

An Introduction to **First Aid**

European First Aid Guidelines
developed by Johanniter International



endorsed by *European Medical Association*



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Preface

In the event of an accident or medical emergency, **first aid saves lives**. Keeping the patient alive and safe until the arrival of expert professional help is a vital part of the chain of care which leads to recovery. The principle of first aid must be simple skills, clearly taught and capable of being performed in a stressful situation by those with no medical training. This manual is intended to offer a basic level of first aid for members of the general public.

Johanniter International (JOIN) is the association of the organisations affiliated to the Orders of St John across Europe and beyond. Its Clinical Working Group is charged with ensuring the quality and dissemination of first aid training across its member countries.

Copyright issues in a number of member countries have made widespread adoption of any single set of guidelines difficult or impossible. The contents of this manual are offered therefore as a first edition of European First Aid Guidelines for general use. As such they are compatible with current practise, with other specialist guidelines (for example regarding the management of burns) and with the evidence base where one exists. These guidelines will be updated on a regular basis by the JOIN Clinical Working Group.

It seems remarkable that a set of European first aid guidelines has not been established before 2019. We hope that these guidelines will be well received, and we welcome any comments or suggestions; which can be sent to our office (join.office@johanniter.org).



Prof Ian Greaves

Chairman, Johanniter International Clinical Working Group

August 2019

Conditions of use

These guidelines, which are currently available in 15 languages, may be used without charge by any organisation or individual that teaches first aid. The guidelines will be issued in the same languages in mobile versions in due course.

If you are using these guidelines as a commercial organisation, we would ask that you consider making a donation to support the work of JOIN via our website.

The guidelines must be used in full *as they are published* and no alterations are permitted without prior agreement.

These guidelines are offered in good faith and represent the European consensus of opinion of a wide range of subject matter experts. Every effort has been made to ensure that this manual reflects the relevant guidance from authoritative sources, current at the time of issue.

However, responsibility for their use remains with the first aider. The JOIN organisations do not accept responsibility for any claims arising from the use of this manual. First aiders are advised to keep up to date with developments and to recognise the limits of their competence. Whilst the material in the guidelines provides guidance on initial care and treatment, it must not be regarded as a substitute for medical advice.

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Organisations and Representatives on the Working Group

As chairman, I am immensely grateful to all the members of the working group, both Johanniter International members and those experts invited to join us for the development process. Without their commitment, hard work and willingness to compromise, these guidelines would not have been possible.

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Sincere thanks are also due to the various national bodies affiliated to the International St John family who have kindly allowed us to share their material.

Introduction

First aid can be defined as the immediate assistance delivered to someone who is ill or injured. A **first aider** is anyone with the skills and knowledge required to provide such care.

This guide is aimed at members of the public or family encountering a medical problem and has been compiled by the Clinical Working Group of Johanniter International (JOIN). The topics it covers includes emergency situations where first aid may be of life-saving importance. This material provides basic guidance and should not replace medical advice if it is immediately available. It describes a level of first aid which might be taught in a single short course. Many of the techniques may also be used on a self-taught basis.

For the purposes of this guide, an infant is less than one year old while a child is considered to be between the age of one and eight inclusive.

First aid training is not a one-off event – it requires ongoing experience and regular refresher training to ensure your knowledge and skills are kept up to date.

The information in this guide is set out so that you can:

- Understand the role of the first aider
- Deal with the first aid incident
- Understand how the setting can affect first aid needs
- Treat specific injuries
- Manage common illnesses
- Know what first aid equipment may be needed and how to use it

Use of a patient's own medication

First aiders are encouraged to assist a patient in taking their own medication if appropriate. Examples include the use of an inhaler in asthma or an auto-injector to treat severe allergic reactions.

Personal safety

An individual providing first aid must protect themselves as much as possible from exposure to body fluids – such as vomit, urine or blood. Certain items of Personal Protective Equipment (PPE) are essential:

- Disposable gloves
- Face shield (to counter risk of infection when delivering rescue breaths)
- Consider alcohol gel or similar (for use before and after providing treatment)

Hand washing reduces the risk of germs or contamination passing between the first aider and patient. Ideally, hands should be thoroughly washed with soap and warm running water before and after patient contact or activities likely to cause contamination. Following washing, hands should be dried thoroughly, preferably with disposable towels. An alcohol-based liquid or gel can be used if soap and water are not available and hands are visibly clean.

Looking after yourself

As a first aider you have the skills and knowledge to save lives. Helping others usually results in a rewarding, positive experience. However, individuals may experience a range of negative feelings such as doubt, anxiety, sadness and irritability. Situations which can be particularly distressing are those involving children, multiple patients or circumstances that impact on a more personal level. As a first aider you must understand the theory and practice the skills required to carry out simple procedures so that, whatever happens, you will know that you did everything you could in the context of your own knowledge and training.

When negative feelings occur, they will usually settle rapidly and are often followed by more positive feelings of relief, satisfaction and acceptance. If these continue to impact upon your normal activities of personal, social or working life you should seek further help from a healthcare professional.

Everyone responds to difficult situations in different ways and some people are more resilient than others. The primary objective is maintaining your own health and understanding your own needs when dealing with a stressful incident.

Most people will not suffer significant or long-term problems after providing first aid. In fact, most will find it a rewarding experience, whether successful or not, and feel satisfied that they tried to make a difference. This is normal too.

Long term problems are quite rare and the secret is to recognise poor coping or abnormal function or reactions (in yourself or others) and access help at the earliest possible opportunity.

Where to get help

Help can be sought through your own family doctor and if you are part of an organised first aid scheme in your own country, such as St John, your colleagues will be only too happy to point you, confidentially, towards appropriate assistance and to provide you with support.

"It's OK not to be OK... but it's also OK to be OK"

Supporting the victim

The victims of accidents and emergencies may also suffer psychological consequences. However, there are some simple things which a first aider can suggest that may help reduce the likelihood of adverse reactions. This approach can be referred to as **psychological first aid** and may be helpful to the victims of traumatic events. If the circumstances are appropriate, it may be useful to advise the victim of effective coping strategies as well as those behaviour patterns which should lead to them to consider seeking help. A summary of potentially beneficial or harmful behaviours is given in the table.

BENEFICIAL	POTENTIALLY HARMFUL
<ul style="list-style-type: none">■ Talking to people for support■ Engaging in positive activities■ Maintain a normal schedule■ Healthy lifestyle■ Relaxation methods■ Participation in support groups■ Professional counselling	<ul style="list-style-type: none">■ Using alcohol or drugs to cope■ Withdrawing from family and friends■ Working too much■ Risk-taking behaviour■ Avoidance of thinking or talking about the event

Responding to an Emergency

In an emergency it is important to follow a clear plan. This helps you to prioritise your actions and provide an appropriate and effective response.

Most of the incidents that a first aider will encounter will be relatively minor. Patients may not require further medical attention and, if they do, they will not need an emergency ambulance. In most cases patients will be able to access other healthcare professionals or make their way to hospital by another means of transport. It is within the remit of the first aider to offer basic advice in signposting¹ patients to the most appropriate onward care pathway (which may include discharge to home or work).

If the incident is more serious certain steps are essential and the first aider must

- Assess for danger and make the area safe if possible
- Call 999/112 to summon emergency assistance if appropriate

When telling the emergency services operator about an incident, begin by giving your name and phone number. Information should be passed briefly and clearly. The following details should be communicated:

- Situation (what has happened)
- Location (precisely where is the incident and how to reach it)
- Injured number (of victims)
- Dangers present (real and potential)
- Emergency services required

Once the call has been completed it is important to do what you can to provide care until further help arrives. You may get assistance by telephone from the emergency call handler. In some cases you may be able to do nothing more than provide support and companionship until help arrives, but this is really valuable.

If the emergency is in a large establishment, ensure that you send somebody to meet the emergency services and direct them to the scene of the incident.

If appropriate and you are able to do so, gather the patient's medications, put any loose animals safely away and if it is dark, ensure that lights are left on to make it easier to find you.

When providing first aid it is important to ensure that you preserve the patient's dignity and privacy as far as possible without interfering with your ability to help them, bearing in mind cultural sensitivities. In addition, whenever providing first aid for a child you should ensure that a parent or other adult is present.

¹ Signposting is the term used for ensuring the patient is directed to the most appropriate form of further care.

Who to treat first?

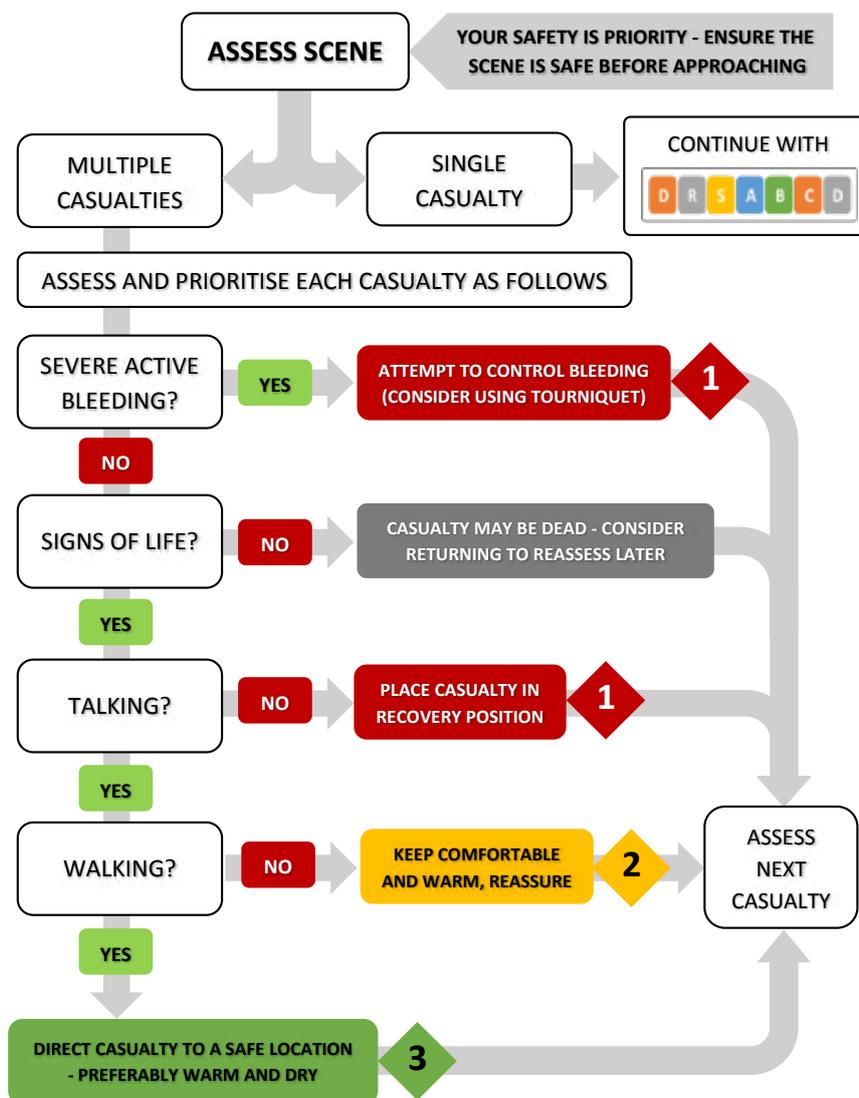
Sometimes an incident involves more than one patient. In these rare situations, you will need to identify those most in need of treatment.

Your aim in this situation is to do the most for the most and preserve life.

If the situation remains hazardous, all those patients who can walk should be directed or guided to a single safe place, usually a little distance from the scene where they can await further assessment in safety.

For the remaining patients, the first focus should be on stopping serious bleeding and supporting the airway and breathing.

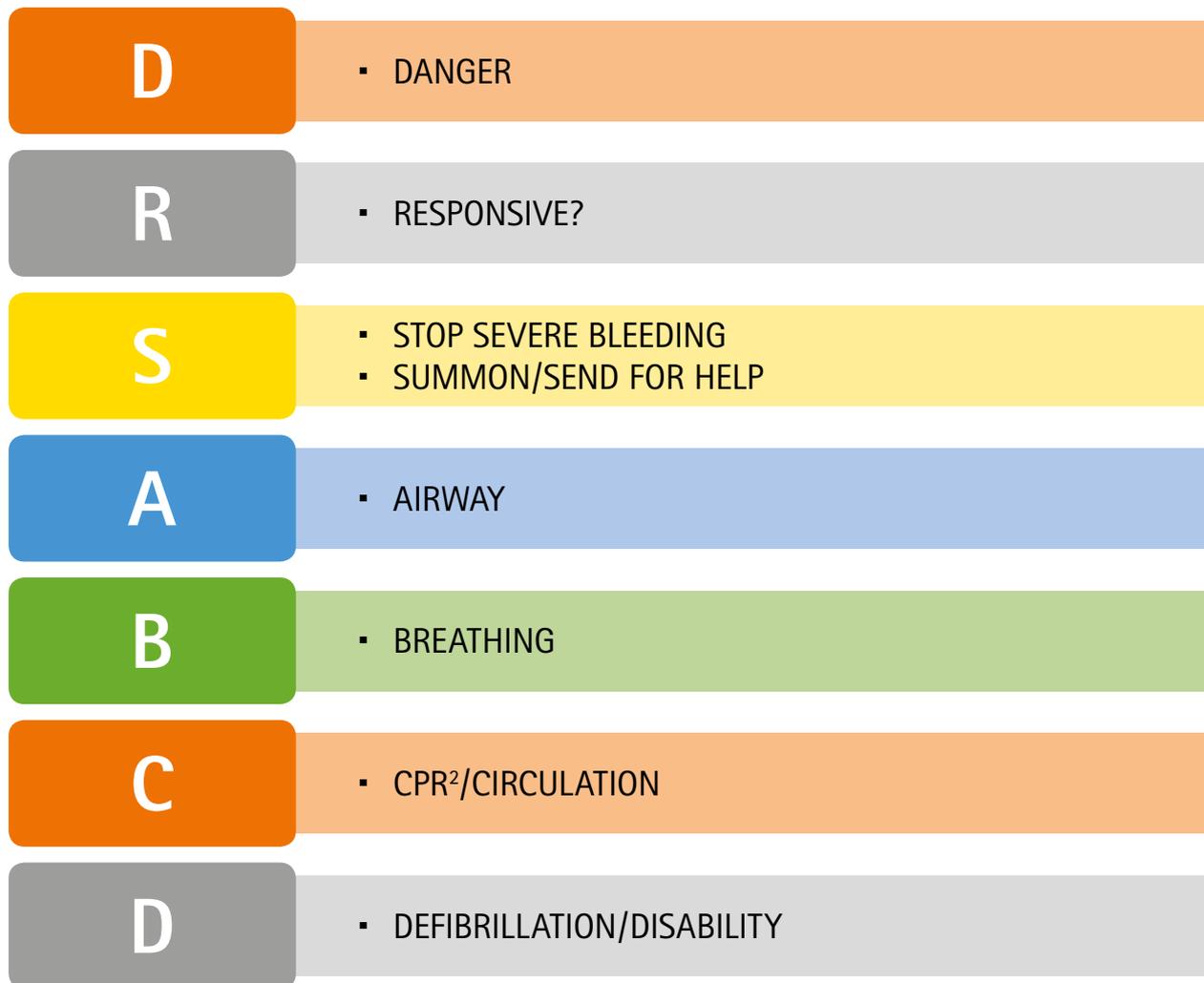
This first aid guide uses the **DRS-ABCD** mnemonic (remember "DoctoRS-ABCD") which will be introduced on the next page. It forms a simple and easy to remember framework for you as a first aider responding to an incident.



▶ Assessment and Prioritisation of Multiple Casualties

Introducing DRS-ABCD

This is the **DRS-ABCD** approach, which should be followed whenever you are managing a single casualty. If you have **multiple casualties** it may be necessary to prioritise severe bleeding ("S") over the assessment of responsiveness ("R").



² CPR - Cardio-Pulmonary Resuscitation

As a first aider you will encounter two groups of patients: those who have been injured and those who are ill. The **DRS-ABCD** approach provides the framework for managing both types of patient. We will now look at each of these stages in turn.

The first two stages D and R are the same whether the patient is injured or ill:

D

▪ DANGER

It is essential that first aiders do not put themselves at unnecessary risk when they go to help someone who is injured or ill (Figure 1). You should make sure that it is safe for you to offer help and if you identify dangers try to ensure that all those present move to a safer place. It may not be possible to safely offer first aid and assistance may have to wait until the emergency services, who are used to working in hazardous environments, arrive. This is fine – do not feel pressured to take unnecessary risks.



▶ Figure 1 – Check for danger

R

▪ RESPONSIVE?

The next step is to find out if the patient is responsive. In most cases this will be obvious as they will talk to you or respond appropriately when you talk to them. If they do not **respond to your voice, pinch their earlobe gently** (Figure 2). Do not vigorously shake the patient as this may exacerbate any injury.



▶ Figure 2 – Pinching an earlobe

Actions at the subsequent stages S-ABCD will differ depending on whether the patient is injured or ill:

S

- STOP SEVERE BLEEDING
- SUMMON/SEND FOR HELP

If the patient has been injured and is bleeding heavily you should immediately attempt to control the bleeding (see page 31).

The next task may be to **call for help**. Ideally you should remain with the patient and use a mobile phone using speakerphone. You may receive further guidance from the emergency services call operator.

If this is not possible, and there is someone else present, send them to telephone for help and return to confirm that help is on its way. In both cases, ensure an Automated External Defibrillator (AED) is obtained if available. The emergency services will tell you where the nearest one is located.

A

- AIRWAY

If the patient is unresponsive, check the airway. If there is a visible blockage in the mouth it should be carefully removed if this is possible and safe to do so.

Next, the airway should be opened using a simple manoeuvre - the "**head tilt-chin lift**" (Figure 3).

Place the fingertips of one hand under the point of the patient's chin, lift and hold. At the same time place your other hand on the forehead and gently tilt the head backwards. This action should open the airway by lifting the tongue away from the back of the throat.



▶ Figure 3 - The "head tilt-chin lift" manoeuvre

There are some small differences in managing airways in children, these are described in page 19.

B

▪ BREATHING

The next step is to see if the patient is breathing normally. Normal breathing should appear regular and comfortable.

To assess breathing look for chest movement and listen and feel for breathing for no more than 10 seconds – **LOOK – LISTEN – FEEL** (Figure 4). If you are unsure whether the patient is breathing normally, assume that they are not.



▶ Figure 4 - Look listen and feel for breathing

If the patient is:

- **Responsive and breathing normally** – place them in a comfortable position and move onto assessment of CIRCULATION
- **Unresponsive and breathing normally** – place them in the recovery position (page 24) and move onto assessment of CIRCULATION
- **Unresponsive and not breathing normally** – immediately go to C and start CPR (page 16)

If you are on your own you may need to leave the casualty briefly to make sure help is on its way.

C

▪ CPR/CIRCULATION

- **If CPR is required follow guidance on page 16.**
- In all other cases assess CIRCULATION by looking for signs of shock (page 33).

D

▪ DEFIBRILLATION/DISABILITY

If **CPR has been commenced**, attach an AED as soon as one becomes available (see page 18) and follow the verbal instructions the device gives.

If **CPR is not necessary** the next step is to assess **DISABILITY** which is carried out using AVPU scale to assess the level of response.

The four levels of response are:

A – Alert: Is the patient fully alert?

V – Voice: Does the patient respond to voice?

P – Pain: Responding only to pain (pinch the ear lobe as shown in Figure 2)

U – Unresponsive: Doesn't respond to any stimulus

As part of the **DISABILITY** assessment ask the patient if they can move and have normal sensation of all their limbs.

When completed this concludes the initial **DRS-ABCD** approach. If there has been any deterioration in the patient's condition recommence your assessment from the start.

If the patient's condition has not changed, this is now the time to conduct a 'head-to-toe' assessment looking for any other injuries and ask about any illness symptoms. This can also be built upon any features recognised during your initial **DRS-ABCD** assessment.

This information can then be handed over to the emergency services when they arrive.



▶ Figure 5 - The international AED sign

The next few pages describe the **DRS-ABCD** phases in more detail using the lettered icons (at the top of the page) to refer to the appropriate part of the sequence. For example:



refers to the **CPR / Circulation** phase of **DRS-ABCD**

Performing CPR and Defibrillation in Adults

This section will explain how to provide first aid to ADULTS who are unresponsive and not breathing normally.

The purpose of chest compressions is to manually pump blood around the body so that oxygen can reach the brain and heart. In addition to this an Automated External Defibrillator (AED) must be used as soon as possible.

999 Remember to summon help as soon as possible 112

The principles which guide first aid in this situation are summarized in the CHAIN OF SURVIVAL (Figure 6).



▶ Figure 6 – The chain of survival

Key elements:

- Early recognition and access to help
- Immediate chest compressions
- AED used as soon as possible
- Delivery of specialist care

CPR involves a combination of chest compressions and rescue breaths. If you are NOT comfortable or unable to do rescue breaths, perform **continuous compressions** without stopping to give breaths.

Providing chest compressions

Performing chest compressions is tiring and ideally the provider should be changed every 2 minutes. CPR should only be stopped if the patient starts to show signs of life, when further medical help arrives, or the provider becomes exhausted.



▶ Figure 7 - Chest compressions

- Move the patient onto their back laid on a firm surface and kneel beside their chest
- Place the heels of both hands on the centre of the chest with your arms straight with one hand upon the other (Figure 7)
- Give 30 chest compressions aiming to achieve a rate of 100-120 compressions/minute
- For each compression firmly press down by 5-6cm, fully releasing the pressure between compressions without your hands leaving the chest (Figure 7)

Providing rescue breaths



▶ Figure 8 - Head tilt-chin lift



▶ Figure 9 - Rescue breath

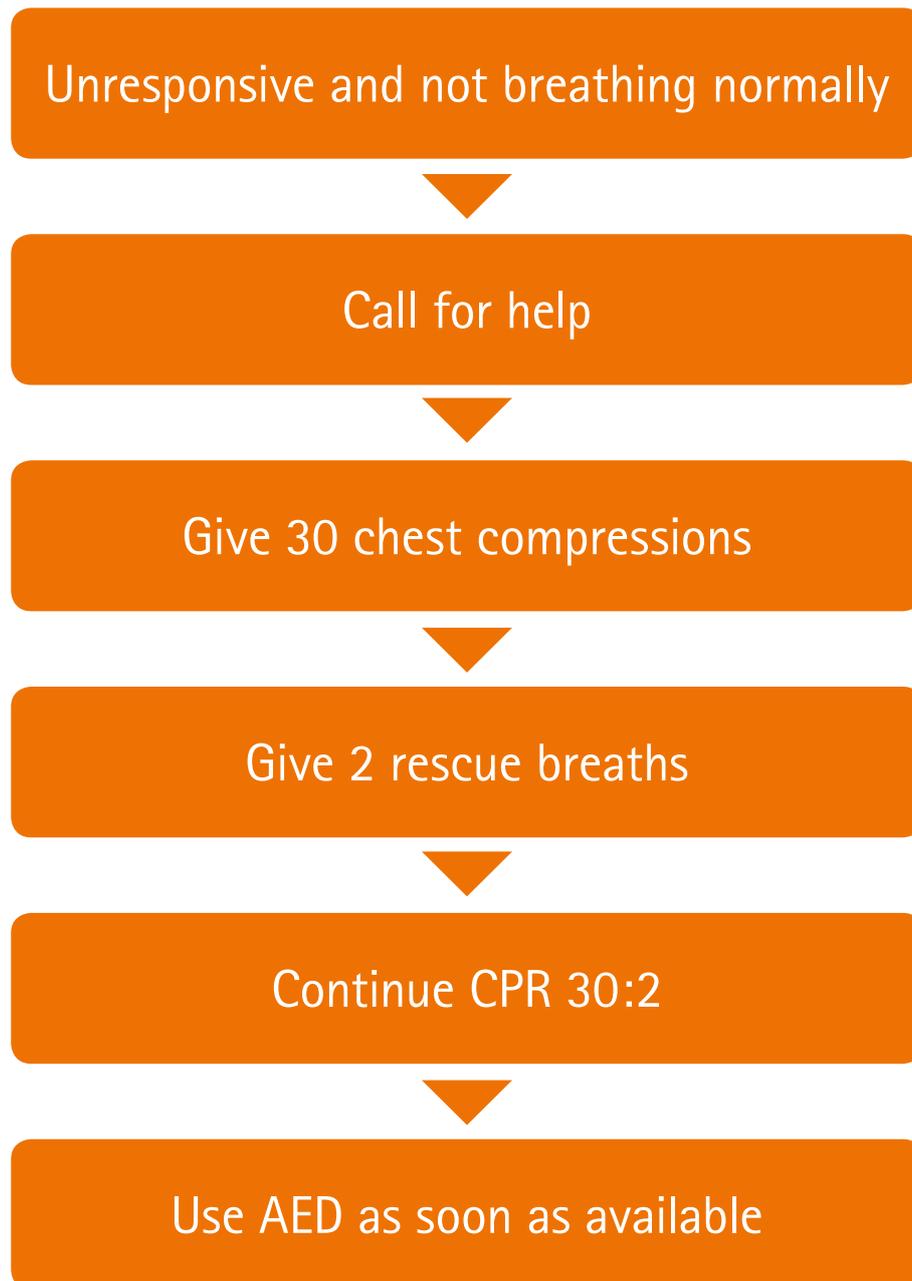
- The ratio of chest compressions to breaths should be 30:2
- Lift the chin and tilt the head back (Figure 8)
- A face shield or face mask will make the delivery of breaths safer and more acceptable for the first aider
- Place your mouth around the patient's mouth, ensuring you have a good seal and pinch their nose (Figure 9)
- Attempt to deliver only 2 breaths of about 1 second duration each time making the chest visibly rise
- If unsuccessful in delivering breaths re-check the airway on the next attempt for a visible blockage (and remove it if present) and reposition the patient's head

If you are unwilling or unable to give breaths, then you should **deliver only chest compressions**. In most countries the emergency services operator will provide instructions for resuscitation which should be followed to the best of your ability.

Use of an Automated External Defibrillator (AED)

Use the AED immediately as soon as one arrives. Open the case, turn on the device and follow the verbal instructions provided. Once the AED is switched on, a voice prompt will tell you exactly what to do. Because the AED monitors the patient's heart rate and rhythm, it will not administer a shock unless one is needed. If the patient has a shockable rhythm, the sooner defibrillation occurs, the greater the chance there is of survival.

Defibrillation may be safely carried out in pregnant patients.



► Table 1 - The BLS algorithm

Performing CPR and defibrillation in Infants and Children

An infant is less than one year old while a child is aged from one to eight (inclusive)

The same **DRS-ABCD** approach should be followed for Infants and Children as for Adults, with some important differences as described below:

Compressions

During CPR, chest compressions should depress the sternum by at least one-third of the depth of the chest, which is approximately 4 cm in an infant and 5 cm in a child.

Compressions in infants

- The lone rescuer should compress the sternum with the tips of two fingers (Figure 10)
- If there are two or more rescuers, one should use the encircling technique to provide chest compressions whilst the other performs rescue breaths:
 - Place both thumbs flat, side-by-side, on the lower half of the sternum (Figure 11), with the tips pointing towards the infant's head
 - Spread the rest of both hands, with the fingers together, to encircle the lower part of the infant's rib cage with the tips of the fingers supporting the infant's back
 - Press down on the lower sternum with your two thumbs to depress it at least one-third of the depth of the infant's chest, approximately 4 cm



▶ Figure 10 - The two fingers technique



▶ Figure 11 - The encircling technique

Compressions in children

- Place the heel of one hand over the lower half of the sternum
- Lift the fingers to ensure that pressure is not applied over the child's ribs (Figure 12)
- Position yourself vertically above the patient's chest and, with your arm straight, compress the sternum to depress it by at least one-third of the depth of the chest, approximately 5 cm
- In larger children, this may be achieved most easily by using both hands (as for CPR in adults)



► Figure 12 – Hand position during compressions in children

Rescue breaths

Remember that airway obstruction is more common in children and more time and care should be taken to ensure the airway is cleared before commencing breaths.

In infants, avoid tilting the head too far backwards as this may obstruct the airway. The position shown in (Figure 13) is ideal.

Exercise extreme caution not to over-inflate when delivering breaths to younger children.

You may find it easier to place your own mouth over the child's mouth and nose to create a seal when delivering breaths to younger children.

Rescue efforts should be continued until the infant or child improves and there are signs of life or further medical help arrives and can take over.



► Figure 13 – Neutral head position in infants

If you need to leave the scene to call for help you should ideally carry the infant or small child with you.

Use of an AED in children

An AED is not to be used in infants

In the child ideally use paediatric pads with the AED. If paediatric pads are unavailable, use standard adult pads and position one on the front of the chest and one on the back – as shown in Figure 14.



► Figure 14 - AED pad positioning in children

Choking in Adults

Choking is not uncommon, especially in the very young or elderly. Simple emergency actions may save lives. You should follow the **DRS-ABCD** approach. Signs and symptoms of choking include:

- Coughing, wheezing or gagging
- Difficulty breathing, speaking or swallowing
- Panic
- Clutching at the throat
- Making abnormal sounds like whistling when breathing
- Unresponsiveness

The actions to take:

- Encourage the patient to cough
- If this does not clear the object, send for help and then
- Lean the patient forwards and give them five firm back blows between the shoulder blades with the heel of the hand as shown in (Figure 15).
- If back blows are unsuccessful in clearing the obstruction, try five abdominal thrusts (also known as the Heimlich Manoeuvre). These are best performed by standing behind the patient then making a fist with one hand and placing just below the rib cage in the middle. The other hand then grasps the fist from below and together they are thrust upwards and backwards (Figure 16).
- Five back blows should be alternated with five abdominal thrusts until the obstruction is cleared or the patient becomes unresponsive.



▶ Figure 15 - Back blows



▶ Figure 16 - Abdominal thrusts

What do you do if the choking patient becomes unconscious?

- Support the patient gently to the floor if they are not already on it and lie them on their back
- Call for help and immediately commence CPR
- Continue CPR until professional help arrives or the obstruction is dislodged

Choking in Infants and Children

For all infants and children the initial treatment is to encourage them to cough.

If the cough is ineffective, perform five back blows.

In *older* children, use the same technique for back blows as in adults (Figure 15).

Infants and smaller children should be supported in a head down position. Depending on the age and size of the child, this may be along a forearm or across the rescuer's lap. The child's head should be supported with the palm of the hand, using the fingers of that hand to hold their mouth open. The forearm should be sloping gently downwards to encourage the object blocking the airway to fall out of their mouth. Give five back blows just as you would in an adult, but more gently (Figure 17).

If this does not dislodge the object, the next step depends on the age of the child:

- In infants, chest thrusts are used
 - Deliver up to 5 chest thrusts. These are the same as chest compressions but delivered at a slower rate (Figure 18)
 - The aim is to relieve the obstruction with each thrust rather than to give all five so it is important to check for improvement after each thrust
- In children, abdominal thrusts are used (as per the technique for adults - see Figure 16)

In infants and children 5 back blows should be alternated with 5 chest thrusts or 5 abdominal thrusts respectively. If the infant or child becomes unresponsive, CPR should be commenced (as explained previously).



▶ Figure 17 - Back blows in an infant or small child



▶ Figure 18 - Chest thrusts in an infant or small child

Recovery position

The unresponsive patient who is breathing normally is at risk of dying if their airway becomes blocked. Placing them in the recovery position ensures that their airway is kept open and clear. Clearing an obstructed airway takes priority over any concern about a potential neck or back injury. If there is a significant risk of a spinal injury and the patient is breathing normally, they should be left in the position in which they are found (page 49).

Figure 19 shows how to put an adult or child in the recovery position.



► Figure 19 - Placing a patient in the recovery position

Once the patient is in the recovery position:

- Phone the emergency services or send someone else to do so
- Keep checking that they are breathing
- Keep the patient warm using a blanket or coat
- If the patient needs to be in the recovery position for a prolonged time, turn them from one side to the other every 30 minute
- Women in late stages of pregnancy should ideally be kept on their left side

Infant recovery position

If the patient is an infant, cradle them in your arms with their head tilted downwards and monitor their breathing and level of responsiveness until medical help arrives (Figure 20).



► Figure 20 - The infant recovery position

Removing a motorcycle helmet

If you are the first on the scene of an accident, the person you are trying to help may be wearing a helmet and you need to know how to remove it.

The most important thing to remember is that *if the victim is appropriately responsive, talking and breathing normally* there is no need to remove the helmet urgently.

If the patient is *unresponsive or has abnormal breathing* the method shown in the sequence below should be used to carefully remove the helmet.

Every effort should be made to move the patient as little as possible during this procedure. The helmet is best removed by 2 persons (as seen in the Figures below).



▶ Figure 21 – First step



▶ Figure 22 – Second step



▶ Figure 23 – Third step

Strangulation and Hanging

Strangulation is a constriction or squeezing around the neck. Hanging is the suspension of the body by the neck which, by definition, may involve strangulation as a mechanism of injury. The risk of spinal injury from the hanging itself is low and therefore the priority must be to release any constriction and establish an open airway.

- In all cases follow **DRS-ABCD**
- If patient is still suspended an attempt should be made to get them down if it doesn't endanger your safety and you have the ability to do so. This is likely to require at least two people
- Be cautious when lowering them to the ground as they will be heavy
- Remove any constriction from around their neck

Difficulty in breathing

Oxygen from the air breathed in through the lungs is transported around the body in the bloodstream. Oxygen delivery can be impaired by an airway obstruction or lung problem (such as a chest infection). This will result in the patient appearing 'short of breath' as they attempt to compensate for this by increasing their rate and effort of breathing.

If a patient uses home or transportable oxygen it is vital that they are not exposed to any naked flame or cigarette which might cause a fire or even an explosion.

Asthma

Most people who suffer with asthma are aware of their condition and should know how to use their own medication appropriately. An asthma attack can be potentially life-threatening.

A person suffering from an asthma attack could have:

- Difficulty in breathing
- Wheezing
- Cough

Without treatment, symptoms can quickly become more serious resulting in:

- Severe shortness of breath
- Anxiety or panic

What should you do?

- Always follow **DRS-ABCD**
- Help the patient sit upright in a comfortable position and provide reassurance
- Advise the patient to self-administer their reliever inhaler medication
- Assist in administration of their medication if necessary, including encouraging the use of a 'spacer' if the patient has one (Figure 24)
- Make sure help is on its way



► Figure 24 – Inhaler administration using a spacer

Croup

Croup affects children up to the age of six and usually occurs during winter. It is caused by a virus causing inflammation of the airway resulting in a 'barking' cough. It can be alarming but usually improves without lasting harm and without the need for further medical assistance or treatment.

The child is likely to have:

- 'Barking' cough
- Rasping noise, especially on breathing in
- Croaky voice

What should you do?

- Always follow **DRS-ABCD**
- Comfort and support the child in the most comfortable position for them
- If the child is becoming more upset or struggling to breathe, call for help

Inhalation of toxic gases

Inhalation of smoke or toxic gases can be lethal. Serious consideration must be taken before entering any potentially toxic environment. If you are unable to safely access or move the patient **AVOID** entering the environment. Wait for appropriately trained and equipped help.

What should you do?

- Always follow **DRS-ABCD**
- If possible, ventilate the area by opening all doors and windows
- If you are able to safely access the patient, continue to provide first aid
- If you are able to safely move the patient, remove them from the toxic environment and continue to provide first aid
- If you start to feel unwell you should **IMMEDIATELY** leave the environment, taking the patient with you if you are able to do so without putting yourself at further risk

Severe allergic reaction

In these cases patients may present with difficulty in breathing or signs of airway obstruction caused by a swelling. Refer to the Severe Allergy chapter.

Near drowning

Near drowning is the term used when a patient has been rescued from water. The term *drowning* is only used when all attempts of resuscitations have failed or the victim has died before being removed from the water. Drowning is one of the most common causes of accidental death in young people, usually associated with alcohol consumption.

You must only attempt to rescue someone from the water if you are a strong swimmer and the conditions are safe for you to do so

If it is not possible to safely rescue someone yourself, consider throwing a buoyancy aid to the victim and wait for professional or trained assistance. **Do not become a second victim.** Special skills and equipment are required to recover a near drowning victim from deep water.

In all cases follow **DRS-ABCD**.

Once the patient has been removed from the water and if they are responsive, remove their wet clothes and keep them warm. It is important to remember that the patient may have suffered a neck injury if there is a history of diving into shallow water.

If the patient is unresponsive, they should be removed from the water, ideally in a horizontal position, and as gently as possible. If the patient is not breathing normally CPR should be commenced and continued until the arrival of professional help (page 16).

It is important to emphasize that all patients who have survived a near drowning episode should be reviewed in hospital.



► Figure 25 - Near drowning chain of survival

Chest pain

There are many reasons why an individual may have pain in their chest. Although pain caused by heart problems is the most common serious cause of chest pain, there are many other important and potentially serious causes.

Some patients may suffer from regular episodes of chest pain. If that is the case, they may need assistance to take their own medication.

As a general rule, any patient who suffers chest pain should be referred for further medical assessment.

Features which suggest that chest pain might be serious include:

- Pain or discomfort often in the centre of the chest and described as a crushing pain, heaviness or 'band-like' tightness
- Pain radiating to the neck, jaw, shoulders or arms
- Sickness and vomiting
- Difficulty in breathing or shortness of breath
- Confusion, dizziness and feeling faint
- Cool, sweaty and pale skin

If you have a patient complaining of chest pain you should:

- Always follow **DRS-ABCD**.
- Sit them up and keep them as comfortable as possible
- Ensure that help is on its way
- Help them take any medication that they may have for their heart condition (for example a GTN-nitrate spray)
- Encourage them to chew 300mg aspirin if available
- Be prepared to start CPR and apply an AED if the patient collapses and becomes unresponsive

Fainting

A faint is a brief loss of consciousness. It is caused by reduced blood flow to the brain. There are lots of reasons for fainting – standing still in a warm environment, lack of drinking or food or emotional stress.

When a patient faints they:

- Usually start by feeling hot and light headed
- May complain of tunnel vision or their vision going dark
- Slump or fall to the ground

Witnesses usually notice that the patient has become pale and less responsive. It is important to remember that patients may injure themselves on falling. The majority of patients make a complete recovery without complication.

What you can you do:

- Help the patient to the ground as gently as possible.
- Lie them on the ground on their back
- If possible, gently raise the patient's legs
- Gradually sit patient up after they have recovered
- Check for any injuries from the fall
- If the faint was witnessed, give a clear account to the next medical provider

If the patient does not become responsive rapidly, you should follow **DRS-ABCD**.

If the patient is in the late stages of pregnancy you should turn them to lie on their left hand side rather than on their back.

External bleeding

Bleeding can range in severity from minor cuts, scratches and grazes to severe bleeding which can be life threatening. In situations like this, where possible, put on disposable gloves to protect yourself from infection or use improvised coverings (page 6) to prevent contact with blood. In all cases follow **DRS-ABCD**.

Minor bleeding

If the patient has a minor cut, scratch or graze, your priority is to prevent infection.

- If the cut is dirty, clean it under running water then pat it dry with a sterile dressing or clean material.
- Clean and dry the surrounding skin whilst protecting the wound
- Cover the wound completely with a sterile dressing or plaster

Severe bleeding

Stop any severe bleeding as soon as possible

- Expose the wound fully by removing or cutting any clothing
- If no embedded/exposed object, apply direct pressure over the wound or as close to the point of the bleeding as possible (Figure 26)
- If an object is embedded in, or protruding from a wound, place padding around it before applying pressure on either side of the object
- Lie the patient down and elevate the affected body part if possible
- If bleeding is still not controlled, leave the initial cover/dressing in place and apply a second over it and reapply direct pressure
- Should bleeding continue from a limb, place a tourniquet above the injury (page 32) and as near to the wound as possible
- Do not give the severely bleeding patient any food or drink and call for help
- Continue to check the patient's condition, following **DRS-ABCD**

When bleeding is severe, it can be dramatic and distressing. If someone's bleeding isn't controlled quickly, they may lose a lot of blood, develop shock (page 33) and become unresponsive. Fortunately, these situations are rare. The important thing to remember is that simple methods can be lifesaving.



▶ Figure 26 - Applying direct pressure to a wound

Applying an improvised tourniquet

Making and applying an improvised tourniquet is not difficult. All you need are a piece of wood or metal and a length of fabric (e.g. a scarf or tie) which must not stretch. The material needs to be reasonably strong so that it doesn't snap when tightened. Making and applying a tourniquet is shown in Figure 27.

Any tourniquet that has been applied properly will be painful. You will need to reassure the patient that the tourniquet is doing an important job and that professional help is on its way.



▶ Figure 27 - Making and applying a tourniquet

Amputations

Very occasionally severe bleeding is the result of an amputation of an arm or leg. In these case bleeding should be controlled as described above. However, most amputations are of fingers or toes and not associated with life threatening bleeding.

Whichever part of the body is amputated, if the amputated part can be safely retrieved, it should always be sent to hospital with the patient. It may be wrapped loosely in a clean cloth, such as a handkerchief, or placed in a plastic bag which rests in cold water. Under no circumstances should the amputated part be placed in water, come into direct contact with ice or be frozen.

Shock

Shock is a potentially life-threatening condition which occurs when the body cannot supply adequate blood to its vital organs such as the brain or heart.

Common causes of shock include:

- Severe bleeding
- Severe infection – which is termed "sepsis"
- Severe allergic reactions
- Severe burns
- Failure of the heart e.g. from a heart attack

Patients who are in shock may show some or all of the following signs and symptoms:

- Rapid heart rate
- Pale, cool, moist/sweaty skin
- Rapid, shallow breathing
- Faintness, dizziness or confusion
- Nausea, vomiting
- Restlessness, agitation
- Loss of consciousness

Checking for a pulse is notoriously difficult, particularly in a shocked patient, and is not recommended as part of first aid. A responsive, talking patient with obvious signs of life offers reassurance that an adequate circulation is present.

Some simple interventions may help improve the patient's condition and make them more comfortable while waiting for further medical assistance:

- Always follow **DRS-ABCD**
- First priority is to try to reverse the cause of shock (e.g stop external bleeding page 31 or give an auto-injector for severe allergic reaction page 39)
- Lie the patient on their back and, where possible or appropriate, raise and support their legs
- Cover the patient with blankets or clothing to keep them warm
- Offer reassurance
- Do not give food or drink although you may allow them small sips of water
- Continue to assess regularly and follow **DRS-ABCD**

Penetrating injury – Stabbings and Shootings

You may be unlucky enough to be involved in an incident where there has been a shooting or a stabbing, or to come across the scene of such an event.

In all cases the priority is YOUR SAFETY. In the event of an incident of a gun or knife attacker or a suspect / exploded bomb, follow the RUN – HIDE – TELL guidance.



▶ Figure 28 – Run Hide Tell

If you can provide assistance to the patient, follow **DRS-ABCD**. In case of external bleeding go to page 31.

- Any object (such as a knife) sticking out of a wound **MUST** be left in place
- Wounds to the abdomen may rarely result in protrusion of bowel. **DO NOT** apply direct pressure to exposed organs or attempt to push them back into the wound. Ideally cover such injuries with a damp clean cloth or dressing
- Responsive patients with penetrating abdominal wounds may be more comfortably placed in the W position until the arrival of an ambulance (Figure 29)



▶ Figure 29 – The „W” position

Heat illness

If the body gains more heat than it loses, the patient is at risk of developing heat illness. In the early stages patients will feel hot, may experience cramping and are often sweating profusely. If the condition is allowed to progress, the patient may become confused and collapse. The very young and very old are more susceptible to the effects of heat.

Simple measures may be life-saving and may prevent progression of the patient's condition.

What you should do:

- Always follow **DRS-ABCD**
- Move the patient to a cool shaded place if possible
- Remove clothing from the patient
- Actively cool the patient rapidly by applying cold water and fanning them
- Give cold fluids to drink if the patient is alert. If available, sports drinks containing salts and sugar should be given

With appropriate first aid measures, patients with milder heat illness should recover fully within 30 minutes.

Prolonged symptoms, including confusion, may suggest that the patient has "heat stroke". Such patients must be directed to hospital urgently.

Problems associated with cold

Patients can suffer with local cold injury to a specific part of their body, usually the toes or fingers ("frost nip" or "frostbite"), or hypothermia when exposed to a cold environment.

Hypothermia

When the body temperature falls very low, hypothermia occurs. Severe hypothermia is life threatening. The speed at which hypothermia can occur is increased by prolonged exposure to cold, strong wind ("wind-chill factor"), alcohol intoxication or being wet (water conducts heat 20x quicker than air).

The first sign of hypothermia is usually:

- Shivering

Followed by:

- Confusion or disorientation
- Slurring of speech
- Loss of coordination

As the patient becomes colder and hypothermia worsens, they will become more confused, unresponsive and ultimately suffer a cardiac arrest.

What you should do:

- Follow **DRS-ABCD**
- If possible, move the patient to a warm place and out of any prevailing wind
- Remove their wet clothing
- Cover the patient (including the head) with warm dry clothing and blankets
- If they are responsive, offer hot drinks and high energy food, but avoid alcohol
- If you have them, put heat packs or hot water bottles on the patient's body but not in direct contact with skin (to avoid causing burns)

If the patient is unresponsive, it is important to handle the patient carefully as careless handling may precipitate cardiac arrest.

If the patient has no signs of life, commence CPR (page 16).

Frost nip

Frost nip is freezing of the superficial skin causing pale and numb areas (usually the face, ears and nose). These areas should be covered to aid local warmth. Frost nip is completely reversible.

Frostbite

Frostbite is the freezing of deep tissues. The more severe the frostbite, the deeper the tissue affected. The fingers and toes are most commonly affected. The severity of frostbite is proportional to degree of cold and duration of exposure.

Signs of frostbite include:

- "Pins and needles" or loss of sensation in the affected areas
- "Wooden" digits (fingers or toes) with reduced movement
- Loss of colour of affected skin
- Mild swelling of the affected areas
- Blistering (usually a late development)

What you should do:

- Move the patient to a warm, dry place
- Check for signs of hypothermia (page 36)
- Rewarm and cover the affected parts
- Replacing wet with dry clothing or warm the whole patient – for example by removing them from the cold or wind and placing them in a sleeping bag
- Do not rub or massage frozen skin as this can be harmful
- Do not burst any blisters
- Do not allow patients to get cold again
- Seek further medical advice

Electrical incidents

When a person is electrocuted, the electric current can cause them to stop breathing and their heart to stop pumping. The electric current can also cause burns where it enters and where it leaves the body.

Non-domestic electricity (high voltage)

Contact with high voltage current is usually fatal. Survivors will have severe burns.

What you need to do:

- Always follow **DRS-ABCD**
- Your own safety is paramount
- Remain at least 20 metres from the source (because electricity can arc up to this distance)
- Arrange for the power source to be switched off if possible
- Only approach the patient when it has been confirmed it is safe to do so
- Continue to follow **DRS-ABCD**

Domestic electricity (low voltage)

The low voltage current used in the workplace and at home can cause significant injury. Most electrical accidents are caused by faulty appliances, frayed flex or bad wiring, while children are at risk due to inserting objects into power sockets. The presence of water around electrical appliances greatly increases the risk.

What you need to do:

- Always follow **DRS-ABCD**
- Always assess the situation for danger
- If the patient is still in contact with the electrical source do not touch them. Turn off the source of electricity – either at the socket or main fuse box if possible
- If you are unable to switch off the electrical supply quickly, attempt to separate the patient from the electrical source. To do so, you may need to stand on an insulating material (such as a plastic mat or wooden box) and use a wooden pole or broom
- Once you are sure that the danger has been removed assess the patient following **DRS-ABCD**

Lightning strike

If the victim has been struck by lightning, it is vital to follow **DRS-ABCD**, starting CPR without delay if the patient has no signs of life and it is safe to do so.

Allergic reactions

Allergic reactions are very common and usually require no more than symptomatic treatment. In many cases the patient will know what caused the problem. Peanuts, antibiotics and shellfish are common triggers. In other cases, it will not be clear what the cause is. What you can do to help will depend on how serious the reaction is.

Mild to moderate allergy

The features include:

- Swelling of the skin, face and eyes
- Raised, usually itchy, rash ("hives" or nettle rash)

What you can do:

- Stop the exposure to the potential cause (e.g. stop taking the antibiotic) and seek further medical advice
- Encourage the patient to take their own medication for a known allergy
- If any airway swelling or breathing difficulty develops assess the patient for severe allergy

Severe Allergy

A severe allergic reaction, known as anaphylaxis, is potentially life-threatening and must always be treated as a medical emergency. The patient may show signs of shock (page 33) and loss of responsiveness or cardiac arrest may occur.

The features include:

- Difficulty in breathing and/or noisy breathing
- Swelling of the tongue and/or tightness of the throat
- Abdominal pain/cramps
- Rash and/or profuse sweating
- Difficulty talking and/or hoarse voice
- Young children may become pale and floppy

What you can do:

- Follow **DRS-ABCD**
- Help the patient to lie in a position of comfort
- Assist the patient to self-administer their own adrenaline auto-injector, if they have one, or administer this on their behalf if they are unable to do so
- If there is no improvement after five minutes, a further adrenaline auto-injector can be administered, if available (Figure 30)
- Ensure the patient receives urgent hospital treatment



▶ Figure 30 – Administrator of an auto-injector

Seizures (fits)

Seizures are the result of abnormal brain activity that can cause involuntary muscle contractions. Seizures can occur as a result of head injury, diseases of the brain, shortage of oxygen or glucose or through abuse of drugs or alcohol.

The features may include:

- The patient suddenly falls to the ground
- Their body may go stiff and rigid
- Twitching or violent jerking movements may occur
- They may wet themselves

After a seizure has resolved the patient may be confused and drowsy.

What you should do:

- Follow **DRS-ABCD**
- Do not try to restrain the patient during a seizure
- Try to protect their head by removing potential hazards or placing something soft under or beside their head
- Do not allow anyone to put anything in the patient's mouth to keep it open
- Call for further medical help if the patient:
 - Has continuous seizures
 - Sustains an injury which requires medical attention
 - Has never had a seizure before or has a seizure that lasts for more than five minutes
- Once the seizure has stopped, if the patient remains unresponsive put them in the recovery position and ensure that help is on its way
- Continue to observe the patient while waiting for further medical help to arrive

Seizures associated with a high temperature

A rapid rise in body temperature may cause an infant or young child to have a seizure. This is a frightening experience for the parents but is common and, as long as the seizure is brief, will not be associated with any long-term problems.

What you should do:

- Follow **DRS-ABCD**
- Remove excess clothing and bedding
- Cool the child, e.g. using wet flannels/sponging, ensuring you do not allow them to become hypothermic
- Encourage the use of an appropriate medication for fever (e.g. paracetamol)
- Seek medical assistance

Head injuries

Head injuries are common and occur in every age group. They are frequently as a result of sport, assaults and falls. A brief period of altered consciousness may occur. In most cases, nothing more is required than reassurance and ensuring that the patient will be observed by a responsible adult after the injury.

The following symptoms are common after a head injury:

- Headache
- Dizziness
- Nausea
- Short period of memory loss
- Short term confusion or disorientation

A more serious head injury may involve bleeding inside the skull and should be suspected if the patient suffers symptoms such as:

- A prolonged period of loss of consciousness immediately following the injury
- Worsening headache
- More than one separate episode of vomiting
- Ongoing irritability or agitation
- Becoming more drowsy, confused or unresponsive over time
- Visual disturbance such as double vision
- Large, soft or depressed area to scalp or obvious deformity

What you should do:

- Follow **DRS-ABCD**
- Check the patient's level of response by asking simple questions e.g "where are you?" or "what time is it?". If the responses are impaired for more than five minutes after the incident, call for further medical assistance
- If any of the features suggestive of a serious head injury are present, call for further medical assistance or refer the patient to hospital

You should also call for further help if the patient:

- Has a seizure
- Is on "blood thinning" or "anti-clotting" medications (e.g. warfarin tablets or heparin injections)
- Is intoxicated with alcohol or drugs
- Does not have anyone to look after them

If the injury occurred as a result of a sporting activity then the patient should be advised not to continue to play, or to return to play, until they have been assessed by an appropriate medical practitioner.

Headaches

Headaches are not usually associated with a severe underlying condition. However, the presence of certain *red flag* signs and symptoms warrants urgent medical attention.

These *red flags* are:

- Headache of a different character to the patient's usual pattern of symptoms
- Headache with other symptoms such as fever, vomiting or neck stiffness
- Headache with double vision, visual loss or sensitivity to light
- Sudden onset of "worst headache ever"
- Headache which the patient describes as feeling like "they've been hit in the back of the head"
- New onset of headaches in those over 50 years of age
- Recurrent headache when the patient wakes in morning
- Headache associated with weakness on one side of the face or body

How to treat the headache which doesn't have any of the *red flags* listed above:

- Encourage the patient to rest in a position of comfort which may be in a quiet and dark room
- Assist the patient in taking their own medications (for example for migraines or cluster headaches)

Migraine

Patients with migraines usually suffer headaches with a similar pattern of symptoms on each occasion. They should be encouraged to take their own medication and seek assistance if the symptoms fail to settle.

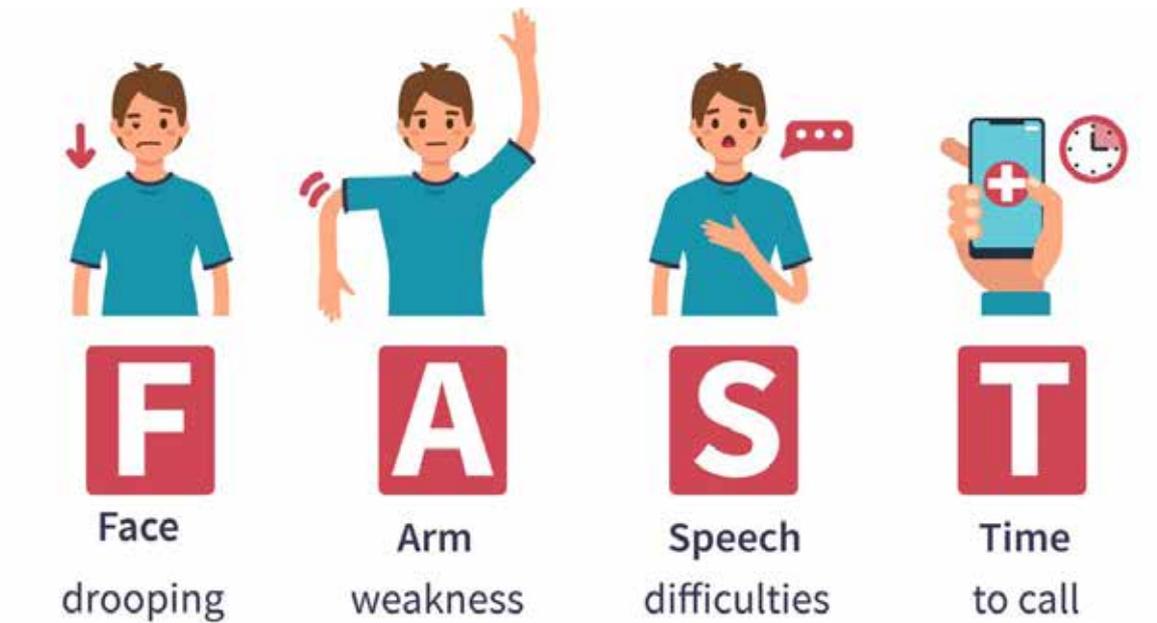
If the pattern of their headache is different to "normal" for them and they are concerned, they should be advised to seek medical attention straight away.

Stroke

Strokes are common and now there are treatments which can improve the outcome for many patients, early recognition by the first aider can make a real difference.

The approach is summarized as:

Recognize stroke...act F A S T



► Figure 31 - The FAST approach to recognising a stroke

The features of a stroke may include:

- Facial weakness
- Weakness or altered sensation on one side of the body
- Slurred speech or difficulty speaking
- Altered or loss of vision
- Loss of coordination
- Confusion or disorientation

What you should do:

- Follow **DRS-ABCD**
- Offer reassurance and keep the patient comfortable
- If the patient has a reduced level of response, put them in the recovery position

Diabetic emergencies

Diabetes is a medical condition in which the body does not adequately control its own glucose level. Diabetes can be diagnosed at any age. There are two sorts of diabetes: Type 1, which tends to occur in younger patients and is usually treated with insulin injections and Type 2, which is usually associated with obesity in adults and is often treated by diet and tablets.

Diabetics need to regularly monitor their blood sugar levels and take insulin injections or tablets accordingly. Sometimes, a diabetic may get the balance between their blood sugar level and insulin dosing wrong which may result in their blood sugar becoming either too high or too low. Both conditions are serious and do need further treatment.

Hyperglycaemia

Hyperglycaemia is the term used when a patient's blood sugar is too high. It is usually caused by insufficient insulin, concurrent illness or infection.

The features of hyperglycaemia may include:

- Gradual onset of symptoms
- Confusion, agitation or irritability
- Drowsiness which may lead to loss of responsiveness if the condition is untreated
- Rapid breathing
- Extreme thirst

Hypoglycaemia

Hypoglycaemia is the term for a low blood sugar. Causes include too much insulin, inadequate sugar intake and/or increased exercise or large alcohol intake.

The features of hypoglycaemia may include:

- Rapid onset of symptoms
- Confusion, agitation and irritability
- Weakness
- Cold, clammy skin
- Aggression
- Drowsiness which may lead to loss of responsiveness if the condition is untreated

Most diabetics know when they are having a "hypo" and they may be able to stop it themselves.

What to look for:

- Some diabetics wear a medical warning bracelet or necklace.
- If you think someone is having a diabetic emergency you will not be able to identify if this is due to hyper- or hypoglycaemia unless the patient has a method of measuring their glucose level.

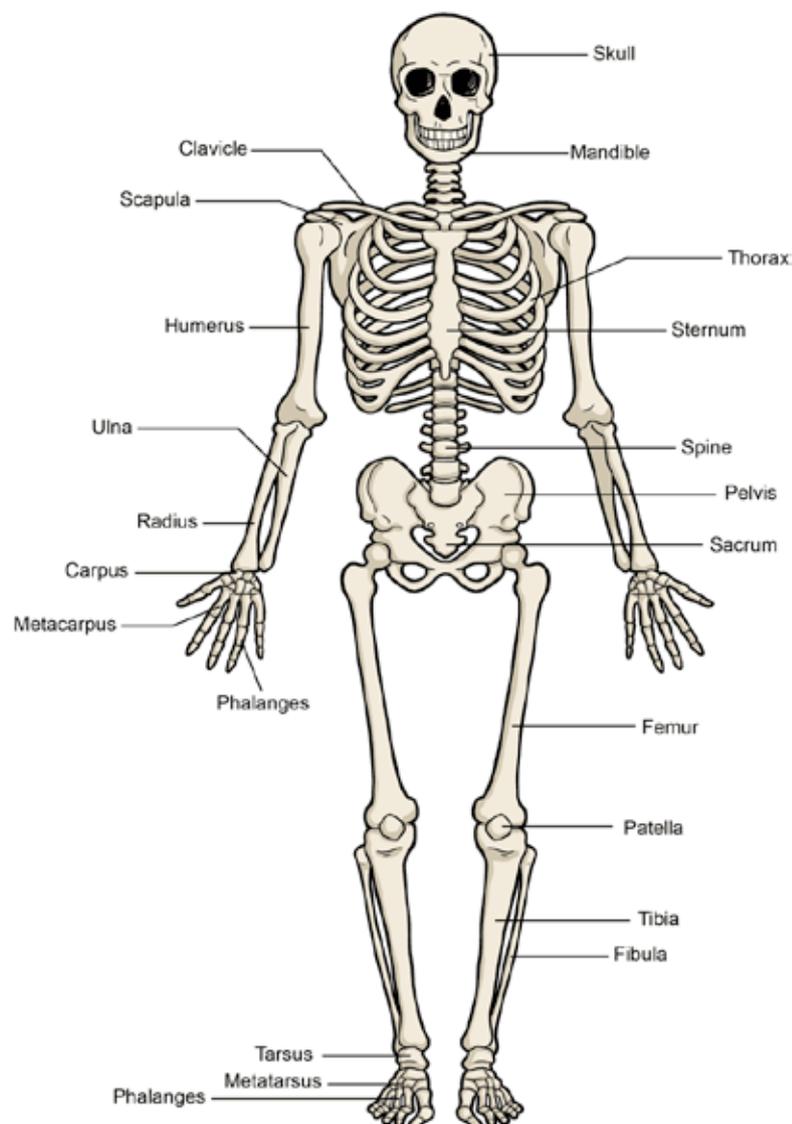
What you can do:

- In all cases follow **DRS-ABCD**
- If they are responsive assist them in taking a sugary gel, snack or drink (non-diet)
 - If they improve quickly, encourage them to take some carbohydrate (such as a sandwich or biscuit) and let them rest
 - If they do not improve quickly or cannot take drinks or snacks by mouth call for help immediately
- Some patients may carry an injection (glucagon kit) that they can give themselves if they are having a 'hypo'. If this is the case, you may need to assist them in administering this injection
- While waiting, keep checking their level of responsiveness

Bone and soft tissue injuries

Injuries to the limbs most often present with pain following an accident. Sometimes there is an obvious bend or other deformity, or there is bruising, swelling and tenderness. The patient will usually be reluctant to allow the limb to be moved. The role of the first aider is to provide support and reassurance. In general, this will involve supporting/immobilising the limb in the position the patient has found to be most comfortable ('pad and support').

Sometimes the patient will have an obvious fracture (broken bone) demonstrated by deformity or suggested by swelling, but in most cases X-rays will be needed to decide whether this is the case. Soft tissue injuries (sprains or strains) can be just as painful as fractures. Rarely, a fracture is described as "open" which is when it is associated with a wound.



► Figure 32 - The skeleton showing the major bones

A strain occurs when there is injury to muscles and tendons. A sprain involves ligaments and joints and is most common at the ankle and knee joints.

Injury may also result in dislocation of a joint. This is where one of the bones moves from its normal position resulting in deformity, pain and inability to move the joint normally. Dislocated joints are normally very painful. No attempt should be made by the first aider to return the joint to its normal position. Use the 'pad and support' method to keep the affected part as comfortable as possible.

Any bleeding wound should be treated as described on page 31.

If the patient becomes unresponsive, follow **DRS-ABCD**.

Shoulder and arm injuries.

The patient with a shoulder or upper limb injury will usually find that the most comfortable position is holding the arm against the front of the body with the elbow bent. The arm should therefore be supported in this position using a sling. A triangular bandage is best used to create a sling although slings can be improvised.



► Figure 33 - The patient should hold their injured arm across their chest, supported by the other arm. The base of the bandage can be folded back on itself to provide a tidy edge and the bandage should be placed with the base parallel with the side of the patient.



► Figure 34 - The upper "end" of the sling is pulled behind the patient's neck towards the other side and tied behind the patient's neck to the other "end" which has been lifted upwards.



► Figure 35 - Finally the point of the bandage is twisted until it lies snug and against the arm and then tucked in to hold it in place



► Figure 36 - The completed sling

Chest injuries

Direct blows to the chest or falls may lead to injuries to the muscle and ribs of the chest wall. Although these injuries can be extremely painful, in young people they are usually not dangerous and simple pain relief is all that is required. Movements of the chest wall should not be restricted. Chest injuries in the elderly or those with underlying chronic chest diseases can have very severe consequences and these patients must be referred to hospital for assessment.

These injuries present with pain at the point of impact, sometimes with bruising and pain in breathing.

Abdomen injuries

Any patient complaining of pain in the abdomen (tummy or belly) following an accident will require urgent medical assistance.

Leg injuries

In most cases simply assisting the patient to keep the leg in a position of comfort will be sufficient. This will usually be by resting it on cushions or some other form of soft comfortable support.

The hip and thigh are most commonly injured in the elderly, sometimes as a result of minor trauma. The leg is often rotated and the hip held bent forward at the thigh and the knee flexed. In these cases the injured leg should be supported ('pad and support') in the position in which it is found.

The knee is very often injured during sport and may swell rapidly. These injuries are often very painful and will require hospital assessment.

Sprains

Lower limb joints are the most commonly sprained and the patient may be unable to walk due to discomfort and swelling. The first aid treatment for soft tissue injuries is summarised in the box below.

Pain relief using simple painkillers

Rest the injured part

Ice or a cooling pack to the injured part

Comfortable support

Elevate the injured part

Ice should not be applied direct to the skin but instead contained in a plastic bag and wrapped in a thin towel. There is little role for bandages or supports in the first aid management of sprains. Patients who have a sprain injury of the leg and are unable to walk on it will require further medical assessment to exclude a fracture.

Spinal and neck injuries

The spinal cord (which runs through the spinal canal) connects the brain to the rest of the body. Together they make up the central nervous system.

The spine is made up of:

- The spinal cord
- The bones (called vertebrae) that protect the spinal cord

The spinal cord connects to individual muscles and tells them to move (motor function). It also connects to organs like the skin which communicates feelings like touch, pain and heat (sensory functions).

The greatest risk if someone has a spinal injury is that their spinal cord will be either temporarily or permanently damaged. If this happens, they will become paralysed from the point of injury downwards.

Spinal injuries are most commonly associated with extreme force. You should be aware of the possibility of a spinal injury if someone has:

- Fallen from a height (for example a ladder)
- Fallen awkwardly (such as while doing gymnastics)
- Dived into a shallow pool and hit their head on the bottom
- Fallen from a moving vehicle or horse
- Been in a high-speed motor vehicle collision, especially if the passenger is not restrained
- Been hit by a heavy object falling across their back or onto the top of their head
- Had a significant injury to the head or face

In practice, the majority of neck and back injuries result from relatively minor trauma, such as an awkward or sudden movement not involving any of the mechanisms listed above. These injuries usually require no more than reassurance and analgesia.

If the patient is unresponsive because of a head injury, always suspect and protect for potential spinal injury

What to look for:

- Pain in the neck or back
- Soreness and/or bruising in the skin over the spine
- Loss of control of the limbs – the victim may not be able to move their arms or legs
- Loss of sensation or abnormal sensations such as burning or tingling

What you need to do:

- Always follow **DRS-ABCD**

If the patient is *responsive and NOT confused*:

- Reassure them and tell them not to move
- In order to perform **DRS-ABCD**, you should ask them to gently move their head so that they are facing directly forward, if they can do so without pain
- Call for an ambulance or ask someone else to call one for you
- Ask the patient to keep their head as still as possible
- You may wish to support their head with pillows or blankets either side or hold the patient's head in neutral alignment. If using your hands do not cover the patient's ears, so they can hear you talk to them (Figure 37)



▶ Figure 37 - Manual stabilization of the neck

If the patient is *unresponsive*:

- Ensure their airway is open, using the head-tilt, chin lift technique if required (Figure 3). You may need to remove a motorcycle helmet to do this (page 25)
- Check for breathing:
 - If the patient is breathing normally, leave the patient in the position in which you find them using your hands to keep their head still. If you have concerns over their airway or whether they are breathing normally, you may need to move them (e.g roll them on to their back) to assess them properly
 - If they're not breathing normally, you'll need to start CPR. in order to do this effectively, the patient will need to be carefully placed on their back

While waiting for help to arrive, keep checking their breathing and level of response. If the patient is uncooperative and/or confused, attempts to force the patient to keep their neck still must be avoided.

Minor injuries

Cuts and grazes

Bleeding from small cuts and grazes can be controlled by pressure and elevation. Use of a plaster will usually allow the wound to heal by itself in a few days. If the wound is a small superficial graze, it is often best left open to air to dry out and scab over.

Medical help only need be sought if bleeding is difficult to control, there is a foreign body in the wound or there is a high risk of infection such as from an animal or human bite. Patients who are not sure about their vaccination status (e.g. tetanus and hepatitis) should seek medical advice.

Bruising

Bruising is caused by bleeding into the tissue layers beneath the skin. A bruise can occur rapidly after an injury or take a few days to emerge (the longer the bruise takes to show, the deeper the injured tissue). Elderly people and those taking anti-coagulation medication are more prone to bruising.

Bruising is reduced by elevation and cooling. Place a cold compress over injured soft tissue for 10 minutes after an injury to reduce the blood flow and hence the extent of any bruising.

If the swelling continues to grow, the patient will need assessment in hospital.

Blisters

Blisters occur with repeated friction of the skin (i.e. when the skin rubs repeatedly against another surface such as the inside of a shoe). The damaged tissue leaks fluid that builds up beneath the skin.

If a blister forms, clean the area and dry it. If the blister has already burst, clean the area but leave the 'roof' of the blister in place and secure a padded dressing over the blistered area to provide cushioning, protection and comfort.

Foreign objects in a wound

It is important to remove foreign objects such as small pieces of glass or grit from a wound. Such objects increase the risk of infection if they are not removed. Either irrigate a wound to remove debris or pick out pieces with a pair of tweezers. If objects are deeply embedded it is better to leave them for removal by medically trained personnel. If you leave an object in the wound, you may need to build up padding around the object before dressing the wound.

If a wound has been thoroughly cleaned and dressed, medical care need not be sought immediately. However, if the wound still contains debris, further medical help should be sought.

Nose bleed

This is a common problem and appropriate first aid will often solve the problem:

- Ask the person to sit down and lean forward
- Ask the patient to pinch the soft part of their nose taking brief pauses every 10–15 minutes, until the bleeding stops (Figure 38)
- Ask the person to breathe through their mouth

If the bleeding is severe, if there are symptoms like light-headedness or feeling faint or if it lasts for more than 30 minutes or the patient has suffered a head injury call for medical help.



▶ Figure 38 - Controlling a nose bleed

Ear problems

An ear ache can develop from many different situations such as infections or objects stuck in the ear. Advise the patient to seek help from their general practitioner or local emergency department. Don't try to remove any foreign object from the ear canal unless it is clearly visible and easily retrievable.

Eye injuries

Many accidents involve eye injuries that range from more common and minor problems to more serious issues. The signs and symptoms to look for are:

- Pain or redness in the eye or eyelid
- Visible wound with or without liquid/blood leaking
- Loss of vision
- Discomfort in the light
- Watering

It is important to try to prevent the patient from rubbing their eye.

If you think there might be something in the eye you should:

- Look closely in the eye looking for wounds
- If you can see something wash it out by pouring copious amounts of clean water over the inner corner of the eye (Figure 39)
- If this doesn't help seek urgent medical assistance

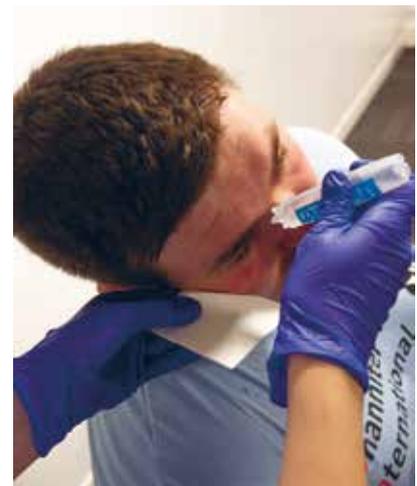
If there is a **bruise, a cut or an embedded foreign body** in or around the eye, you should:

- Tell the patient to keep the eyes still
- Tell them to seek urgent medical assistance

If a **chemical burn** has occurred you should:

- Flush the eye immediately with clean water for at least 15 minutes, tilting the head with the affected eye facing downward (to avoid contamination of the other eye)
- Tell the patient to seek urgent medical assistance

It is important not to touch the eye and you must not remove any object sticking out of the eye. There is no need to pad an injured eye.



▶ Figure 39 - Washing out an eye

If the patient has a toxic chemical in their eye such as acid, commence irrigation immediately with any water-based fluid. If plain water is not available, soft drinks will do.

Burns and scalds

Close exposure to fire or burning materials, particularly in an enclosed space, may lead to inhalation of hot gases and/or thermal injury to the mouth and airways. This situation may lead rapidly to a life-threatening problem for which urgent medical assistance should be sought and tell the call operator that you suspect a burn to the airway (page 27).

In the case of a burn or scald, cooling the burn area will reduce pain as well as swelling and subsequent risk of scarring. The faster and longer a burn is cooled, the less the impact of the injury.

Key principles

- Make sure it is safe for you to offer assistance
- Do NOT try to remove anything sticking to the burnt area
- Do NOT over-cool the patient – cool only the burnt area
- Do NOT use any lotions, ointment or creams
- Do NOT use adhesive dressings
- Do NOT burst any blisters

What you can do:

- Always follow **DRS-ABCD**
- Hold burnt area under cold running water (NOT ice-cold water) for at least 20 minutes. Cooling large burns in children may risk causing hypothermia and appropriate care should be taken to avoid this
- If cold water is not available, any cold liquids could be used such as soft drinks
- Remove any jewellery adjacent to burnt skin
- Cover with a sterile dressing if available
- Alternatively, strips of cling film may be applied to the burnt area, but must not be wrapped around the limb
- For large or serious burns ensure that medical assistance is sought. Many patients will require medical assistance for pain relief
- If there are signs of breathing difficulty – follow the advice shown on page 26

For chemical burns, particularly corrosive substances or a deliberate attack using an unknown chemical, follow the advice shown on page 55.

If a patient is on fire attempt to put it out following the 'stop, drop and roll' technique (Figure 40).



▶ Figure 40 - The Stop-Drop-and-Roll technique

Acid attack

Attacks with corrosive substances are becoming more common. As a first aider, your initial actions are straightforward and effective and can make a big difference to the victims of such an attack.

Once you are sure it is safe to approach, the sequence of actions is:

Report	–	Dial 999 or 112
Remove	–	Carefully remove contaminated clothing
Rinse	–	Rinse immediately

When helping someone who has been the victim of an acid attack, it is vital to make sure that you don't become contaminated yourself. If you are removing clothing, try to protect yourself by wrapping plastic bags around your hands, wearing gloves if you have them and not touching any obviously contaminated area of the victim or their clothing.

What you should do:

- Always follow **DRS-ABCD**
- Cool the burn, not the patient, ice must not be used
- Keep the patient warm
- Copious volumes of running tap water are ideal for washing away the corrosive but other simple fluids can be used. Ideally the washout should take place for at least 20 minutes
- Avoid spreading contamination from the exposed area to other parts of the body when carrying out the irrigation

Poisoning or intentional overdose

You might have to help when someone has taken an overdose or has been poisoned. There are a few simple tips which will help in this situation:

- Always follow **DRS-ABCD**
- If you need to do rescue breaths use a pocket mask or face shield to protect yourself
- Reassure the patient
- Phone 999 or 112 and give as much information as you can about the poison
- Do not attempt to make the patient vomit but support them if they do
- Keep a sample of the poison

Bites and stings

Animal bites

Bites damage tissues and let germs into the skin, so you need to treat any bite that breaks the skin to stop it getting infected.

Use **DRS-ABCD**. First aid treatment of bites is:

- Stop bleeding (page 31)
- Irrigate the wound with copious amounts of water
- Cover the wound with a sterile dressing to prevent infection
- Advise the patient to seek medical assistance

Most bites will require antibiotics and there is a risk of tetanus (or rabies infection in some countries) so it is important that patients are advised to seek medical help.

Human bites

If the bite is from another person, as well as a risk of bacterial infection there is also a risk of getting hepatitis or HIV. Hospital referral is essential.

Insect stings

Insect stings can be painful but are usually not dangerous. Pain is often the first symptom followed by mild swelling, redness and soreness.

Sometimes stings can generate a severe allergic reaction so it's important to look out for this and get medical help quickly if necessary.

What you need to do:

- If you can see the sting, brush or scrape it off sideways. Don't use tweezers to try and pull it out as you could squeeze more poison into the wound
- Offer simple pain relief
- Put an ice pack or something cold on the wound to reduce the swelling and raise the part of the body that's affected
- If the sting is in the mouth or throat (for example from swallowing insects trapped in a soft drink can) get them to suck an ice cube or sip icy water
- Keep checking **DRS-ABCD**

If you notice any signs of a severe allergic reaction (page 39) call for emergency medical help. Assist the patient in the use of their adrenaline auto-injector if they have one.

Snake bites

All known or suspected snake bites must be treated as potentially life-threatening and medical aid should be sought urgently.

Do not try to catch the snake

Signs and marks of a snake bite are not always visible. Symptoms may appear after an hour or even more after the person has been bitten. Bite marks may vary from obvious puncture wounds to scratches or may be almost invisible.

The signs and symptoms may include any combination of the following:

- Pain, swelling, bruising or minor bleeding at the bite site (sometimes delayed)
- Headache, faintness, dizziness
- Abdominal pain, nausea and vomiting
- Blurred vision, floppy eyelids
- Difficulty in speaking or swallowing
- Limb weakness or numbness
- Difficulty in breathing

What to do:

- Follow **DRS-ABCD**
- Call 999 or 112 for an ambulance
- Lie the patient down and ask them to keep still. Reassure the patient
- Stop any bleeding and wash the wound with clean water
- Cover the bite site
- If the bite is on a limb apply a tight bandage starting at the fingers or toes and extend it all the way up the affected limb (Figure 41)
- Immobilize the bandaged limb
- Make a note on the time of the bite and when the bandage was applied
- Stay with the patient until medical help arrives

Do NOT attempt to suck out the venom or apply a tourniquet to the affected limb.



▶ Figure 41 - Pressure bandaging and immobilisation

