage you will have decisions to make – for example, is the casualty breathing? The steps given here tell you what to do next; work through them in rapid succession with minimal interruption.

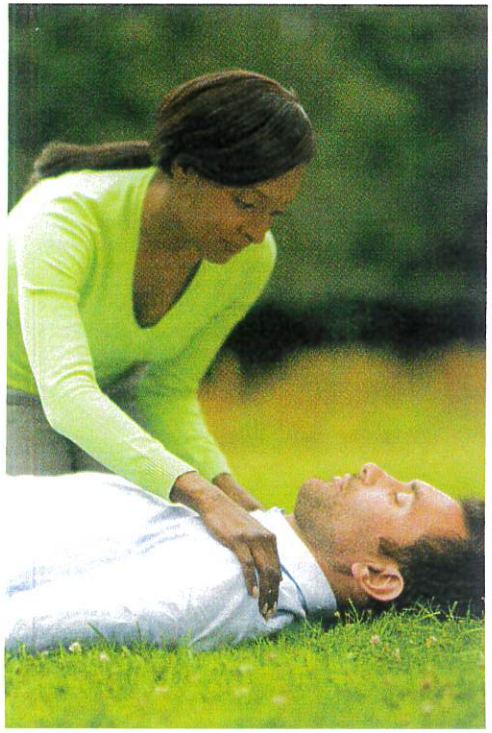
The first priority is to open the casualty's airway so that he can breathe or you can give rescue breaths. If normal breathing returns at any stage, you should place the casualty in the recovery position. If the casualty is not breathing, the early use of an AED (automated external defibrillator) may increase his chance of survival.

CAUTION

- Always assume that there is a neck injury and shake the shoulders very gently.

HOW TO CHECK THE RESPONSE

On discovering a collapsed casualty, you should first make sure the scene is safe and then establish whether he is responsive or unresponsive. Do this by gently shaking the casualty's shoulders. Ask "What has happened?" or give a command such as, "Open your eyes". Always speak loudly and clearly to the casualty.



IF THERE IS A RESPONSE

1. **If there is no further danger,** leave the casualty in the position in which he was found. Use the primary survey (pp.44–45) to identify the most serious injury and treat conditions in order of priority. Summon help if needed.

2. **Monitor and record vital signs** – breathing, pulse and level of response (pp.52–53) – until help arrives or the casualty recovers.

IF THERE IS NO RESPONSE

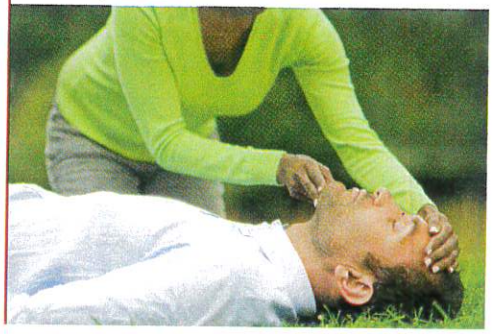
1. **Shout for help.** Leave the casualty in the position in which he was found and open the airway.

2. **If you are unable to open** the airway in the position in which he was found, roll him on to his back and open the airway. Go to *How to open the airway* (opposite).

HOW TO OPEN THE AIRWAY

1. **Place one hand on his forehead.** Gently tilt his head back. As you do this, the mouth will fall open slightly.

2. **Place the fingertips** of your other hand on the point of the casualty's chin and lift the chin. Check the casualty's breathing. Go to *How to check breathing,* below.



HOW TO CHECK BREATHING

Keeping the airway open, look, listen and feel for normal breathing: look for chest movement; listen for sounds of breathing; and feel for breaths on your cheek. Do this for no more than 10 seconds before deciding whether or not the casualty is breathing normally. Breathing may be agonal (p.59). If there is any doubt, act as if it is not normal.

IF THE CASUALTY IS BREATHING

1. **Use the primary survey** (pp.44–45) to identify the most serious injury and treat conditions in order of priority.

2. **Place the casualty in the recovery position** (pp.64–65) and **call 999/112 for emergency help.**

3. **Monitor and record vital signs** – breathing, pulse and level of response (pp.52–53) – while waiting for help to arrive. Go to *How to place casualty in recovery position* (pp.64–65).

IF THE CASUALTY IS NOT BREATHING

1. **Ask a helper to call 999/112 for emergency help.** Ask the person to bring an AED if one is available. If you are alone, make the call yourself, ideally use your mobile device set to speaker phone to make the call.

2. **Begin CPR with chest compressions** – do not leave a casualty in search of an AED. Go to *How to give CPR* (pp.66–67).

« UNRESPONSIVE ADULT

HOW TO PLACE CASUALTY IN RECOVERY POSITION

If the casualty is found lying on his side or front, rather than his back, not all the following steps will be necessary to place him in the recovery position. If the mechanism of injury suggests a spinal injury, treat as described opposite and on pp.157–59.

WHAT TO DO

1 **Kneel beside the casualty.** Remove his spectacles and any bulky objects, such as mobile phones or large bunches of keys, from his pockets. Do not search his pockets for small items.

2 **Make sure that both** of the casualty's legs are straight. Place the arm that is nearest to you at right angles to the casualty's body, with the elbow bent and the palm facing upwards.

3 **Bring the arm** that is farthest from you across the casualty's chest, and hold the back of his hand against the cheek nearest to you. With your other hand, grasp the far leg just above the knee and pull it up, keeping the foot flat on the ground.

4 **Keeping the casualty's hand** pressed against his cheek, pull on the far leg and roll the casualty towards you and on to his side.

5 **Adjust the upper leg** so that both the hip and the knee are bent at right angles.

6 **Tilt the casualty's head back** and tilt his chin so that the airway remains open (p.63).

7 **If necessary,** adjust the hand under the cheek to keep the airway open.

8 **If it has not already been done, call 999/112 for emergency help.** Monitor and record vital signs – breathing, pulse and level of response (pp.52–53) – while waiting for help to arrive.

9 **If the casualty is likely to remain** in the recovery position for a while, after 30 minutes roll him on to his back, and then roll him on to the opposite side – unless other injuries prevent you from doing this.

SPECIAL CASE RECOVERY POSITION FOR SUSPECTED SPINAL INJURY

If you suspect a spinal injury (pp.157–59) and need to place the casualty in the recovery position because you cannot maintain an open airway, try to keep the spine straight using the following guidelines:

- If you are alone, use the technique shown opposite and above.
- If you have one helper, one of you should steady the head while the other turns the casualty (right).
- With three people, one person should steady the head while another turns the casualty. The third person should keep the casualty's back straight during the manoeuvre.
- If there are four or more people in total, use the log-roll technique (p.159).

« UNRESPONSIVE ADULT

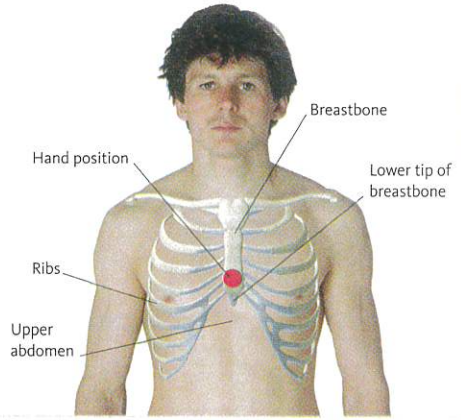
HOW TO GIVE CPR

WHAT TO DO

1 **Kneel beside the casualty** level with his chest. Place the heel of one hand on the centre of the casualty's chest. You can identify the correct hand position for chest compressions through a casualty's clothing.

HAND POSITION

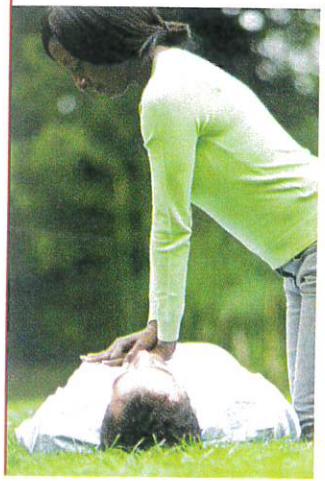
Place your hand on the casualty's breastbone as indicated here. Make sure that you do not press on the casualty's ribs, the lower tip of the breastbone or the upper abdomen.



2 **Place the heel of your other hand** on top of the first hand, and interlock your fingers, making sure the fingers are kept off the ribs.

3 **Leaning over the casualty,** with your arms straight, press down vertically on the breastbone and depress the chest by 5–6cm (2–2½in). Release the pressure without removing your hands from his chest. Allow the chest to come back up fully (recoil) before giving the next compression.

4 **Compress the chest** 30 times at a rate of 100–120 compressions per minute. The time taken for compression and release should be about the same.



5 **Move to the casualty's head** and make sure that the airway is still open. Put one hand on his forehead and two fingers of the other hand under the tip of his chin. Move the hand that was on the forehead down to pinch the soft part of the nose with the finger and thumb. Allow the casualty's mouth to fall open

CAUTION

If there is more than one rescuer, change over every 1–2 minutes, with minimal interruption to chest compressions.

6 **Take a breath** and place your lips around the casualty's mouth, making sure you have a good seal. Blow into the casualty's mouth until the chest rises. A complete rescue breath should take one second. If the chest does not rise, you may need to adjust the head position (How to open the airway, p.63).

7 **Maintaining head tilt** and chin lift, take your mouth off the casualty's mouth and look to see the chest fall. If the chest rises visibly as you blow and falls fully when you lift your mouth away, you have given a rescue breath – one rescue breath should take one second. Give a second rescue breath.

8 **Continue the cycle** of 30 chest compressions followed by TWO rescue breaths (30:2) until: emergency help arrives and takes over; the casualty shows signs of becoming responsive – such as coughing, opening his eyes, speaking, or moving purposefully – and starts to breathe normally; or you are too exhausted to continue.

UNRESPONSIVE ADULT

SPECIAL CONSIDERATIONS FOR CPR

There are circumstances when it may be more difficult to deliver CPR:

- If you have not been trained in CPR or are unwilling or unable to give rescue breaths you can give chest compressions only (pp.70–71). An ambulance dispatcher will give instructions for chest-compression-only CPR.
- If there is more than one rescuer, change over every 1–2 minutes, with minimal interruption to chest compressions.
- If the casualty vomits during CPR, roll him away from you onto his side, ensuring that his head is turned towards the floor to allow vomit to drain away. Clear any residual debris from his mouth, then immediately roll him onto his back again and recommence CPR.
- If a woman in the late stage of pregnancy requires CPR, raise her right hip off the ground by tilting it upwards before you begin compressions, see below.
- Modified rescue breathing may be necessary in some cases: for example, if a casualty has a chemical around the mouth, you can give rescue breaths through the nose (opposite). A casualty may breathe through a hole in the front of the neck – a stoma – opposite). You can also use a pocket mask or face shield when giving rescue breaths.

CPR IN LATE STAGES OF PREGNANCY

If a heavily pregnant woman is lying on her back, the pregnant uterus will press against the large blood vessels in the abdomen. This restricts blood from the lower part of the body returning to the heart, which reduces the amount of blood circulation that can be achieved with chest compressions. To prevent this from happening, tilt her right hip upwards.

Positioning the woman
Keep the woman's upper body as flat on the floor as possible in order to give good-quality compressions. Raise her right hip and ask a helper to kneel beside the woman so that his knees are underneath the raised hip. If you are on your own, place tightly rolled up clothing or towels under the woman's hip to lift it.

PROBLEMS WITH RESCUE BREATHING

If a casualty's chest does not rise when giving rescue breaths:

- Re-check the head tilt and chin lift.
- Re-check the casualty's mouth and remove any obvious obstructions, but do not do a finger sweep of the mouth.

Make no more than two attempts to achieve rescue breaths before repeating compressions.

VARIATIONS FOR RESCUE BREATHING

There are some situations where mouth-to-mouth rescue breaths are not appropriate and you need to use a mouth-to-nose or mouth-to-stoma technique.

Mouth-to-nose rescue breathing
If a casualty has injuries to the mouth that make it impossible to achieve a good seal, you can use the mouth-to-nose method for giving rescue breaths. With the casualty's mouth closed, form a tight seal with your lips around the nose and blow steadily into the casualty's nose. Then allow the mouth to fall open to let the air escape.

Mouth-to-stoma rescue breathing
A casualty who has had his voice-box surgically removed breathes through an opening in the front of the neck (a stoma), rather than through the mouth and nose. Always check for a stoma before giving rescue breaths. If you find a stoma, close off the mouth and nose with one hand and then breathe into the stoma.

FACE SHIELDS AND POCKET MASKS

Face shields are plastic barriers with a filter that is placed over the casualty's mouth. A pocket mask has a mouthpiece through which breaths are given. If you have one of these barrier devices, avoid unnecessary interruptions to CPR when you use it.

Using a face shield
Tilt the casualty's head back to open the airway. Place the shield over the casualty's face so that the filter is over the mouth and pinch the nostrils shut. Deliver rescue breaths through the filter.

Using a pocket mask
Kneel behind the casualty's head. Open the airway and place the mask, narrow end towards you, over the casualty's mouth and nose. Deliver rescue breaths through the mouthpiece.

WHEN THE AMBULANCE ARRIVES

The ambulance service may initially send a sole responder in a fast-response vehicle or a community first responder ahead of the ambulance. If an AED is not already attached to the casualty, the ambulance personnel will do that. They will also use additional drugs and equipment to provide advanced care (p.57). If you are asked to help you should listen carefully and follow the instructions given (p.23).

The ambulance personnel will make a decision whether to transfer the casualty to hospital immediately or to continue treatment at the scene. Any decision to stop resuscitation can only be made by a health care professional.

« UNRESPONSIVE ADULT

CAUTION

- If there is more than one rescuer swap every 1–2 minutes to prevent fatigue. Make sure there is minimal interruption when you change over to maintain the quality of the compressions.
- For unresponsive children and infants who are not breathing, it is best to give CPR using rescue breaths with chest compressions (pp.76–77 and pp.82–83).
- If a casualty has been rescued from water and is not breathing, it is best to give CPR using rescue breaths and chest compressions (Drowning, p.100).

CHEST-COMPRESSION-ONLY CPR

Healthcare professionals and trained first aiders will deliver CPR using chest compressions combined with rescue breaths (pp.66–67). However, if you have not had training in CPR or you are unwilling or unable to give rescue breaths, chest-compression-only CPR has been shown to be of great benefit certainly in the first minutes after the heart has stopped. The emergency services will give instructions for chest-compression-only resuscitation for an unresponsive casualty when advising an untrained person by telephone. Put your device on speaker-phone mode so that you can deliver first aid and talk to the dispatcher. Start chest compressions as soon as possible and continue them until: emergency help arrives and takes over; the casualty shows signs of becoming responsive – such as coughing, opening his eyes, speaking or moving purposefully – and starts breathing normally; or you are too exhausted to continue.

WHAT TO DO

1 **Check for a response.** Gently shake the casualty's shoulders, and talk to him or give a command (p.62).

IF THERE IS A RESPONSE
Use the primary survey (pp.44–45) to identify the most serious injury and treat conditions in order of priority.

IF THERE IS NO RESPONSE
Shout for help and open the airway, step 2.

2 **Open the casualty's airway.** Place one hand on the forehead and gently tilt the head – the mouth should fall open. Place the fingertips of your other hand on the chin and lift it.

3 **Check breathing:** look, listen and feel for signs of breathing for no more than 10 seconds.

IF HE IS BREATHING
Use the primary survey (pp.44–45) to identify the most serious injury and treat conditions in order of priority. Place in the recovery position (pp.66–65).

IF HE IS NOT BREATHING
Call 999/112 for emergency help then begin chest compressions, step 4.

4 **Kneel beside the casualty,** level with his chest. Place one hand on the centre of the chest (p.66) – you can identify the position through clothing. Put the heel of your other hand on top of the first and interlock your fingers. Make sure your fingers are not in contact with the ribs.

5 **Begin chest compressions:** lean over the casualty, with your arms straight and press down vertically on his breastbone, depressing the chest by about 5–6cm (2–2½in). Release the pressure – but do not take your hands off the chest – and let the chest come back up. The time taken for compression and release should be about the same.

6 **Continue with chest compressions** at a rate of 100–120 per minute until: emergency help arrives; the casualty shows signs of becoming responsive – such as coughing, opening his eyes, speaking or moving purposefully – and starts breathing normally; or you are too exhausted to continue.