An Introduction to

First Aid

2nd Edition

European First Aid Guidelines

developed by Johanniter International

johanniter international

April 2025

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Preface

The first version of these Guidelines was published in 2019. This was achieved by the JOIN Clinical Working Group which was led by Professor Ian Greaves whose direction and vision was instrumental in getting this work underway. The work has been undertaken by a multi-national team of Healthcare professionals including Doctors and Paramedics; all of whom are working in out-of-hospital environments and initiating care for the ill and injured.

This second edition has been updated in accordance with the latest guidance available, including the 2025 ILCOR Statement and its recommendations. It is also consistent with other JOIN series of guidance documents, namely First Aid stories for children (aged 5 to 7) and European First Aid for young people (aged 13 to 17).

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These Guidelines are offered in good faith and represent the European consensus of opinion from 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 publication.

However, responsibility for their use remains with the individual First Aider or responsible body. Johanniter International and its partner organisations do not accept any responsibility for claims arising from the use of this manual. First Aiders are advised to keep up to date with developments in policy and practice, 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 from an accredited healthcare service or registered healthcare professional.

Feedback or comments regarding content should be directed to join.office@johanniter.org

Imprint

Published by Johanniter International ASBL ▪ Enterprises of the Orders of St John ▪ Rue Joseph II, 166, 1000 Brussels
Phone +32 2 282 1056 ▪ join.office@johanniter.org ▪ www.johanniter.org ▪ Registered in Belgium (ASBL)

Editor Johanniter International ▪ **Layout and design** Mag.ª Julia Kadlec ▪ April 2025

Representation on the Clinical Working Group

As Chair, I am immensely grateful to all the members of the Clinical Working Group, both Johanniter International (JOIN) members and those experts invited to join us for the development process who have contributed to this revised edition. Without their commitment, diligence and ability to collaborate, these Guidelines would not have been possible.

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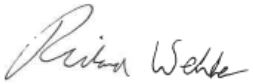
The Clinical Working Group is grateful for the generous financial support and encouragement offered by the Johanniter International Board and its members who recognise the significance of this project and facilitated the meetings which allowed its development. The Board of Johanniter International most kindly provided a grant to support this project.

Thanks are due to the photographer Alexis Sophocleous for the pictures and to the volunteers of St John Association and Brigade Cyprus who made them possible.

Thanks are also due to Joachim Berney and the staff of the secretariat at our head office in Brussels and the various national bodies affiliated to the international St John family who have kindly allowed us to share their material. These adult Guidelines are part of a series of guidelines that currently includes 3 books for 5 to 7 years old, a Young People set of guidelines published in 2023 that is aimed at 13 to 17 years old and guidelines for 8 to 12 years old due to be published in 2026.



Richard Webber

Chair, Johanniter International Clinical Working Group

April 2025

Introduction

First Aid can be defined as the immediate care provided to someone acutely ill or injured.

First Aid can be provided by anyone.

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. It offers treatments which can be carried out with little or no equipment. Where we have recommended the use of equipment such as a bandage, we have also provided an alternative improvised solution using readily available materials. We hope therefore that wherever you find yourself using this guide, it will offer a simple and easily achievable means of helping your casualty.

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 anyone **under one year old**, and a **child** is regarded as between the age of **one and eight years inclusive**.

Training in First Aid is best achieved on a face-to-face training course, but the basic principles and theory that underpin the practical application of First Aid skills can be learnt via materials like this, and on a self-taught basis. One of the key principles is that the education should be universal, and that everyone should learn First Aid.

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. Although the knowledge and skills may not be difficult to learn, keeping up to date and applying these skills in a real-life situation can be challenging, even for the most experienced practitioners. Regular reading, training and application will help refresh and maintain your First Aid knowledge and skills.

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

- understand your role as a First Aider
- deal with an incident where First Aid is needed
- understand how the setting can affect First Aid needs
- treat specific injuries
- manage common illnesses

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Background

This guidance was developed and agreed by the Clinical Working Group representing partner organisations from across Europe and within the JOIN community. The main philosophy of First Aid education is that it is universal, available for everyone and free.

The goals of First Aid

The goals of First Aid include the following:

- preservation of life, including resuscitation
- alleviation of suffering and providing comfort
- prevention of further illness or injury
- promotion of recovery and well-being

The JOIN Clinical Working Group has ensured as much as possible that this second edition of European First Aid Guidelines is consistent with recommendations provided by the European Resuscitation Council (ERC), and is appropriate in the context of the age group it is aimed at.

Medical emergencies	Trauma emergencies
Recovery position for an unresponsive casualty	Control of life-threatening bleeding
Optimal positioning for shock victims	Treatment of open chest wounds
Bronchodilator (“inhaler”) treatment for asthma	Cervical spine stabilisation
Recognition of stroke (“CVA”)	Recognition of concussion
Early aspirin for chest pain	Treatment of thermal burns
Recognition of severe allergic reactions (“anaphylaxis”)	Dental injuries including avulsion
Management of low blood sugar (“hypoglycaemia”)	Bandaging for extremity joint injuries
Oral rehydration treatment	Straightening a broken bone (“angulated fractures”)
Cooling treatment for heat stroke (“severe heat illness”)	Eye injuries from chemicals
Fainting (“syncope”)	

The ERC also provided their First Aid **“5 Top Messages”** which JOIN endorses, and lists below:

1. RECOVERY POSITION	Only for casualties NOT requiring rescue breaths or CPR
2. STROKE RECOGNITION	Use of a Stroke assessment protocol (e.g. F A S T)
3. COOLING OF HEAT CASUALITIES	Immediate removal from heat, passive and active cooling
4. CONTROL SEVERE BLEEDING	Apply direct pressure, use of tourniquet or haemostatics
5. THERMAL BURNS	Remove heat source, 20 minutes of cooling, cover loosely

In addition to these, JOIN wishes to emphasise the importance of prompt Cardiopulmonary Resuscitation (CPR) including good quality chest compressions and the early use of an AED.

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.

A First Aider should always follow a five-step approach when managing an incident:

1. **Assess** the situation
2. Ensure **safety**
3. Call for **help**
4. Provide emergency **First Aid**
5. **After-incident** care

Most of the incidents that a First Aider will encounter will be relatively minor. When you encounter a medical emergency, you should:

- identify yourself as a person with First Aid skills
- find out what has happened
- ask if any other bystanders can help

Casualties may not require further medical attention. If they do, in most cases they will be able to access other healthcare professionals or make their own way to hospital. It is within the remit of the First Aider to offer basic advice in directing casualties to the most appropriate onward care pathway.

For more serious incidents, an ambulance response may be required. A First Aider can call the emergency services in such circumstances, or you may ask another member of the public to call for help whilst you provide First Aid.

1. **Assess** the situation
2. Ensure **safety**
3. Call for **help**
4. Provide emergency **First Aid**
5. **After-incident** care

Safety is the first priority when responding to any situation and includes protecting yourself, the casualty, or other responders and bystanders from encountering further danger at the scene.

Never put yourself or others at risk while providing care to an ill or injured person.

Common risks include fire, electricity, deep or rough water (especially cold), threat of violence or injury from an attacker, toxic chemicals or infection hazard, transport (road or rail) or from collapse of damaged building structure.

Keeping Yourself Safe

The aim is to avoid harming yourself as the scene may have threats such as broken glass on the ground. Special equipment is likely to be required in higher risk circumstances and only correctly equipped, trained personnel should be providing care in those areas.

All individuals providing First Aid must protect themselves as much as possible from exposure to body fluids, such as blood, which may cause a risk to the responder's health. Particular care must also be taken to avoid a "sharp" injury.

The term used for equipment that is used to protect yourself is **"personal protective equipment"**, also referred to as **PPE**. This should always be carried in First Aid packs.

Certain items of PPE are desirable as "**standard precautions**":

- disposable gloves
- a face shield to counter risk of infection when delivering rescue breaths
- alcohol gel or wipes for use before and after providing treatment

Hand washing reduces the risk of infective organisms or contamination passing between the First Aider and casualty. Ideally, hands should be thoroughly washed with soap and warm running water before and after casualty contact or activities likely to cause contamination. Hands should be dried, preferably with disposable towels. An alcohol-based liquid or gel can be used if soap and water are not available, and your hands are not visibly dirty.

Different situations provide different hazards to the First Aider and casualty. There are some specific precautions you can take depending on the situation you might face:

Fires

Incidents involving a fire in the open

- Try to approach a situation with the smoke blowing away from you
- Be aware of risk of chemicals or explosions
- Only approach the casualty if they are a safe distance from the fire
- Warn others not to approach the fire

Buildings on fire

- **Do not** enter a building which is on fire.
- Exit a building which is on fire as safely and quickly as possible through the nearest emergency exit. Help others out of the building if you can.
- **Do not** use a lift in a burning building - use the fire escape stairs.
- Close doors behind you as you leave to help slow the spread of fire. If used correctly, fire doors can hold back fire for 30 minutes or more.
- If you are trapped in a building which is on fire - enter a room with a window, shut the door, cover the bottom of the door with clothing or a blanket, open the window and shout for help.

Clothing on fire

Remember **"Stop, Drop and Roll!"** (see figure 52 on page 65) - the casualty should:

- STOP moving
- DROP to the floor
- ROLL on the floor

Wrapping the casualty in a coat or blanket may help to smother the flames. Use water to put out the flames if electricity is not involved.

Electrical Injuries

If the situation involves power lines, overhead cables or live railway lines **DO NOT APPROACH** the casualty. High voltage energy can "jump" through the air and cause injury even at distance. Keep at least 20 metres away from the source of the electricity and ensure that any bystanders do the same.

If emergency contact details are available, try to inform the organisation responsible for the power supply. **DO NOT APPROACH** until the relevant authority has confirmed that the area is safe.

Do not touch the casualty if they are still in contact with the electrical source or before it is switched off.

Chemical Injuries

- if you think there is a risk from the chemical involved, **do not** approach the casualty unless you are sure it is safe to do so. If not, call for help from the Emergency Services and wait until they arrive.
- avoid pools of fluid and try to remain upwind of any smoke or vapour clouds.
- chemical containers usually show a code or a symbol to identify their contents. If you can do so safely, make a note of the code, as this can be used by emergency services to find out which chemical is present.

1. Examples of chemical warning symbols

Road Accidents

If you find yourself at the scene of a road accident the most important thing is your personal safety. Some key things to consider doing are:

- get people to a place of safety or refuge away from moving traffic whenever possible.
- if it is safe to do so, make sure that any vehicles which are involved have their handbrakes on and ignition off, leaving the keys in the ignition in case the emergency services need to move the vehicle.
- provide a warning to other road users by doing things such as turning on hazard lights and putting out warning triangles or cones.
- if available, wear high visibility or bright clothing.
- ensure that no naked flames such as cigarettes, lighters or matches are brought close to the incident.

2. Image: National Highways (UK)

If you are unable to exit the vehicle safely and get to a safe place, or must stop in a live traffic lane, or feel your life is in danger:

- **stay in your vehicle with your seatbelts and hazard lights on**
- **call emergency services immediately (or press the SOS button in your vehicle)**

Incidents involving water

Rescue from a river, lake, canal, pond or the sea is **dangerous**. Specialist recovery and safety equipment may be required. You **must not enter the water** unless you are **absolutely sure** it is safe for you to do so. Rather than enter the water you can:

- **throw** rescue equipment such as a lifebuoy, ring or rope if available
- **call for help**

You should not enter water to save an animal.

If the casualty has already got out of the water:

- make sure they are in a safe place
- encourage the casualty to remove wet clothing (not completely!)
- wrap them in any dry, warm clothing or a blanket

Responding to an Emergency... *continued*

1. **Assess** the situation
2. Ensure **safety**
3. Call for **help**
4. Provide emergency **First Aid**
5. **After-incident** care

Calling the Emergency Services

The Emergency Services can be called from any telephone by dialling **112** or **999**.

All emergency calls are **free**.

You will be asked for the following information:

- the emergency service you need
- your name and phone number
- what has happened
- the number of casualties
- where help is required and how to reach it
- any hazards you have found e.g. fire, chemical, electrical

Once the call is over it is important to do what you can to provide care until further help arrives. You may get advice by telephone from the emergency call handler. You may only be able to provide support and reassurance until help arrives, but this is really valuable.

If the emergency is in a large building, ask somebody to meet the emergency services at the entrance to guide them to the scene of the incident.

If you are able to, gather the casualty's medicines, secure any pets safely 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 casualty'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 carer/adult is present.

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1. **Assess** the situation
2. Ensure **safety**
3. Call for **help**
4. Provide emergency **First Aid**
5. **After-incident** care

Emergency First Aid requires a systematic, reproducible and consistent approach. These guidelines will describe the **DR-CBAC** paradigm in more detail below in **CHAPTER 2**.

Briefly, the priorities are avoiding potential **D**angers, checking for **R**esponsiveness, **C**ontrolling severe bleeding and **C**alling for help, then assessing the **A**irway, **B**reathing and **C**irculation or **C**ardiopulmonary Resuscitation (CPR) if necessary.

1. **Assess** the situation
2. Ensure **safety**
3. Call for **help**
4. Provide emergency **First Aid**
5. **After-incident** care

After any incident there is a need to consider support for anyone involved with providing care and those who may have witnessed the incident.

Confidentiality

Sharing your experiences of providing First Aid with others can help both you and other people learn from your actions. Doing so as part of your First Aid training is acceptable, but **do not** share any information on social media.

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 so it is important to recognise poor coping or abnormal function or reactions (in yourself or others) and access help at the earliest possible opportunity.

If you are worried about something you have seen or done as a First Aider, talk about it with someone you trust

Where to get help

Sometimes just talking to a friend may be enough. Extra 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 mental health of 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 below:

Beneficial	Potentially harmful
■ Talking to people for support ■ Engaging in positive activities ■ Keep your normal schedule ■ Maintain a healthy lifestyle ■ Relaxation methods ■ Participation in support groups ■ Professional counselling	■ Using alcohol or drugs as a coping strategy ■ Withdrawing from family and friends ■ Working too much ■ Risk-taking behaviour ■ Avoiding thinking or talking about the event

Use of medication

First Aiders are encouraged to support a casualty in taking their own medication. Examples include the use of an inhaler in asthma or an auto-injector to treat severe allergic reactions.

In the case of chest pain, First Aiders should encourage the casualty to chew 150 to 300mg aspirin if available.

Assessing the Casualty

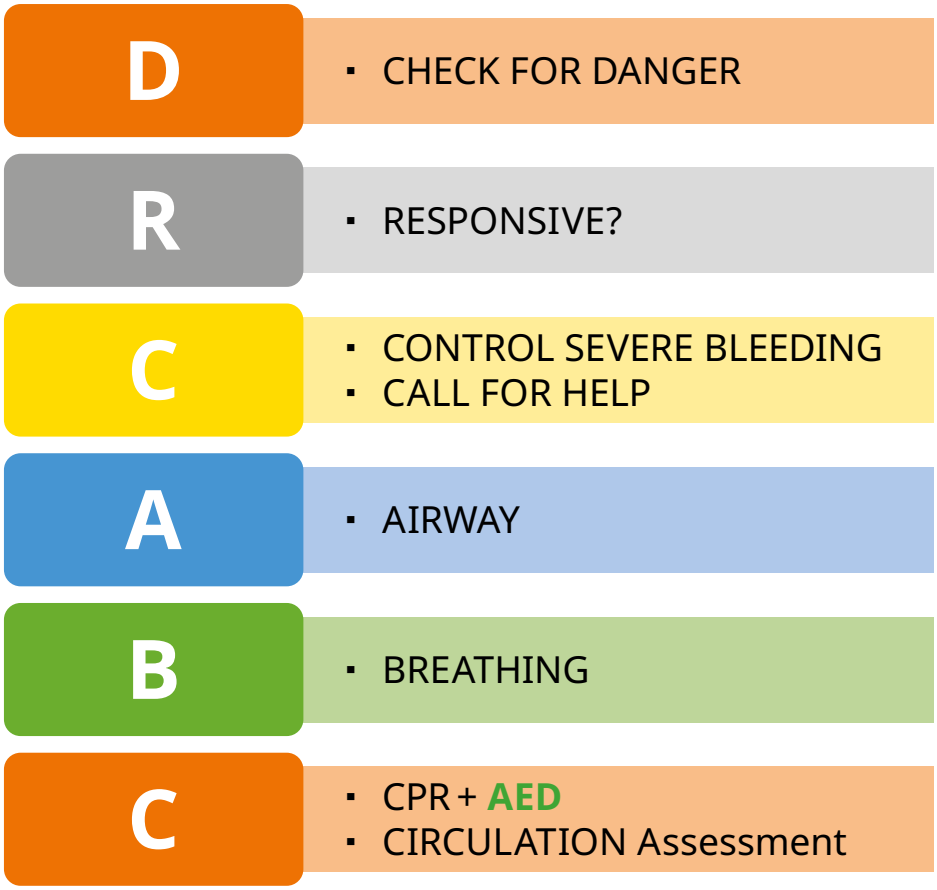
We have covered the steps required to assess the scene on **page 8**. In this section, we will focus on the steps required to methodically assess a casualty.

The **DR-CABC** mnemonic (remember as "**D**octo**R** - **C A B C**") forms a simple and easy to remember framework for you as a First Aider responding to an incident.

Introducing DR-CABC

As a First Aider you will encounter two types of casualties: someone who has been injured and someone who is ill. The **DR-CABC** approach provides the framework for managing both types of casualties. We will now look at each of these stages in turn.

Remember that whilst you are working through **DR-CABC** you should be asking questions to help you manage the casualty (**see page 17**).



D · CHECK FOR DANGER

As a First Aider you must not put yourself in danger. We have covered safety at the scene on **page 9**. You must make sure that it is safe for you to offer help. Don't become another casualty and always follow the advice or instructions of the emergency services. If you identify dangers, you should make sure that all those present move to a safer place. It may not be possible to offer help, which may have to wait until the emergency services arrive. This is fine - **do not** feel pressured to take unnecessary risks.

R · RESPONSIVE?

Firstly, talk to the casualty. In most cases they will talk to you or respond appropriately when you talk to them. If they don't answer, ask them to open their eyes. If they still don't respond, try a gentle shake of the shoulders. **Do not** shake the casualty too vigorously, as this risks make an injury worse.

To assess a casualty's level of response, the "**ACVPU**" scale should be used. The ACVPU assessment can be performed quickly and provides a simple measure of the level of casualty's level of response.

Alert - the casualty is fully awake with eyes open and responding normally

Alert but Confused - the casualty responds but speech or behaviour is confused

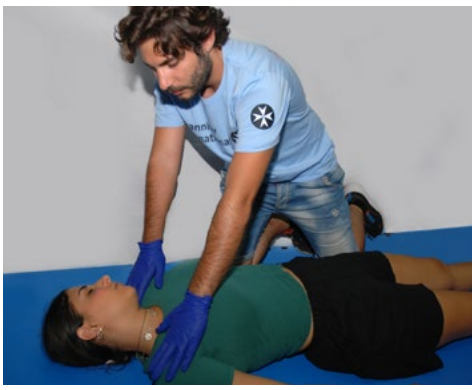
Responds to Voice - the casualty responds to your voice, such as opening their eyes

Responds to Pain only - the casualty will only respond to a painful stimulus

Unresponsive - the casualty does not respond to any stimulus

Some casualties are responsive but may appear **C**onfused, which is particularly important if it's a change from that individual's normal state and may indicate a cause for concern. This could be following a head injury or may be an early sign of an illness

Casualties who will respond to your voice are described as **V** on the ACVPU scale. To test their response to voice, you should ask a casualty to obey a simple command. For example, you may ask them to open their eyes. If they do not obey your command you should move on to the next step of the ACVPU scale and assess their response to pain.



3. Checking for responsiveness

A casualty who only responds to a painful stimulus is described as **P** on the ACVPU scale. An example of an appropriate painful stimulus would be to squeeze the fleshy area at the front of the shoulder. In response to such a stimulus, a casualty will normally:

- open or screw up their eyes
- move limbs and/or head towards (localise) or away (withdraw) from the stimulus
- talk, shout or mumble

A casualty who does not respond to a voice or painful stimulus is **unresponsive** i.e. **U** on the ACVPU scale.

C

- CONTROL SEVERE BLEEDING
- CALL FOR HELP

If the casualty is bleeding heavily you should immediately attempt to control the bleeding. Methods to achieve this are covered in more detail on **page 58**.

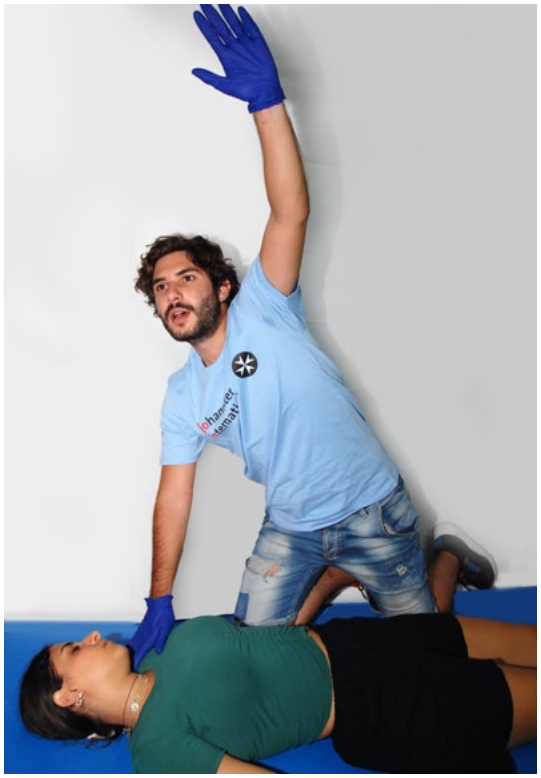
If you have not already done so, the next task is then to **call for help** If you have identified a need for support.

If you are alone:

- stay with the casualty.
- use a mobile phone, ideally using the speakerphone, to call the emergency services (**112** or **999**) for assistance.
- call for help or ask any passers-by for help.

If other people are present:

- continue your assessment and treatment of the casualty
- ask someone to call for help.
- make sure that the person you have asked to call for help comes back to tell you help is on the way.



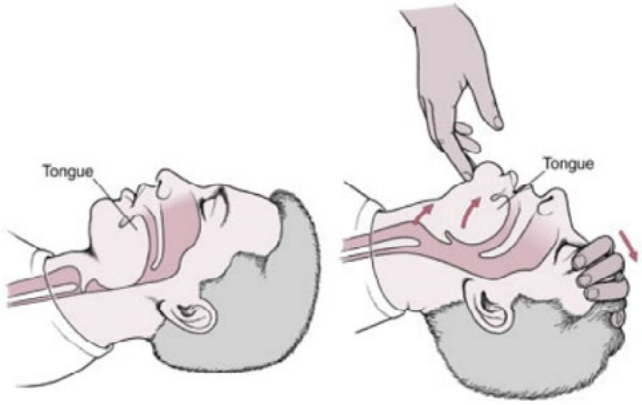
4. Calling for help

A · AIRWAY

If the casualty does not respond, your next priority is to assess and open the airway. Open the casualty's mouth and remove any obvious, visible blockage if this is possible and safe to do. Techniques such as blindly finger sweeping should not be carried out.

Use a simple manoeuvre - such as the "**head tilt - chin lift**":

- Place the fingertips of one hand under the point of the casualty's chin, lift chin and hold
- At the same time place your other hand on their forehead and gently tilt their head backwards.
- In a very young child, or infant, the most appropriate position is neutral (**see figure 7**).



5. Head tilt – chin lift manoeuvre

6. The "head tilt-chin lift" manoeuvre

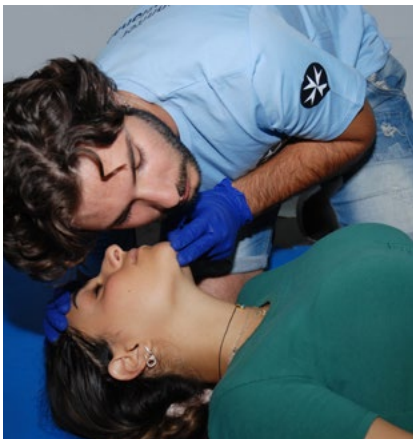
7. Neutral position for an infant

B · BREATHING

The next step is to see if the casualty is breathing **normally**. Normal breathing should be regular and appear comfortable. Abnormal breathing may be too slow or too fast, or may look or sound ineffective.

To assess breathing look for chest movement then listen and feel for breathing for no more than 10 seconds:

- **LOOK** (for chest movement)
- **LISTEN** (for breath sounds)
- **FEEL** (the casualty breathing on your cheek)



8. Look, listen and feel for breathing

If you are unsure whether the casualty is breathing normally, assume that they are not.

Next, if the casualty is:

- **Responsive** – move them as little as possible and place them in a comfortable position and move onto checking **CIRCULATION**
- **Unresponsive and breathing normally** – place them in the recovery position (see page 37) and move onto checking **CIRCULATION**
- **Unresponsive and not breathing normally** – immediately **start CPR (see page 21)**

9. Casualty placed in the recovery position

The recovery position is explained further on **page 37**. Here we are just introducing you to the idea.

Remember, if you have not called for help yet then CALL NOW!

C

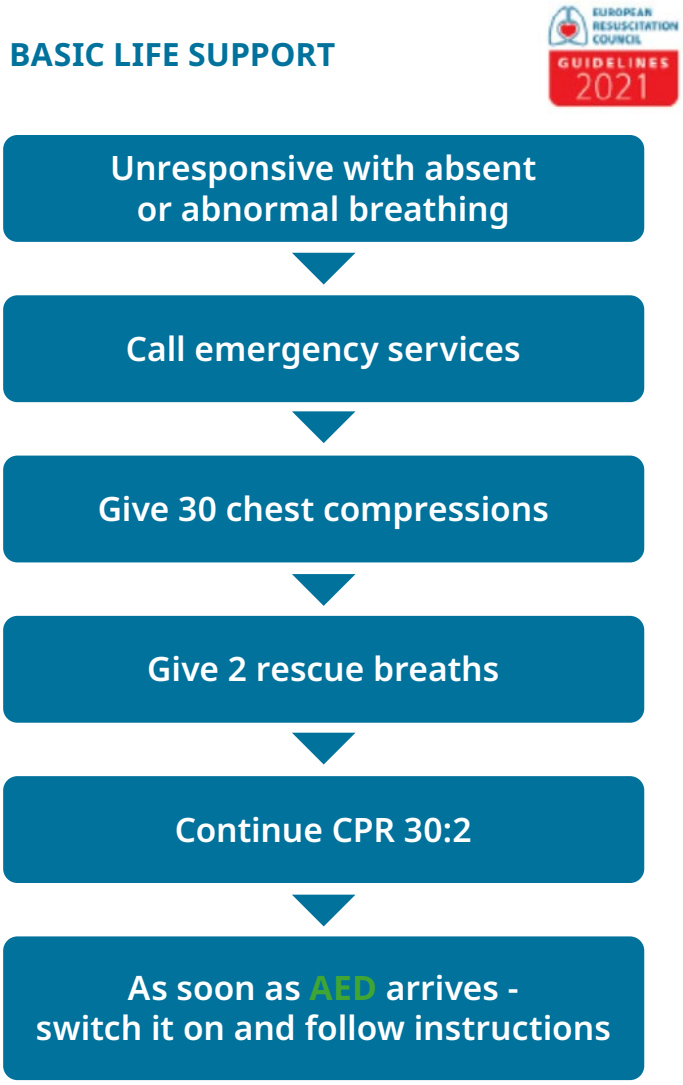
- CPR + AED
- CIRCULATION Assessment

Cardiopulmonary resuscitation (CPR)

Start CPR immediately if the casualty is **unresponsive and not breathing normally**

Adults

The combination of rescue breaths and chest compressions is called **BASIC LIFE SUPPORT** (**BLS**) and can be a very effective way of saving a life. It follows the sequence shown below:



10. Adult BLS © European Resuscitation Council, 2021

Learning how to do CPR is one of the top 5 key messages from the European Resuscitation Council guidelines published in 2021.

Remember to call for help as soon as possible 112 / 999

The purpose of chest compressions is to manually pump blood around the body so that oxygen can reach the brain and heart. The emphasis in cardiac arrest is providing high quality chest compressions with minimal interruption. In addition to this, an Automated External Defibrillator (**AED**) should be obtained and used as soon as possible.

A casualty will usually experience signs or symptoms of illness before cardiac arrest occurs. Cardiac arrest is therefore potentially preventable with early access to medical care. The latest recommendations state that in suspected opioid-related (e.g heroin) cardiac arrest, naloxone (reversal medication) should be used if available.

The principles which guide First Aid in this situation are summarised in the **Chain of Survival.**

11. The “Chain of survival”

The key elements of the Chain of Survival are:

- Early recognition and call for help
- Immediate CPR (with minimal interruptions)
- **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 doing or are unable to do rescue breaths, perform uninterrupted compressions, without pausing.

Chest compressions

Performing chest compressions is tiring and ideally the person doing so should change-over every 2 minutes. CPR should only be stopped if the casualty starts to show signs of life, when further medical help arrives, or if the provider becomes exhausted.

- Move the casualty onto their back 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 on top of the other; pressing on the breastbone and avoiding pressing on the ribs (**see figure 12, page 23**)
- Give 30 chest compressions aiming to achieve a rate of 100-120 compressions/ minute – 2 per second
- For each compression firmly press down by 5-6 cm depth fully releasing the pressure between compressions without your hands leaving the chest

12. The correct hand position for chest compressions. ideally use the phone on speakerphone so you can hear it clearly and also speak without interrupting the CPR.

Rescue breaths

Following the simple instructions below will ensure effective breaths:

- the ratio of chest compressions to breaths should be **30 : 2** for an adult
- use head tilt-chin lift (**see page 19**) to open the airway
- a face shield or face mask could make the delivery of breaths more acceptable for the First Aider, but is more effective if previously trained in their use
- place your mouth around the casualty's mouth (or over the face mask/shield valve), ensuring you have a good seal and pinch their nose (**see figure 13**)

13. Giving rescue breaths

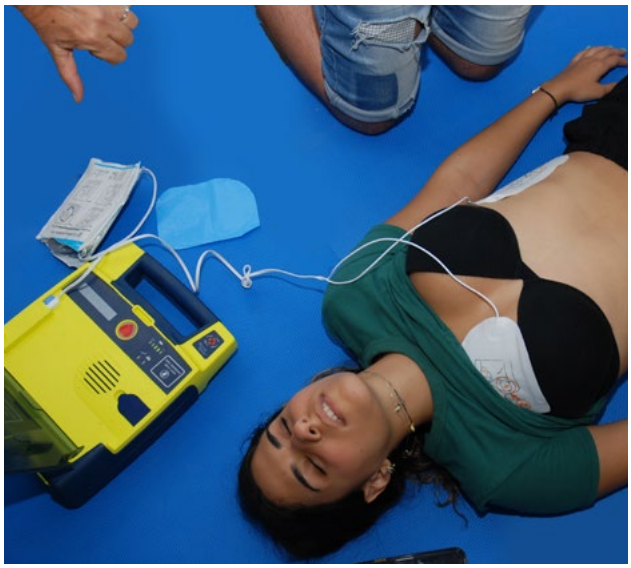
- the chest should be allowed to visibly rise and fall with each delivered breath
- make no more than two attempts between sets of compressions - if unsuccessful in delivering breaths re-check, clear the airway and reposition on the next attempt

If you are unwilling or unable to give rescue breaths, then you should **deliver only chest compressions** (the rate is of 100-120 compressions/minute - 2 per second). The emergency services operator will provide instructions for CPR which should be followed to the best of your ability- put your phone onto external loudspeaker!

Use of an Automated External Defibrillator (AED)

Use the **AED** as soon as it arrives. Open the case, turn on the device and follow the verbal instructions it gives you. The **AED** monitors the casualty's heart rate and rhythm, and will only let you administer a shock if one is needed. The sooner an **AED** is used, the greater the chance there is of survival.

14. International sign for an AED



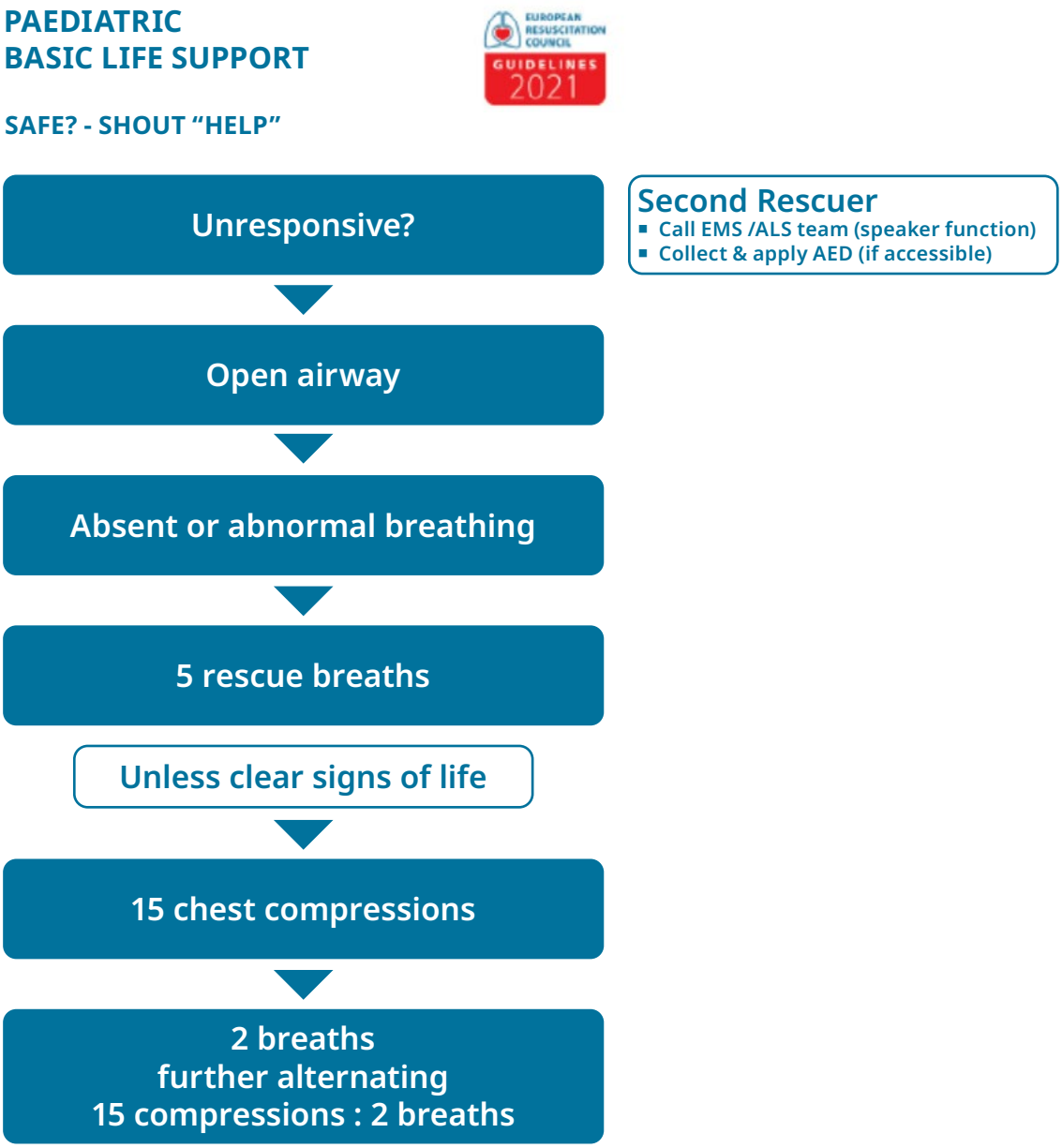
15. Example of AED placement (adult). Please make sure that any clothing such as a bra is removed to make CPR more effective and also ensure anything metal, such as jewellery or a bra is removed to avoid further injuries.

Putting it all together

16. The full sequence of Basic Life Support

Infants and Children

Sometimes, but very rarely, you may have to carry out basic life support on a child or an infant. The BLS algorithm is shown below:



17. Paediatric Basic Life Support algorithm
© European Resuscitation Council, 2021

REMEMBER: an infant is less than one-year-old and a child is aged 1 to 8

The same **DR-CABC** approach should be followed for infants, children and adults. When providing CPR, there are two important differences between infants, children and adults: giving rescue breathes, and the rate and position for delivering chest compressions.

Rescue breaths

In infants and children, a cardiac arrest is most likely to be caused by an initial breathing problem. Therefore, if an infant and child is not breathing normally, **5 rescue breaths** should be given before starting chest compressions. If there is any change in the casualty's condition while doing so, then reassess.

18. Rescue breaths

Chest compressions

In children and infants, **15** compressions are given to every **2 breaths** at a rate of **100 - 120** compressions per minute or 2 per second. There should be minimal interruptions in chest compressions.

Compressions in infants

- compress the sternum (breastbone) with the tips of two fingers (**see figure 19**)
- the depth of compressions should be approximately 4cm

19. The two finger technique for chest compressions on an infant

“Encircling” technique for chest compressions in infants

An alternative technique is to use the encircling technique to provide chest compressions:

- place both thumbs flat, side-by-side, on the lower half of the sternum (**see figure 20**), 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 by approximately 4 cm.

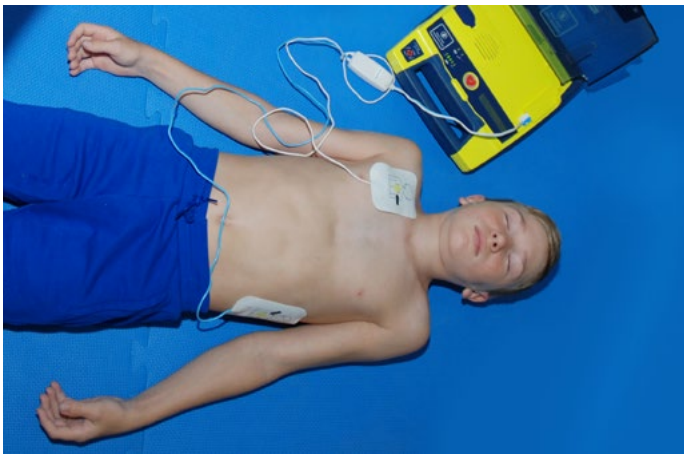
20. The “encircling“ technique

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 (**see figure 21**).
- position yourself vertically above the casualty’s chest and, with your arm straight, press down approximately 5 cm. The other hand can be used to support the head as shown below, placed on the ground to aid balance or held behind your back.
- in larger children, this may be achieved most easily by using both hands (as for CPR in adults).

21. Providing chest compressions in children

Use of an AED in children



AEDs should not be used for infants (children under one year)

22. AED applied to a child

Paediatric pads should be used if the child is less than eight years old. If paediatric pads are unavailable, use standard adult pads and position one on the front of the chest and one on the back (**see figure 23**).

23. Standard AED pad positioning for a child

More than one First Aider

If you are alone, you will need to provide both chest compressions and rescue breaths as described above. If help is present, you should use others to help perform Basic Life Support. If possible, use:

- one person to provide breaths
- one person to attach and use the defibrillator
- at least one person to perform chest compressions. Because chest compressions are tiring, if available, more than one person can be used for this, swapping as they get tired; ideally every two minutes

As a First Aider, if enough people are present to perform all of the roles above, you can stand back from the casualty and direct each person to ensure all elements of basic life support are being performed correctly. Clear communication is key to successful resuscitation.

Circulation

If the casualty has a problem with their circulation they may complain of:

- chest pain
- feeling sick
- feeling faint or light headed

and/or you may notice:

- pale, cool, and sweaty skin
- rapid, shallow breathing
- signs of confusion
- a reduced level of responsiveness

What you can do:

- Casualties showing signs of a severe problem with their circulation, called "**shock**" (**see page 57**) are best placed lying on their back.
- If there is no evidence of injury, lifting the legs may help improve the circulation. This is called **passive leg raising**.
- Assist a responsive casualty who is experiencing non-traumatic chest pain that is suspected to be a heart attack (myocardial infarction), to take aspirin (**see page 50**).

DO NOT suggest anyone taking aspirin with a known allergy or reaction, such as severe asthma.

While you're waiting for further help to arrive:

- always follow **DR-CABC**
- if you see bleeding, try to control it (**see page 56**)
- if they are feeling faint, lie the casualty on their back and, if possible, raise and support their legs
- cover the casualty with blankets or clothing to keep them warm
- advise them not to eat or drink but you can give them sips of water
- reassess the casualty regularly

Some people may carry an adrenaline auto-injector, also known as an "EpiPen®", which contains adrenaline as an emergency self-treatment if they have a severe allergic reaction. If they do, you can assist them in using it (**see page 85**)

This concludes the initial approach. If there has been any change in the casualty"s condition, you should repeat your assessment from the start.

Who do I treat first?

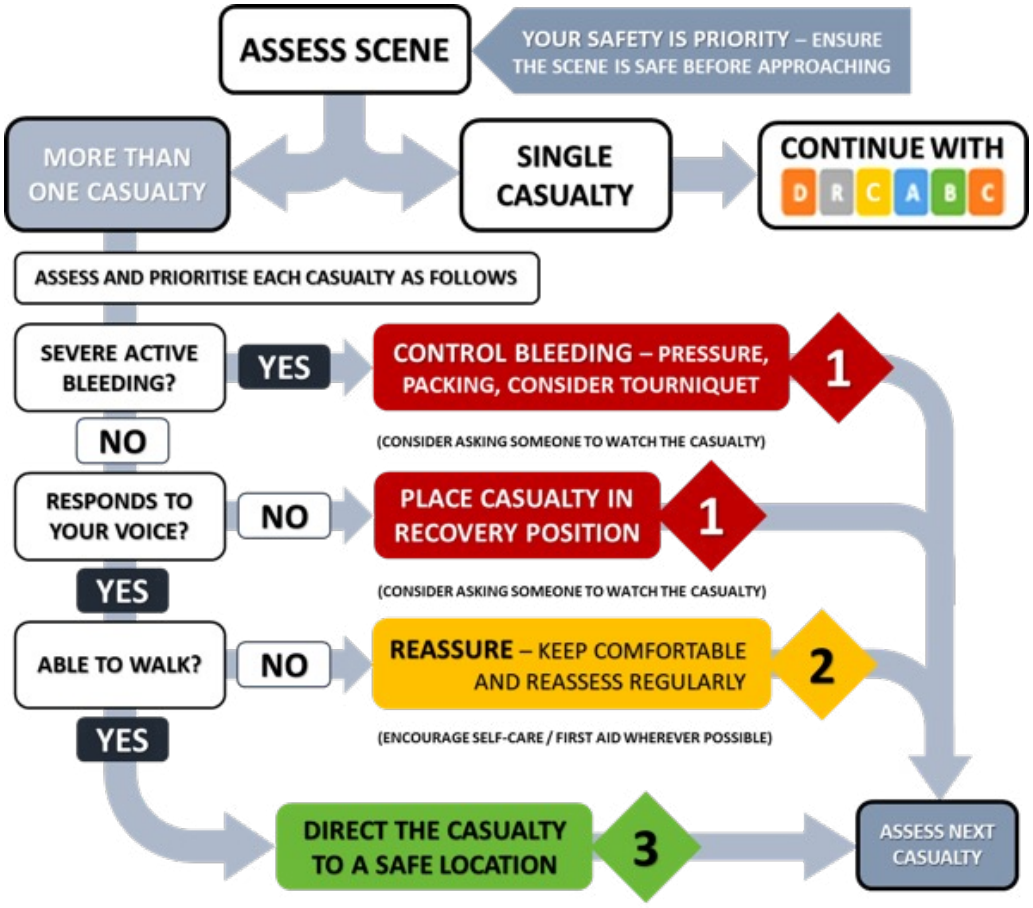
If there is more than one casualty and you can safely offer First Aid, you should first ensure that the emergency services have been called, sharing as much information about the situation with them as you can. The first priority will be to stop severe bleeding (**see page 56**) and, where necessary, placing a casualty into the recovery position (**see page 37**).

There are three simple questions to consider regarding each casualty:

1. Is there severe active bleeding?

2. Do they respond to your voice?

3. Are they able to walk?



24. Simplified Triage process for assessing and prioritising more than one casualty

The most serious casualties are referred to as category "**1**" (usually denoted as **RED**), followed by category "**2**" who require urgent care but not usually life-threatening (**AMBER**), and then category "**3**" which means they are a walking casualty (**GREEN**). Think traffic lights.

If possible, try to record where the most severe casualties are, and indicate them as such with a suitable method e.g. coloured labels or improvised markers. If there is any possibility of further danger, your immediate action should be to leave the scene and reach a safe place.

Following DR-CABC

Once you have completed your **DR-CABC** the next step is to conduct a ”head-to-toe” assessment looking for signs of injury or illness, and ask about any symptoms. This information can then be handed over to the emergency services when they arrive.

Your **DR-CABC** assessment may not identify the problem which needs immediate treatment. In some cases you will need to use other sources of information. There may be clues such as a medic alert bracelet, an “EpiPen®” or medications carried by the casualty or on their person.

It will not always be possible to gather all this information, for example if the casualty is unresponsive, there were no witnesses to an incident or anyone nearby who may know the casualty. Always check for any medic alert bracelets or necklaces which they may be wearing.

25. Examples of medical alerts (bracelet and necklace)

“Head-to-toe” assessment

This is a careful, systematic examination covering all of the following:

- head and neck
- chest
- abdomen
- back
- arms and legs

Assess each limb and joint with a “look then feel” approach, noting any deformity or swelling, wounds or other skin changes as you go. Ask the casualty to move their limbs and look for any restriction of movement or pain when doing so.

When you examine the head ensure you look through the casualty’s hair for any wounds. You should also look for injuries to the eyes, nose, mouth or ears, or the presence of foreign bodies. Remember that many people wear dentures or use contact lenses.

Removal of clothing

When providing CPR and performing defibrillation, any clothing or jewellery that could interfere with positioning of the pads should be removed or cut away, as the pads must be attached to bare skin. Clothing may also be moved or removed to allow you to assess and treat wounds, or to control severe external bleeding. Always remember to respect the casualty’s dignity at all times, explaining what you are doing and why, and removing as little clothing as possible.

History

As you begin to assess the casualty, you should try to gather as much information as you can about the situation by **taking a history**. This can be obtained from the casualty themselves, cares or relatives, witnesses or any combination of these. Elements of the history or evidence at the scene may alert you to possible causes of injury or illness.

As you assess the casualty, they may tell you symptoms they are experiencing, such as pain, difficulty breathing or itching. As you perform your **DR-CABC** assessment you may find signs that are consistent with these symptoms, such as bruising, a wheeze or a rash.
You should start your history by finding out the casualty's name and age or date of birth. This will be useful later when speaking to the emergency services.

A useful mnemonic to use when assessing a casualty is "**AMPLE**":

A	**Allergies**
M	**Medications**
P	**Past Medical history**
L	**Last ate or drank**
E	**Events leading up to the illness/ injury**

Moving casualties

Wherever possible, leave the casualty in the position in which you find them UNLESS this prevents you being able to assess and treat a life-threatening problem effectively, or you need to move them away from an approaching hazard – such as fire/fumes or moving traffic.

Always ensure your own safety first. Ideally, use a moving/lifting technique that you have been trained to perform. If not, always try and minimise risk of injury by seeking help first.

Choking

Choking occurs when the airway is completely or partly blocked. Food is often the cause of the blockage although young children can choke on toys or other small objects they put in their mouths. Signs and symptoms of choking include:

- coughing, wheezing or gagging
- difficulty breathing, speaking or swallowing
- panic
- clutching at the throat
- abnormal breathing sounds
- unresponsiveness

Choking in Adults

Simple emergency actions may save lives. You should follow the **DR-CABC** approach.

The actions to take:

- encourage the casualty to cough.
- if this does not clear the object, ask someone to help you and then.
- lean the casualty forwards and give them five firm back blows between the shoulder blades with the heel of the hand as shown in (**see figure 26**).
- 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 casualty 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 (**see figure 27**).
- five back blows should be alternated with five abdominal thrusts until the blockage is cleared or the casualty becomes unresponsive.

26. Back blows

27. Abdominal thrusts

What do you do if the choking casualty becomes unresponsive?

- Support the casualty 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 blockage is cleared and breathing restarts

Choking in Infants and Children

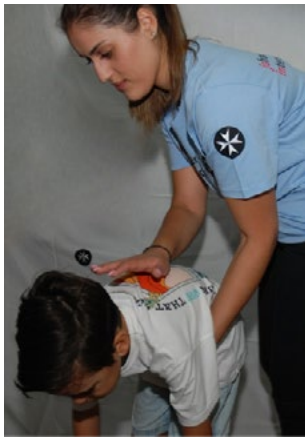
For children the initial treatment is to encourage them to cough. If this fails to clear the object, infants and smaller children should be supported in a head down position. Babies should be laid along your forearm, toddlers and young children across your lap. The child's head should be supported with 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. Start with five back blows just as you would in an adult, but more gently (**see figure 28**).

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

- **in infants (under one year):**
  - 5 back blows are alternated with 5 chest thrusts. Chest thrusts are similar to chest compressions but delivered at a slower rate (**see figure 29**)
  - Once the obstruction is cleared check the airway- look in the mouth
- **in children (1 to 8):**
  - 5 back blows are alternated with 5 abdominal thrusts using a lower force than for adults (**see figure 30**)
  - Once the obstruction is cleared check the airway- look in the mouth
  - If the infant or child becomes unresponsive, CPR should be started (**see page 26)**

28. Performing back blows on an infant

29. Performing chest thrusts in an infant



30. Performing back blows and abdominal thrusts on a child

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 casualty is responding appropriately, talking and breathing normally** then there is no need to remove the helmet urgently as there is a risk of causing further damage to the neck.

If the patient is **unresponsive or has abnormal breathing** the method shown in the sequence below should be used to carefully and quickly 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 (**see figures 31**).

31. Example of removal of motorcycle helmet

Strangulation and Hanging

Strangulation is a constriction or squeezing around the neck. Hanging is the suspension of the body by the neck. The priority must be to release any constriction or pressure upon the neck, lower the casualty if safe or able to do so, and establish an open airway.

- in all cases follow **DR-CABC**
- if casualty is still hanging, try to get them down only if this can be done so safely. This is likely to require at least two adults and may be a significant risk of further injury
- remove anything from around the casualty's neck
- if the casualty is not breathing, start CPR

Recovery position

The unresponsive and breathing casualty is at risk if their airway becomes blocked. This can be protected by placing the unresponsive casualty in the recovery position.

The airway takes priority over any concern about neck injury. However, if injuries are severe ideally the casualty should be left in the position in which they are found until professional medical help arrives.

Children recovery position

If safe to do so, place the casualty in the recovery position as shown in the following sequence:

Open the airway

Nearest arm as in “STOP“ sign

Then opposite arm across chest

Hold outside of opposite knee, keeping head supported

Lift knee, foot flat on the ground

Pull knee and hip into right angles

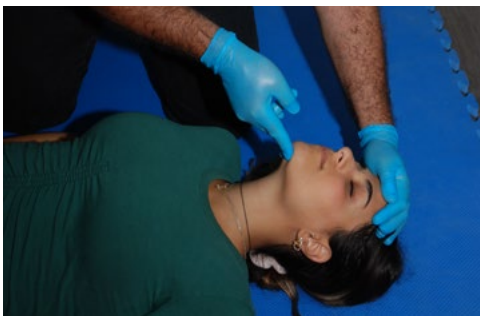
Roll casualty towards you until on their side

Check head position

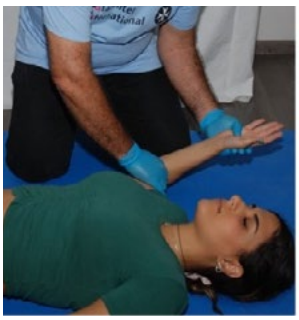
32. Placing a casualty into the recovery position

Adult recovery position

If safe to do so, place the casualty in the recovery position as shown in the following sequence:



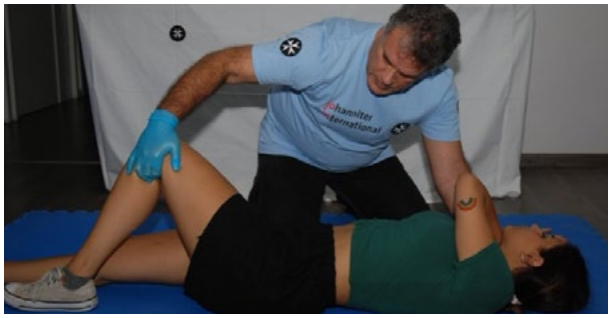
Open the airway



Nearest arm as in “STOP“ sign

Then opposite arm across chest

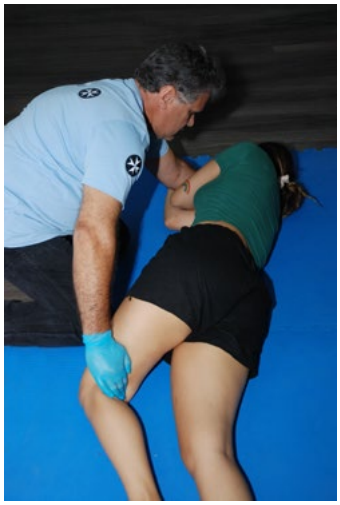
Hold outside of opposite knee, keeping head supported

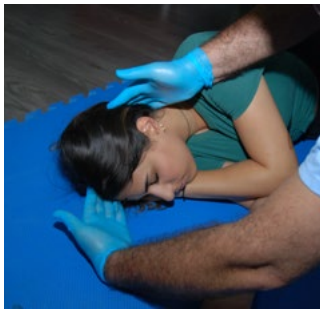


Lift knee, foot flat on the ground

Move yourself away before rolling towards you

Roll casualty towards you until on their side





Check head position

33. Placing a casualty into the recovery position

Infant recovery position

If the casualty is an infant, cradle them in your arms with their head tilted slightly downwards and continue to monitor their breathing and level of responsiveness until medical assistance arrives.

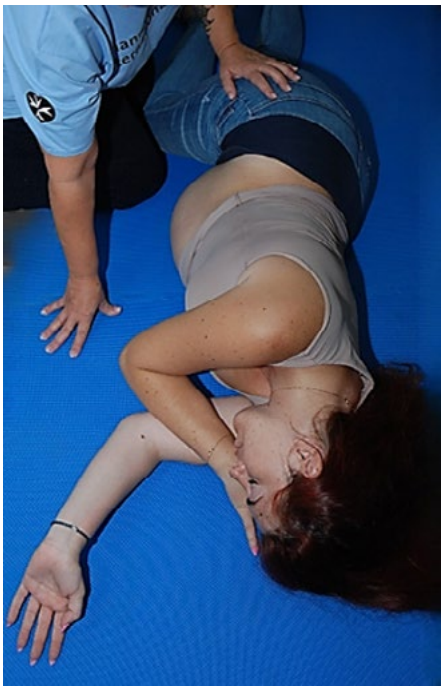
34. The infant recovery position

Once the casualty is in the recovery position:

- keep checking that they are breathing
- keep them warm using a blanket or coat

Pregnancy

Casualties obviously in late stages of pregnancy should be placed on their **left** side downwards:



35. Left side down position

Repositioning

If the position of the casualty impairs the first aider's ability to effectively assess for signs of life, the casualty should be immediately placed flat on their back and reassessed.

Seizures (“fits”)

Some people have seizures sometimes for no obvious reason which are usually controlled by medication, but seizures can also occur as a result of head injury, diseases of the brain, shortage of oxygen or glucose (low blood sugar) or through misuse or withdrawal from drugs or alcohol.

The features of a seizure may include:

- the casualty suddenly falls to the ground
- their body may go stiff and rigid
- they may look awake but do not respond
- twitching or violent jerking movements of the limbs may occur
- they may wet themselves
- they may bite their tongue

After a seizure has resolved the casualty may remain confused and drowsy for anything from seconds to minutes, or even hours. This is termed the “**post-ictal phase**”. During this time the casualty may be at risk of airway obstruction or respiratory depression and may not be breathing properly. Continue reassessing the casualty, so if this occurs, go back to the **AIRWAY** step of the **DR-CABC** assessment.

When you are looking after someone who is having a seizure you should:

- follow **DR-CABC**
- not try to restrain the casualty during a seizure
- try to protect their head by removing potential hazards or placing something soft under or beside their head
- not allow anyone to put anything in the casualty’s mouth to keep it open
- call for further medical help if there is no responsible adult present
- ideally record the duration of the seizure
- once the seizure has stopped, if the casualty remains unresponsive, put them in the recovery position while you wait for help to arrive
- continue to observe the casualty and keep them warm and safe
- the families of children who have seizures may have medication they can administer to stop them

Seizures associated with a high temperature (“febrile convulsions”)

Young children and infants may have seizures as a result of having a fever (high temperature). This can be a frightening experience for the parents but is common and, as long as the seizure is brief, should not be associated with any long-term problems. These are called “febrile convulsions”.

What you should do:

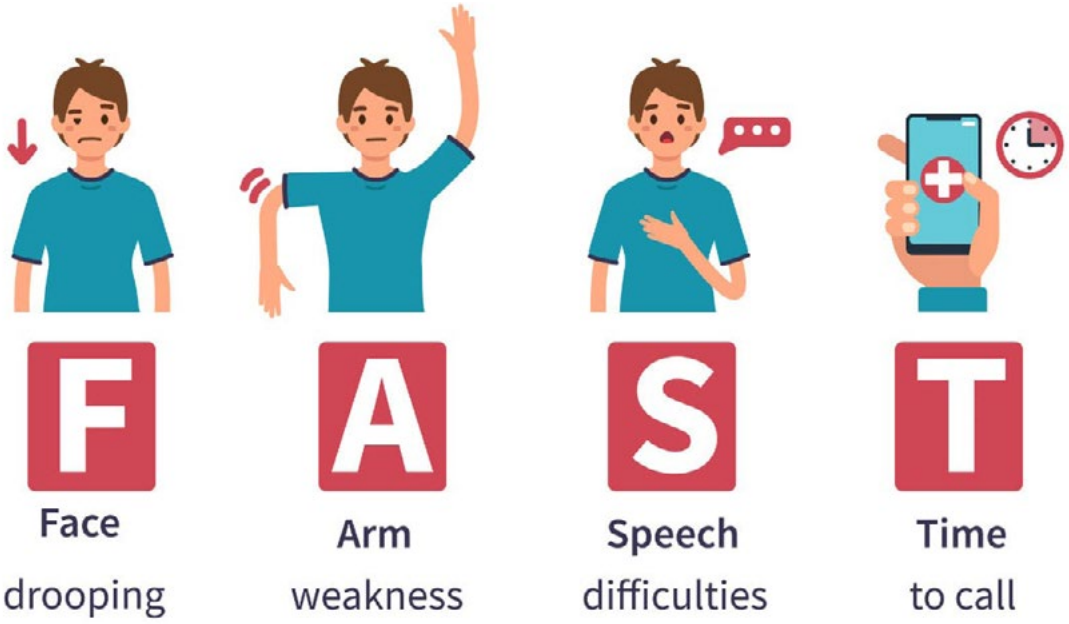
- follow **DR-CABC**
- remove excess clothing and bedding
- seek medical assistance
- Parents may wish to give their child medication to lower their temperature, such as paracetamol or ibuprofen when they are fully responsive

Stroke

A stroke occurs when the blood supply to a part of someone's brain is suddenly cut off either because a blood vessel has become blocked or because of a bleed into the brain. Early recognition by the First Aider and rapid transfer to hospital can make a real difference to the casualty's recovery. The **FAST** approach can help you to recognise if a stroke has occurred.

The typical features of a stroke may include:

Recognize stroke...act F A S T



36 - The FAST approach to recognising a stroke

- facial weakness (facial droop) on one side
- weakness or altered sensation on one side of the body
- slurred speech or difficulty speaking
- altered or loss of vision
- loss of coordination
- sudden confusion or disorientation

What you should do:

- follow **DR-CABC**
- offer reassurance and keep the casualty comfortable
- if the casualty has a reduced level of responsiveness, put them in the recovery position
- call for urgent medical help, explaining the symptoms and "**FAST**" signs

Head injury

Another possible cause of a reduced level of responsiveness is following a head injury. Most casualties will recover fully after a head injury. However, afterwards, some may complain of headache, dizziness, visual disturbance, tiredness or feeling sick.

If a casualty has suffered a head injury and becomes unresponsive, this is a sign of a significant and possibly life-threatening injury, such as bleeding in or around the brain. This may be more common or more severe in casualties who take anti-clotting medications, which may also be called "blood-thinners".

In all instances, follow the **DR-CABC** approach. If the casualty has suffered a minor head injury, was never unresponsive and is still fully alert and has no further symptoms, they may not need any further care other than you completing the **DR-CABC** assessment and "head-to-toe" check.

"**Concussion**" is a term which may be applied following head injury with signs of ongoing confusion or disorientation or unusual behaviour. It is recognised as a potential risk from sports, especially involving contact (e.g. rugby or boxing). It is advised anyone suffering a head injury should be assessed for whether they require more formal evaluation by a healthcare professional.

Symptoms which may suggest a more serious head injury include:

- unresponsive **at any point** because of the injury
- a penetrating injury (a large open wound to the head)
- any seizure (fit) since the injury
- any ongoing reduction in level of responsiveness, including new confusion
- any vomiting episodes since the injury
- an ongoing headache since the injury
- any weakness or changing sensation of the limbs
- ongoing leak of clear fluid from the nose or ears since the injury
- any loss of memory in relation to the injury
- any casualty who is on any kind of anti-clotting ("blood-thinning") medication

Recommend a casualty with any ongoing symptoms to get further medical advice, and call for help from emergency services if the casualty has any of the features as listed above.

Diabetic emergencies

Diabetes is a medical condition in which the body does not adequately control its own blood sugar (glucose) level. Diabetes can be diagnosed at any age.

Diabetes can result in complications that may be life-threatening without timely treatment. In the event of a diabetic becoming unwell, seek further help from a healthcare professional.

Many diabetics regularly monitor their blood sugar levels and take insulin injections or tablets accordingly. Some diabetics use an implant which allows them to continuously monitor their blood sugar level for example via their smartphone. 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 potentially serious and need further treatment. From a First Aider perspective, this guidance will focus on low blood sugar.

Low blood sugar ("Hypoglycaemia")

Hypoglycaemia is the term for low blood sugar and may also be referred to as a "hypo". Causes include taking too much insulin, inadequate sugar intake and/or increased exercise.

The features of hypoglycaemia may include:

- rapid onset of symptoms
- confusion, agitation and irritability
- weakness or tiredness
- cold, clammy skin
- aggressive behaviour
- drowsiness which may lead to loss of responsiveness if the condition is untreated

Most diabetics know when they are having a "**hypo**" and are often able to stop it themselves. This will usually mean taking some sugary food or drink (non-diet), a carbohydrate source such as biscuits.

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 a high or low blood sugar unless the casualty has a method of measuring their glucose level.

What you can do:

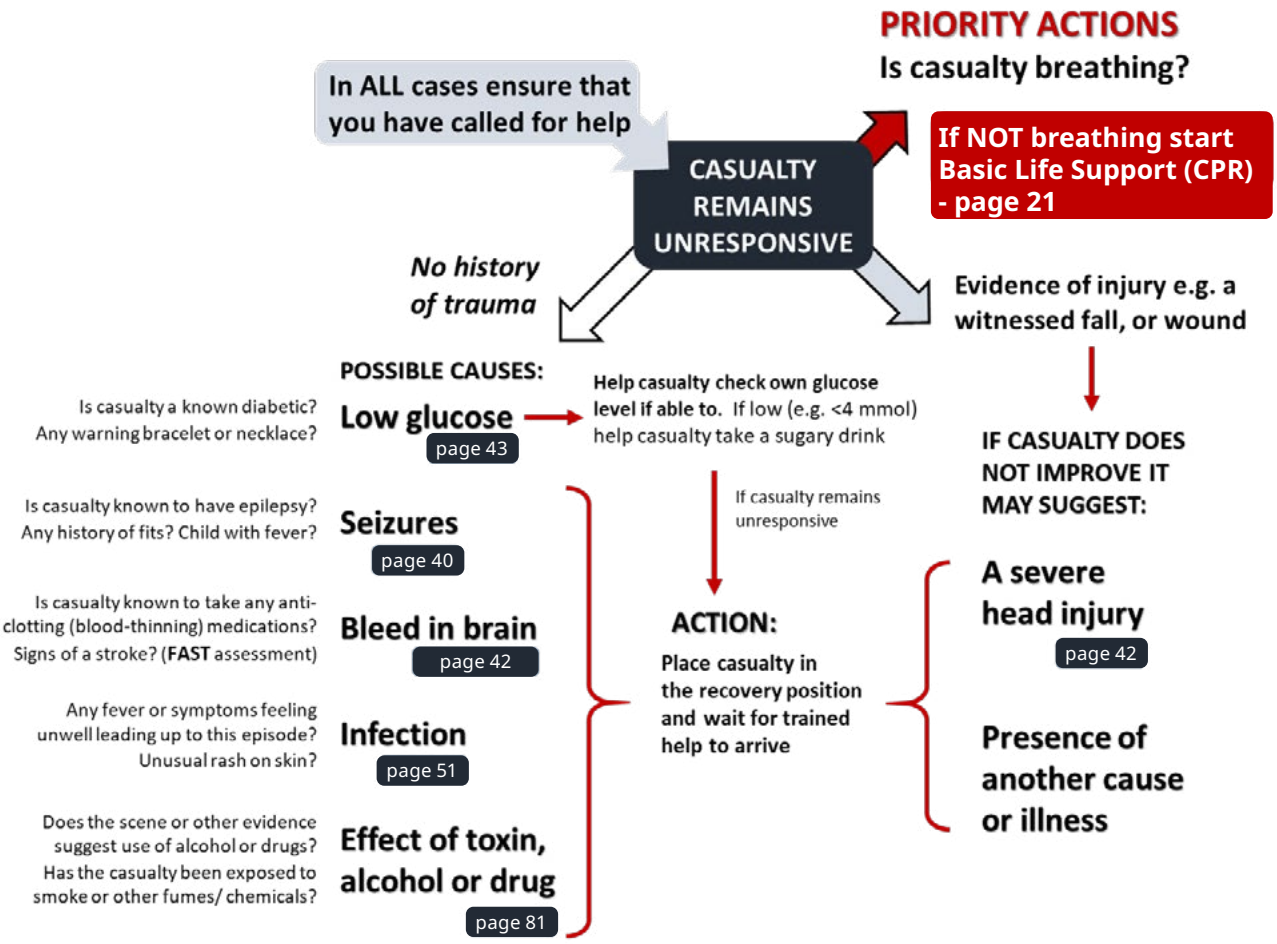
- in all cases follow **DR-CABC.**
- if they are responsive assist them in taking a sugary snack or drink or their own sugar medication ("Glucogel®" for example).
  - If they improve quickly, encourage them to take some carbohydrate (such as a sandwich or biscuit) and let them rest.
  - If they do not improve quickly or unable to eat or drink, call for help immediately.
- some casualties may carry an injection (Glucagon kit) that they can give themselves, or which a family member can give them when they are having a severe "hypo".
- while waiting, keep checking their level of response.

Why is the casualty unresponsive?

Sometimes you won't know why the casualty is unresponsive. For example, they may have suffered a stroke and because they are unresponsive could not be assessed using the **F A S T** approach. They may have taken an overdose or sustained an unwitnessed head injury. Identifying the exact cause does not matter - simply follow **DR-CABC** and call for help early.

In all cases, the priorities are to keep the casualty safe and warm, ensure they are not bleeding, their airway is open, position them appropriately and monitor them.

The following system may help to decide between different causes for an unresponsive casualty, and could help to ensure they receive the right care at the right time:



37. Flowchart for the unresponsive casualty

Headaches

Headaches are not usually associated with a severe underlying condition. They often last between 30 minutes and several hours, and settle spontaneously or with simple pain relief.

The presence of certain "**red flag**" features warrants more urgent medical attention.

Red flag signs and symptoms include:

- a headache with a fever and neck stiffness, sensitivity to bright light
- a headache that is present when they wake in morning, or wakes the casualty at night
- a headache with loss or significant change of vision
- sudden onset of "worst headache ever" or described as feeling like being hit on the head
- a new onset or change in headache in those over 50 years of age
- a new onset headache in someone with cancer
- a headache associated with other symptoms such as numbness or weakness in the arms or legs, or new speech disturbance
- a headache triggered or made worse by coughing, sneezing, or bending down

If casualty has any of the "red flags" features listed above, they should be directed to seek urgent medical attention.

If none of the red flags are present, you should:

- Encourage the casualty to rest, relax and keep well-hydrated.
- Advise the casualty to take simple pain relief such as paracetamol or ibuprofen, or any medications they have been prescribed for headaches (such as for migraine).
- Advise the casualty to avoid alcohol and activities which may worsen the headache such as electronic screen use.

Migraine

Migraine is a common health condition, affecting around 1 in every 5 women and around 1 in every 15 men. Casualties with migraines usually suffer headaches with a similar pattern of symptoms on each occasion. Such headaches are usually described as a throbbing pain on one side of the head. Casualties often suffer other symptoms such as feeling sick, vomiting and increased sensitivity to light or sound.

Casualties should be encouraged to take their own medication and seek further help from a healthcare professional if the symptoms fail to settle, or attacks become very frequent e.g. on more than five days in every month. 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.

Fainting

A “faint” is caused by a temporary reduction in blood flow to the brain. It may result in a brief episode of being unresponsive. There are lots of reasons for fainting - standing up in a warm environment, dehydration or emotional stress. The main risk is from injury related to the fall.

When a casualty faints, they:

- usually start by feeling hot and light headed
- may complain of “tunnel vision” or their vision going cloudy/dark
- may slump or fall to the ground

Witnesses usually notice that the casualty has become pale and less responsive. It is important to remember that a casualty may injure themselves on falling. The majority of casualties make a complete recovery without ill effects. If slow to recover, treat them as unresponsive.

What you can do:

- if they look like they are going to faint help the casualty to the ground as gently as possible and lie them down on their back
- if possible, gently raise the casualty’s legs
- sit the casualty up gradually after they have recovered
- check for any injuries from the fall
- if you witnessed the faint, give a clear account to the next healthcare provider

If the casualty does not become responsive rapidly, you should follow **DR-CABC**.

If the casualty is obviously pregnant and needs to lie down, you should lie them on their left-hand side rather than on their back, with someone supporting them in this position.

Methods to help prevent a faint:

The ERC guidelines additionally recommend the use of simple physical “counter-pressure” manoeuvres that may help prevent an impending faint. Consider explaining one of the following techniques to someone feeling unwell with symptoms and a prior history of faints.

- Leg pumping/tensing e.g. standing with crossed legs (most effective)
- Squatting down, especially with abdominal muscle tensing
- Arm muscle tensing e.g. by pulling gripped hands apart (less effective)

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 properly. Casualties with asthma may suffer worsening of their breathing called an "asthma attack". Asthma attacks cause several deaths every day although many of these deaths could be avoided.

A person suffering from an asthma attack will be:

- short of breath
- wheezing or coughing
- they may tell you that their usual medications are not helping

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

- too breathless to speak
- anxious or panicky
- unable to take an effective breath
- less responsive

What you can do:

- always follow **DR-CABC**
- help the casualty sit upright in a comfortable position and provide reassurance
- advise the casualty to self-administer inhaler medication (most will have a BLUE cap)
- encourage repeated doses of the reliever inhaler until they improve or help arrives
- assist in administration of their medication if necessary, including encouraging the use of a "spacer" if the casualty has one (see figure 38)
- make sure help is on its way, continue to monitor and reassure the casualty

38. Using an inhaler with a spacer device attached

Chronic Obstructive Pulmonary Disease ("COPD")

Chronic obstructive pulmonary disease (COPD) is the name for a group of lung conditions that cause difficulty in breathing and include emphysema and chronic bronchitis. It is a common condition that mainly affects middle-aged or older adults especially those who have smoked.

People with COPD suffer from long-term shortness of breath and episodes of severe shortness of breath which are more common in cold weather and often caused by a chest infection. Some may be on oxygen at home. These people may also have inhalers and should be assisted to take theirs if they have one. Some may also have a medication "rescue pack" which they have been given to use in emergencies and they should be encouraged to use this. Casualties with worsening shortness of breath despite their own medication will also need further assessment.

Chest infection

Signs and symptoms and of a possible chest infection include:

- a cough
- green or brown sputum sometimes mixed with red blood specks
- rapid, or difficulty in, breathing
- chest pain, especially sharp pain which is worse with breathing

In children, the chest may appear to "suck in" between or below their ribs, or they may use their accessory (neck) muscles when working harder to breathe.

What you can do:

- Always follow **DR-CABC**
- Help the casualty sit upright in a comfortable position and provide reassurance
- Advise the casualty to self-administer their reliever inhaler medication if they have one
- Make sure help is on its way

Fires and inhalation injury

Fire poses a threat to humans from both its direct and indirect effects. Direct contact can cause burns directly or set fire to clothing. Smoke from the fire can cause injury through inhalation. Toxic fumes can be created by fire and can also cause poisoning. Fire also damages the environment around it. Such damage, for example to a roof of a house, can cause injury due to collapse and objects falling on to a person.

If you are unable to safely access or move the casualty **AVOID** entering the environment. Wait for appropriately trained and equipped help.

If you need to escape from a burning building, leave your personal belongings and take the most direct route following the emergency exit signs.

What you should do:

- always follow **DR-CABC**
- if the fire is out, ventilate the area by opening all doors and windows
- if still burning, exit the area or room and ensure fire doors are closed behind you, as they are designed to slow the spread of the fire
- if you are able to safely access the casualty, continue to provide First Aid
- if you are able to, move the casualty to a place of safety and continue to provide First Aid

Follow the guidance shown **on pages 9 -10.**

Drowning

Water can pose a serious threat to life, even for the most confident of swimmers. Water-based activities such as swimming, canoeing and sailing are fun and exciting hobbies. However, the environment in which they take place is potentially dangerous.

The most important risk is drowning which occurs due to being submerged. This may go unnoticed, even with people nearby. Young children are particularly at risk, and most incidents occur in natural water bodies such as ponds, rivers, lakes or the sea.

Drowning is also one of the most common causes of accidental death in young people, and is often associated with alcohol consumption. Hypothermia is also associated with drowning.

DO NOT attempt to enter the water to try to rescue the casualty

Remain alert near water. However, special training, skills and equipment are required to recover a drowning casualty. Do not overestimate your ability and become a second casualty.

If you see someone apparently struggling in the water:

- call for help straight away – ring **112 / 999**
- if they are responsive and it is safe to rescue them, encourage the casualty to a safe place at the edge of the water and assist their recovery from it – get down on one knee, or lie down, so that you don't fall in
- if there is a life-ring, or other public rescue aid equipment nearby, read any instructions and throw it to the casualty (if not, throw anything that will float)
- if they become exhausted, advise the casualty to try and lay backwards to float and preserve their energy – "**Float to Live**"
- if they are unresponsive you may not be able to help until trained assistance arrives

39. The drowning chain of survival

Once the casualty has been removed from the water:

- if the casualty is **responsive**:
  - remove their wet clothes, get them dry and keep them warm
  - remember that the casualty may have suffered a neck injury if there is a history of diving into shallow water
  - follow **DR-CABC** and complete the "head-to-toe" assessment **(see page 32)**

- if the casualty is **unresponsive**:
  - check and open the airway and give **five initial rescue breaths**
  - start chest compressions and continue CPR (**see page 21**)
  - casualties may have swallowed large amounts of water – be prepared to turn them onto their side to keep their airway clear
  - remember to ask a second responder to try and obtain an **AED**

Chest pain

There are many reasons why someone may have pain in their chest. Although pain caused by a heart problem is one of the most common serious causes of chest pain, there are many other important and potentially serious causes.

Some casualties may suffer from regular episodes of chest pain, for example a condition called "angina". If that is the case, they may need assistance to take their own medication.

As a general rule, any casualty who suffers chest pain should be advised to seek further medical assessment. In some cases, you may need to request an ambulance urgently.

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 tightness "like a band" around the chest
- pain that spreads to the neck, jaw, shoulder or arm
- pain with sickness and/or vomiting
- difficulty in breathing or shortness of breath
- feeling faint
- pale, clammy or sweaty skin

Angina is chest pain which is caused by not enough blood being supplied to the muscles of the heart. It is usually brought on by exertion and settles with rest. The pain may spread to the neck or arm and is often described as feeling of heaviness in the middle of the chest. Casualties with angina often have a spray or tablets ("**GTN**") which they can use to ease the pain. If the pain does not settle with rest and medication, or comes on without exertion, this might be the sign of a more serious condition and urgent medical assessment will be necessary: call for an ambulance.

If the pain persists, and especially if it is associated with the other symptoms listed above, then this may be suggestive of a heart attack ("**myocardial infarction**") which is when the blood flow to the heart is blocked, causing severe pain and may stop the heart from beating properly. This is a medical emergency which may progress to a cardiac arrest and require CPR and defibrillation. Ideally try to obtain an AED if you are trying to help someone in this condition – it may be life-saving.

If someone is complaining of chest pain you should:

- always follow **DR-CABC**
- sit them still and keep them as comfortable as possible
- ensure that help is on its way, and reassure them
- help them take any medication they normal use for their heart condition (e.g. GTN)
- encourage them to chew 150 to 300mg aspirin if available
- be prepared to start CPR and apply an **AED** if the casualty collapses and becomes unresponsive

Infections

Infection can occur when a bacteria or virus enters the body. Most infections will cause minor illness which often recovers by itself. However, severe infections can be life-threatening.

Symptoms depend on the site of infection and severity of reaction by the casualty's immune system. Some people struggle to fight infection because their immune system does not work properly, for example due to recent cancer treatment. These casualties must be seen urgently by a healthcare professional.

There are some general symptoms which can occur from any infection:

- fever (raised temperature)
- "chills" and shivering
- muscle or joint aches

Features which may suggest more serious infection may include:

- rapid breathing rate
- rapid heart rate
- confusion or agitation
- reduced level of responsiveness

Sepsis is a life-threatening reaction to an infection and can happen when your immune system overreacts and starts to damage your body's own tissues and organs.

Casualties with sepsis may develop pale or blotchy skin, or a rash which does not fade to touch or with rolling a glass over it **(see figure 40, page 52)**. They will often be confused or may become unresponsive.

Sepsis may be harder to recognise in babies and young children, people with dementia or those who have difficulty in communicating or accessing healthcare.

In the rest of this section, we will describe the treatment of specific infections, but there are some general treatment principles for all casualties with infections.

What you can do:

- take the casualty's temperature using a thermometer to identify if they have a fever if available. A temperature above 37.7°C (99.8°F) is considered a fever
- if you are concerned the casualty may have a more severe infection then encourage the casualty to seek urgent medical attention or call for an ambulance yourself
- if the casualty has a fever, encourage them to take their own paracetamol or ibuprofen
- encourage plenty of fluids to stay well-hydrated (aiming to pass clear urine)
- in young children and babies with a fever ensure the parents are aware and seek medical attention

Meningitis

Meningitis is an infection of the protective membranes that surround the brain and spinal cord. It can affect anyone, but is most common in babies, young children, teenagers and young adults especially those living or working closely together. The initial symptoms are often very similar to a simple cold.

The presence of a high temperature (fever) associated with any of the following symptoms should suggest the possibility of meningitis, and urgent medical assistance is vital:

- severe headache
- persistent vomiting
- a "non-blanching" rash – one that does not fade on pressing, or rolling a glass over the skin (**see figure 40**)
- neck pain/stiffness
- sensitivity to bright light
- increasing confusion, agitation or drowsiness
- seizures

40. A non-blanching rash

What you can do:

- always follow **DR-CABC**
- call for medical help as early as possible - this is key to ensuring the best chance of recovery

Gastro-intestinal infection

Anyone who has been a close contact of a case of meningitis should seek medical advice and may require antibiotics to prevent them developing similar infection.

Gastroenteritis is the medical name for an infection of the stomach and bowels and is often due to an infection.

Typical symptoms include:

- vomiting
- diarrhoea (3 or more loose or watery bowel motions in 24 hours)
- abdominal pain or cramps
- high temperature (fever)
- feeling generally unwell

The diagnosis is more likely if other people known to the casualty have also got the same symptoms or there is a history of eating something unusual. If this is not the case, review by a healthcare professional and further tests may be necessary, especially if the symptoms are not settling after a week. "Travellers' diarrhoea" is a common complaint when going away on holiday and usually settles by itself within 3 – 5 days.

What you can do:

- encourage oral fluids if the casualty is vomiting and/or has diarrhoea in order to achieve rehydration - consider using bought or improvised oral rehydration fluids (**see page 54**)
- encourage good hygiene with regular hand-washing
- remind the casualty not to share cutlery/toilets/towels to avoid spreading the infection
- children who are unable to keep fluids down or have reduced production of urine will need review by a health care professional
- If there is blood in the vomit or diarrhoea, advise the casualty to seek urgent assessment by a healthcare professional

Urinary tract infection ("UTI")

Symptoms of a simple urinary tract ("water") infection can include:

- a high temperature (fever)
- lower abdominal pain
- more frequent urination
- painful/ burning/stinging feeling on passing urine
- bloody or discoloured urine
- new confusion, especially in the elderly

Pain in the flank (the sides of the back) together with fever and shivering suggest the possibility of a more complex urinary tract infection, possibly involving the kidney. Casualties with these symptoms should be advised to see a healthcare professional.

Skin infection

The superficial layer of the skin can often appear red or inflamed due to rubbing or irritation. Infection of the deeper layers of the skin is called "**cellulitis**".

Examples of this appearance are shown below **(see page 86)**.

Symptoms of a skin infection can include:

- hot, red, painful or swollen areas of skin
- complaining of pain or swelling in the groin or armpit of the affected limb
- in cases of more serious infections there may be blistering on the surface of the skin

Treating minor infections – general principles

What you can do:

- always follow **DR-CABC**
- follow the treatment advice for the specific situation outlined above
- encourage the casualty drink plenty to stay well-hydrated
- encourage the casualty to take medication to help relieve the fever e.g. paracetamol
- if the casualty is not improving or becoming more unwell, advise urgent assessment by a healthcare professional

Other conditions

Dehydration

The casualty may have a dry mouth and increased thirst or feel dizzy or light-headed in situations such as gastrointestinal infections or following excessive sweating in hot climates and/or with increased exertion.

What you can do:

- always follow **DR-CABC**
- offer carbohydrate-electrolyte drinks, or skimmed milk as an alternative
- clean drinking water is also suitable

The World Health Organisation (WHO) suggests a simple oral rehydration solution (ORS) made up with 6 teaspoons of sugar and ½ teaspoon salt per litre of water. Pre-prepared solutions (such as Dioralyte®, UK) are also available.

Testicular pain

Males with severe pain in the groin and specifically the scrotal/ testicle region, whether following an injury or not, may have a condition called "**testicular torsion**" which is where the testicle becomes twisted and therefore starved of its blood supply. This is a medical emergency.

If the condition is not operated upon quickly, within around 6 hours, the testicle may become irreversibly damaged. Although the casualty suffering from this may be too embarrassed to mention it, they should be encouraged to tell a responsible adult or someone else they trust and seek further professional medical help from an appropriate emergency care service, such as a hospital emergency department.

Childbirth

Childbirth is a natural process and the vast majority of cases will proceed normally without intervention. Therefore, if you encounter a woman who is in labour you should assist her to reach her planned birth unit. If the birth is imminent you should call **112** / **999**.

In all circumstances, if the casualty becomes unwell, collapses or becomes unresponsive follow the **DR-CABC** approach. Remember to position a responsive and obviously pregnant female tilted onto her LEFT side, facilitated by something acting as a wedge to support this position – which can be your own kneeling legs if necessary in an emergency while you are providing First Aid.

Following birth, if the woman is suffering from severe bleeding, latest recommendations are to carry out external uterine massage, including self massage.

41. External Uterine Massage

Mental health issues

Some casualties will not have a physical illness, but will be suffering from a mental health problem. Like physical health problems, there are a variety of mental health issues that have a wide range of symptoms and signs.

An approach to helping someone appearing to suffer with a mental health problem

A First Aider can offer support and advice by directing the casualty to appropriate sources of help. The majority of people with mental health issues will not pose a risk to the First Aider. However, if they are displaying aggressive behaviour, the First Aider must first ensure their own safety before offering help.

The features of a person with a mental health problem that may require more urgent care includes:

- very low mood/ depression
- anxiety or panic
- confusion or agitation
- strange behaviour, especially that which is out of character
- suicidal thoughts, or actions

Panic Attacks

Anxiety is a common problem and can lead to a panic attack. Casualties who are having a panic attack may hyperventilate (fast, shallow breathing). Because shortness of breath can also be a sign of serious illness, be careful not to assume that the casualty is having a panic attack. However, they or a relative may confirm that they have had a panic attack before.

If a casualty is hyperventilating they may experience some unpleasant symptoms, such as:

- chest tightness
- very rapid heartbeat
- tingling or pins and needles especially in the lips and hands
- feeling faint
- visual disturbances
- sudden emotional outbursts

As these symptoms can be very frightening in themselves, they often lead to further over-breathing – the vicious cycle of hyperventilation. The aim is therefore to try and restore normal breathing.

What you can do:

- speak calmly to the casualty, reassure them the symptoms are normal reactions
- find a quiet place and encourage them to sit down, release the tension in their shoulders
- ask them to think about the word "**calm**"

Breathing exercises

Coach the casualty to take long slow breaths:

" breathe out...

breathe in SLOWLY to the count of one elephant, two elephants, three elephants, four elephants...

hold your breath for the same count of four again...

breathe out slowly again to the same count " ... **and repeat**

There are many Apps, helplines, advice websites and other self-help resources available that offer advice and self-help for stress, anxiety, panic attacks and other mental health issues. It may be useful to signpost these to casualties.

Bleeding

Bleeding can range in severity from minor cuts, scratches and grazes to severe bleeding which can be life-threatening. Where possible, put on disposable gloves to protect yourself from infection or use improvised coverings to prevent contact with blood. When bleeding is severe, it can look dramatic and cause distress. If the bleeding isn't controlled, casualties may lose a lot of blood, develop failure of circulation (**see page 57**) and become unresponsive. Ultimately, severe bleeding can be life-threatening.

In all cases follow **DR-CABC**.

Minor bleeding

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

- If the cut is dirty, rinse it carefully under clean running water if possible then pat it dry with a sterile dressing or clean material; do not use river/stream/lake water
- Clean and dry the surrounding skin whilst protecting the wound
- Cover the wound completely with a sterile dressing or plaster

For more information on caring for minor wounds **see pages 88.**

Severe bleeding

If a casualty is bleeding heavily from a wound (for example a stab wound), the following steps must be taken as some simple interventions may help improve the casualty's condition and make them more comfortable while waiting for further medical assistance.

42. The "W" position

What you can do:

- always follow the **DR-CABC** approach
- identify and expose the wound
- stop the bleeding through direct pressure to the wound
- if the casualty has been stabbed in the stomach or chest, place them in the "W" position (see figure 42)

Failure of circulation (Shock)

Severe bleeding can lead to failure of the circulation where not enough blood is present to flow around, or the pumping of the heart is not working properly. In either case the casualty may have the following signs or symptoms:

- pale skin, which may be cold and clammy
- a fast and/or weak pulse
- fast, shallow or panting breathing
- nausea and possible vomiting
- restlessness or aggressive behaviour
- the casualty may become unresponsive

Shock

Shock is a general term, referring to a potentially life-threatening condition in which the body cannot supply enough blood to transport oxygen to vital organs such as the brain or heart.

Common causes of shock include:

- Severe bleeding (usually due to an injury)
- Severe infection – which is termed “sepsis” (**see page 51**)
- Severe allergic reactions
- Heart failure for example due to a heart attack
- Severe injury to the spine

Checking for a pulse can be unreliable in a severely injured or unwell casualty and is not recommended as a routine part of First Aid. A normally responsive, talking casualty suggests that an adequate circulation is present.

We concentrate on the care of a casualty with severe external bleeding because this is the casualty for whom you can do the most with simple First Aid measures. The casualty suffering circulation problems from other causes should be kept in a comfortable position, given appropriate reassurance and observed until the arrival of expert medical help.

Sometimes, for example following severe trauma, a casualty may be suffering from internal bleeding. This is unlikely to be visible from the outside but be visible with features such as:

- signs of bruising or swelling over the chest, pain with breathing
- signs of bruising or swelling, or increasing distension of the abdomen
- a painful or an obviously misshapen pelvis
- pain, deformity or severe swelling to the thighs

First Aid measures will not be able to provide much to assist a casualty with internal bleeding, other than offering comfortable positioning, support and reassurance, and ensuring swift medical attention.

Controlling bleeding

The first step for managing any significant wound that is bleeding will be to apply direct pressure and dress the wound. A smaller, lighter person may need to apply their full body weight in order to control very severe bleeding. Lie the casualty down, elevating the affected body part if possible. If bleeding is still not controlled, leave the initial cover/dressing in place and apply another dressing over it and reapply direct pressure.

43. Placing a bandage over a wound dressing

Further measures include:

- if the bleeding is still not controlled apply a haemostatic dressing (if one is available) if one is available whilst maintaining direct pressure.
- if bleeding from a limb is still not controlled apply a tourniquet around the limb at a position above (nearer to the torso) and as close to the wound as possible
- a second tourniquet may be applied above the first if it has not controlled the bleeding
- advise not to eat any food, but can have small sips of water if thirsty
- always offer reassurance and support
- continue to check the casualty's condition, following **DR-CABC**
- make a note of the time the tourniquet was applied

44. Examples of manufactured tourniquets

Applying an improvised tourniquet

Making and applying an improvised tourniquet is not difficult. All you need are a longish piece of wood or metal (a large spoon or a ruler) and a length of fabric (for example a scarf or tie) which must not be too stretchy. The material also needs to be strong enough that it doesn't snap when tightened.

45. Application of an improvised tourniquet

Applying a manufactured tourniquet

46. Applying a manufactured tourniquet

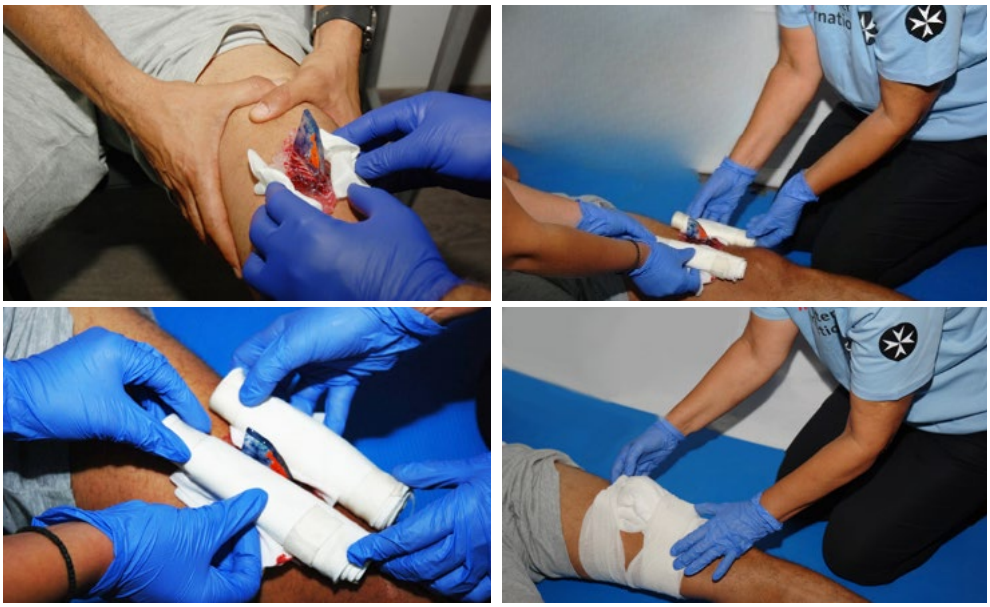
Haemostatic dressings

A haemostatic dressing is one which contains additional constituents that actively promote clotting within the wound itself. A range of haemostatic dressings are commercially available and usually carried by paramedics and other pre-hospital care personnel. These should ideally only be used by a person trained in their specific use.

47. Examples of haemostatic dressings (© CELOX, © SAM, © AxioBio)

Embedded objects

- if an object is embedded in, or protruding from a wound, place padding around it before applying pressure on either side of the object
- **do not** attempt to remove any embedded object
- if no embedded/exposed object, apply continuous direct pressure over the wound through a specific sterile dressing, or improvised dressing, as close to the bleeding point as possible (**see figure 48**)



48. Applying direct pressure to a wound with embedded/exposed object

Penetrating injury

You may 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 involving a gun or knife attacker or from a suspect explosive device/ exploded bomb, follow the **RUN – HIDE – TELL** guidance.

RUN: to a place of safety. If there is nowhere to go then…

HIDE: rather than confront. Turn your phone to silent and barricade yourself in if you can…

TELL: when it is safe to do so, inform the police and emergency services by calling **112** / **999**

49. - Run Hide Tell

If you believe you are in a situation in which you can safely provide assistance to the casualty, follow **DR-CABC**. In case of external bleeding follow the advice on **page 56**.

- any object sticking out of a wound should be left in place, or supported to stop it moving
- abdominal wounds may result in protrusion of bowel. In this case **do not** apply direct pressure or attempt to push anything back into the wound. Cover such injuries with a damp clean cloth or dressing, or with cling film – the aim is stop exposed tissue drying
- stab and shooting wounds to the chest may be left uncovered if they are not bleeding. If they are bleeding, apply a sterile dressing
- responsive casualties with penetrating abdominal wounds may be more comfortably placed in the "W" position (**see figure 41**) until the arrival of an ambulance.

Stabbing wounds

Knife crime is a serious issue, and one that is has increased in some places. Wounds occurring as a result of a stabbing attack will be a combination of incision and puncture wounds, be of varying depth and often in multiple locations. Although upsetting and dramatic-looking the important factor is staying calm, keep yourself safe (from any possible attacker). Control bleeding by putting direct pressure on the wound(s) until further medical help arrives. For further information on stopping bleeding and on the "W" position **see page 56**.

Gunshot wounds

A gunshot wound is caused when a bullet or other projectile goes into or through the body. Even though they may look small, projectiles travel at high speed therefore carry a lot of energy and can cause serious internal damage. They may pass straight through the body or could be deflected by bone making it hard to predict their path. In some cases there are two wounds; an entry and an exit wound. The exit wound is usually larger and more ragged.

Limb amputation

Fortunately, most accidental amputations are of fingers or toes, or parts of, and will not be associated with life-threatening bleeding. If the amputated part can be safely retrieved, it should always be sent to hospital with the casualty. Protect the amputated part by wrapping it and then placing it in a plastic bag, which is then immersed in cold water if available. Under no circumstances should the amputated part be placed directly in the water, come into direct contact with ice or be frozen.

Very occasionally severe bleeding is the result of an amputation of part of an arm or leg. In these cases, bleeding should still be controlled using the step-wise approach as described above.

General principles

The important thing to remember is that simple methods can be lifesaving – the priority in all cases is stopping severe bleeding, even before moving on to assess the airway as part of **DR-CABC**. If this is all you can achieve then you have still contributed a great deal to potentially life-saving care and a full recovery later.

Other mechanisms

Crush Injury

Crush injuries occur when a heavy weight such as building structure falls onto someone and cannot be removed quickly. It is a potential problem in any trauma casualty but can affect as many as 30% of earthquake victims.

Casualties who have been trapped for less than 15 minutes can released immediately if it is possible to do so safely. Any bleeding should be controlled and the casualty evacuated to hospital as an emergency. In the meantime, follow **DR-CABC**.

When a casualty has been trapped for longer, you should call for urgent assistance and the casualty should only be removed under close medical supervision. You should provide reassurance and support until help arrives.

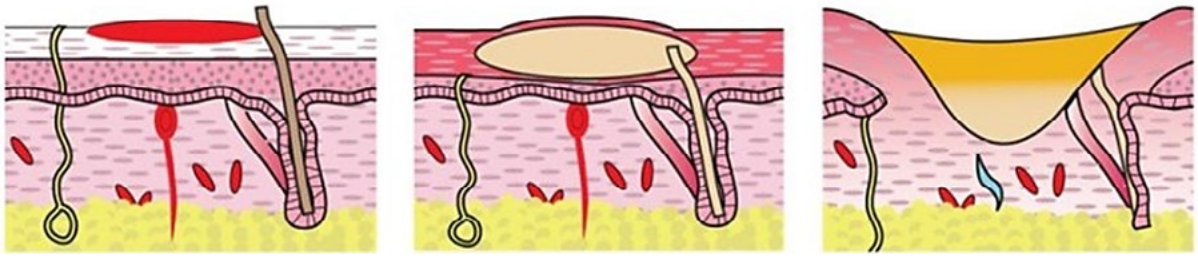
BURNS AND SCALDS

The three things which are important in deciding about the severity of a burn are the depth, size and location.

Depth

- **superficial burns** – involve only the very outer layer of the epidermis and will appear red and swollen. They are usually very painful. Sun burn is an example of a superficial burn.
- **partial thickness burns** – theses involve the full epidermis and part of the dermis layer and often form fluid-filled blisters.
- **full thickness burns** – involve the whole dermis and epidermis and may appear pale or even blackened (from charring, called an "**eschar**").

In adults, the redness of superficial burns, although painful, does not require medical assessment. Superficial burns will gradually heal and usually without any scarring although will still benefit from cooling measures, pain relief and re-hydration.



Superficial burns **Partial thickness burns** **Full thickness burns**

50. Illustrations representing burn depth

Size

It is useful to estimate the total area of the body that is burnt as the treatment required will depend on this, and the information can be shared with emergency services.

51. Palmar Area to estimate 1% body surface area

A rough guide to the area of skin that is involved in a burn can be made by remembering that the adult casualty's hand with their fingers together is approximately equal to 1% of their body surface area. There are a number of different methods for estimating the size of a burn which are available, but these require specific training to use accurately.

Location

There are several locations where burns may lead to more serious complications. These include airway, face, head and neck, hands, genitals or over joints. Burns in these areas may have more significant cosmetic or life/ function-changing effects.

Casualties with burns to the face may rapidly develop increasing breathing difficulty, particularly when the exposure occurred in an enclosed space or flash burns resulting in inhalation of hot gases or smoke.

Together with location it is also important to assess the extent of the burn – for example if the burn is to an extremity, e.g. limb or digit, is it on one surface only, or goes all the way around ("**circumferential**")? Circumferential burns can cause serious complications due to swelling cutting off circulation to the part beyond the burn. Circumferential, or large area, full thickness burns can also restrict movement of vital areas such as the chest wall, preventing effective breathing.

Treatment of burns or scalds

Airway burns

Casualties with airway burns may already be experiencing breathing difficulty, have signs of swelling in or around the mouth, or may be coughing up sooty sputum. Urgent medical care is required. The casualty may be best positioned sitting up rather than lying down to help reduce swelling.

Key principles of burn management:

- always follow **DR-CABC**
- if safe to do so, immediately move the person away from the heat source
- cool the burn ideally with cool (not iced) running water for **at least 20 minutes**
- you can remove clothing or jewellery that is near the burnt area but **do not** try to remove anything that is stuck to the skin
- Aim to keep the casualty warm while cooling the burns in order to avoid hypothermia. Cooling etc. - cooling large burns in children may risk causing hypothermia

Cool the burn not the whole casualty!

- do not use any lotions, ointment or creams on the burnt area
- after cooling, ideally cover the burn area using strips of cling film laid along the limb (**do not** wrap anything around a limb)
- if cling film is not available, cover with a damp dressing or other suitable material
- if possible raise the affected limb, such as for burn to a hand, to reduce swelling
- you can advise the casualty to take painkillers such as paracetamol and/or ibuprofen
- the casualty may take small sips of water if they are thirsty

For large or more serious burns ensure that medical assistance is sought. If you are unsure, it is always safer to make sure the casualty is seen by a health care professional. Features which may suggest a more serious burn are shown in the box below.

If there are signs of breathing difficulty – follow the advice shown on **page 20.**

For chemical burns, particularly accidental exposure to corrosive substances or a deliberate attack with a chemical (such as acid) follow the advice shown on **page 66**.

For minor burns it may be possible to treat "at home" and not require further professional medical attention. After appropriate First Aid, ask the casualty to continue to keep the burn clean and take pain killers such as paracetamol and/or ibuprofen.

Advise to seek urgent medical advice if:

- the wound becomes more painful or smelly
- they develop a fever
- any dressings become soaked with fluid leaking from the wound
- the wound hasn't started to heal within one week

Burns which are likely to require urgent medical assessment:

- all chemical and electrical burns
- large or deep burns – any burn bigger than the area of the injured person"s hand
- burns that cause white or charred skin of any size
- burns on the face, neck, hands, feet, over joints or genitals
- contaminated burns that may require further treatment
- burns that go around an arm, leg or body (circumferential)
- suspicion or symptoms of airway burns, or has breathed in smoke or fumes
- burns to children under 10 years old

If the casualty's clothes are on fire attempt to extinguish it by instructing the casualty to use the "**STOP - DROP - ROLL**" technique (**see figure 51**):

52. The "STOP - DROP - ROLL" actions

Sunburn

Prolonged exposure to sunlight without adequate protection from clothing or sun cream can lead to sunburn. The affected skin will appear red and may even be blistered. It is typically very painful and sensitive to touch. In this case the aim of treatment will be to cool the burn area and help relieve pain. Mild sunburn may benefit from application of moisturising "after-sun" lotions.

The majority of cases do not require medical attention. Casualties with more severe sunburn, especially involving blistering, should be advised to seek further advice and babies with sunburn will always require medical assessment. The best approach to sunburn is prevention!

Chemical Burns

Chemical burns are rare, but serious. Sometimes chemical burns can result from a deliberate attack.

As a First Aider it is vital that you do not become exposed to the chemical and suffer injuries yourself. It is advisable to wear protective gloves when dealing with any unknown substance.

What you can do:

- the first priority is to thoroughly rinse the affected area for **at least 20 minutes**
- if water is not available, any soft drink or other neutral fluid may be used
- take care that the run-off of rinsing liquid does not contaminate more skin
- if you need to remove clothing, ideally shirts or tops should be cut off rather than pulled over the head
- do not try to remove any clothing that is stuck onto the skin

ALL chemical burns will require further medical assessment.

Follow the "**COOL - CALL - COVER**" approach (**see figure 52**).

53. Cool - Call - Cover

Electrical incidents

Most electrical incidents are not life-threatening.

When a serious incident does occur, the electric current can lead to the casualty stopping breathing and their heart to stop pumping properly. The electric current can also cause burns where it enters and where it leaves the body.

Non-domestic electricity

Contact with high voltage current such as from pylon cables, generating or step-up/down stations or railway supply lines is usually fatal. Survivors will have severe burns.

What you need to do:

- always follow **DR-CABC**
- your own safety is paramount
- remain at least 20 metres from the source because electricity can arc (pass through the air) up to this distance
- arrange for the power source to be switched off if possible
- only approach the casualty when it has been confirmed it is safe to do so
- continue to follow **DR-CABC**

Domestic electricity

The electricity supply at home or school can still 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 of injury from electrocution.

What you need to do:

- always follow **DR-CABC**
- always assess the situation for further danger to yourself or others
- if the casualty is still in contact with the electrical source do not touch them. If you are able to do so, turn off the source of electricity – either at the socket or main fuse box
- if you are unable to switch off the electrical supply quickly, attempt to remove the casualty from the electrical source. To do so, you may need to stand on a suitable insulating material and use a wooden pole or broom to try and hook them away
- once you are sure that the danger has been removed continue to assess the casualty following **DR-CABC**

54. Removing the casualty from the electrical source

Lightning strike

If the victim has been struck by lightning, follow **DR-CABC**.

Follow these four simple steps:

1. Call for help, giving your location – it is safe to use a mobile phone during a storm.

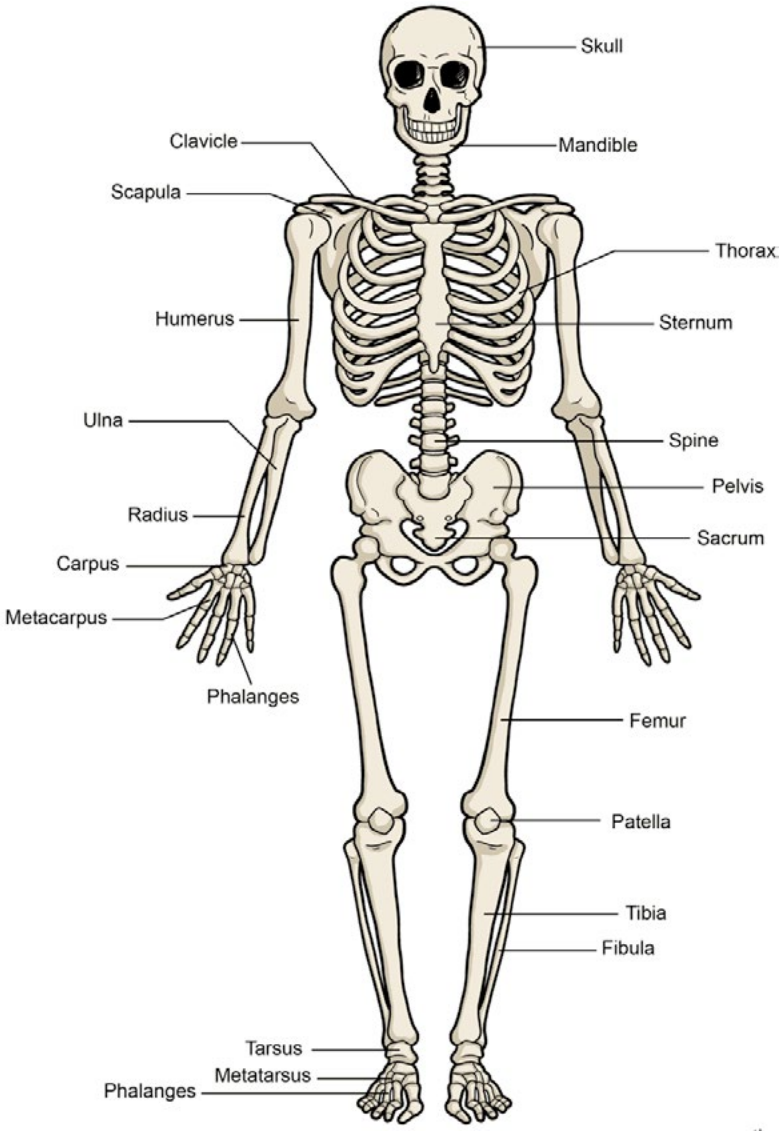
2. Assess the situation: safety is your priority. There will be an ongoing risk of lightning strike to victim and rescuer. If necessary, move to a safer location – **do not** attempt to shelter under an isolated tree or remain in an open field. Injuries such as broken bones or serious bleeding wounds are unlikely, unless the person fell from height as a result of the lightning exposure.

3. Respond: lightning will often cause cardiac arrest. Check for breathing or signs of life. If the casualty is responding then treat other injuries that are common, such as burns. Protect the casualty from hypothermia as they will often be in an exposed, outdoor location in the circumstances.

4. Resuscitate: if the person is not breathing immediately begin CPR with initial rescue breaths and chest compressions. Try to obtain an **AED**. Continue until help arrives, or the casualty starts to show any signs of life.

Bones, Joints and Muscles

The skeleton supports the weight of our body and holds our shape as well as providing the framework that our muscles are attached to, allowing us to move. It also protects vital organs, for example the rib cage around the heart and lungs or skull surrounding the brain. It is made up of over 200 separate bones and makes up around 14% of the total body weight of an adult.



55. The human skeleton showing the major bones

Where bones meet, they will form a joint, some of which allow movement such as bending or twisting. Muscles are attached to the bones of the skeleton by tendons. They move body parts through contracting or relaxing. Muscles often work together to act at joints to coordinate movement.

Nerves carry messages between the brain and the body. If a nerve is damaged (from an injury) then the messages that are normally transmitted by that nerve may be interrupted. Effects of a nerve injury might include weakness of a muscle, loss of pain sensation or tingling feeling to an area of the body.

Fractures

A fracture is the medical term given to a break or crack in the bone. A fracture is described as "**open**" when it is associated with a wound connecting to the outside through the skin. Open fractures may cause serious damage to other ("soft") tissues and blood vessels. Where there is no wound it is called a "**closed**" fracture.

In the elderly or frail, bones are weaker and may break more easily. As a result, fractures may occur with less force than would be needed in younger people. Even falling from standing may be enough to cause serious injury. This issue has been termed "**Silver Trauma**".

Pain is the most frequent symptom following an injury. Sometimes there is an obvious bend or other deformity, or there may be bruising, swelling and tenderness. The casualty will usually be reluctant to allow the limb to be moved.

What you can do:

The role of the First Aider is to provide simple treatment and reassurance. In general, this will involve supporting/ immobilising the affected limb in the position the casualty finds is the most comfortable.

Soft tissue injuries

Soft tissue injuries (sprains or strains) can be just as painful as fractures. A strain usually describes an injury to muscles and tendons. A sprain usually involves the ligaments between bones and around a joint. They are most commonly seen at the ankle and knee joints. A more extreme form could involve a tear or "rupture" of a ligament or tendon, usually resulting in loss of movement function and severe pain and swelling.

What you can do:

The general principles for initial treatment will be to elevate, rest and ice the affected joint. Encourage the casualty to take appropriate pain relief.

Dislocation

Dislocation occurs when one of the bones moves out of its normal position in a joint resulting in deformity, pain and an inability to move that joint normally. No attempt should be made by the First Aider to return the joint to its normal position.

What you can do:

Support the limb in the most comfortable position possible for the casualty, and which minimises movement of the affected joint. Professional healthcare assessment and treatment will usually be required, so ensure the casualty has access to further medical care.

The general aims of treatment for a fracture, sprain or joint injury are to:

- support and protect the injured body part e.g. apply a splint
- **DO NOT** attempt to straighten a suspected fractured bone
- cover the wound if there is one
- reduce swelling and pain by applying something cool such as frozen peas wrapped in a towel or a cold pack

The generic First Aid treatment for soft tissue or joint injuries can be summarised as **PRICE**:

P ain relief – encourage the casualty to take a simple painkiller

R est the injured part

I ce or a cooling pack to the injured part

C omfortable support

E levate the injured part

53. The PRICE approach

Ice should not be applied directly to the skin to avoid cold injury. Place crushed ice in a plastic bag, or use an ice pack, and wrap this in a thin towel before applying to the injured area.

Wounds should be treated as described **on pages 86**.

If the casualty becomes unresponsive, follow **DR-CABC**.

Shoulder and arm injuries

The casualty 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 also be improvised.

Hand and Finger injuries

A check should be made for deformity by comparison with the other hand. Bracelets and rings should be removed before more swelling occurs where this can be achieved without undue distress and apply an arm sling (**see figure 57, page 72)** applied for comfort. Wounds should be cleaned, covered with an improvised dressing and if necessary pressure applied or the limb elevated to control bleeding.

Placement of Slings

The casualty should hold their injured arm across their chest, supported by the other arm. The base of the triangular bandage should be placed parallel with the uninjured side of the casualty.

56. Stages of application of a simple triangular bandage arm sling

Next, the upper “end” of the sling is pulled behind and around the casualty’s neck towards the other side and tied at one side (not at the back) of the casualty’s neck to the other “end” which has been lifted upwards. Finally, twist and tuck the point of the bandage to hold it in place.

57. Tying the sling in place

Slings can also be improvised with any other fabric as a loop around the neck/shoulder.

58. A completed arm sling

59. Improvised sling using a belt

60. Corner of shirt pinned to collar

61. Hand tucked into shirt between buttons

62. Sleeve button attached front button hole

Leg injuries

The most common leg injuries are of the ankle and knee and often result from sport. These are usually sprains or strains but fractures do occur. Keep the leg in a comfortable position. This can be done by resting it on cushions or some other form of soft comfortable support.

Hip fractures are the most common leg fractures in the elderly, sometimes as a result of a fall. The injured leg may appear shorter and the foot turned out. The injured leg should be supported in a comfortable position.

The casualty may be unable to walk due to discomfort and swelling – assistance such as crutches may help but need to be measured and applied by an experienced practitioner. Casualties unable to walk or bear weight on the affected limb will require further medical assessment.

Fractured pelvis

Casualties complaining of pain or tenderness in the area of the pelvis or hips following a significant trauma mechanism may have suffered a pelvic fracture. There may also be bleeding from damage to organs within the pelvis as a result of the fracture. Causes of pelvic injury include vehicle accidents, falls and crushing.

What you can do:

Always follow **DR-CABC**. Urgent medical assistance should be sought and the casualty kept still and comfortable. **Do not** move the casualty unless they are risk of further harm. Binding of the lower legs may help to immobilise the legs and stabilise a pelvic injury. Specifically designed **pelvic binders** should only be applied by appropriately trained personnel.

Muscle pains

Muscles aches or stiffness for a few days after significant exercise is normal. It can affect people of all fitness levels, particularly after trying a new activity or pushing themselves a bit harder than usual. The casualty may be encouraged to stretch and relax the affected muscles, and use regular pain relief medications if necessary. This pain will settle with rest and no further action is required.

Facial bone fractures

Fractures to the bones of the face occur from a direct blow. They may involve the nose, cheeks or jaw bones. The main risk is blockage of the airway from swelling, or obstruction by blood or loose teeth.

Facial injuries may be associated with head or neck injuries. In all cases follow the **DR-CABC** approach.

If a facial injury is identified during the "head-to-toe" assessment, recommend the casualty seeks further medical advice.

Spinal and neck injuries

The spinal cord is a collection of nerves which connect the brain to the limbs and torso. The greatest risk if someone has a neck or back injury is that their spinal cord will be damaged. If this happens, they may become paralysed from the point of injury downwards. The bones of the spine (the vertebrae) protect the spinal cord.

Spinal injuries are most commonly associated with high levels of force but may also occur with relatively minor trauma in the elderly, such as a simple fall from standing. You should be aware of the possibility of a spinal injury especially if someone has:

- fallen from a height (for example a ladder) e.g. more than 2 metres
- fallen in an awkward position (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 a pedestrian hit by a motor vehicle
- been involved in a high-speed motor vehicle collision, especially if not restrained
- been a cyclist or motorcyclist involved in a vehicle collision
- been hit by, or collided with a heavy object impacting on the head, neck or back
- had a significant blunt injury to the head or face
- a penetrating/ stabbing injury to the spinal area

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

What to look for:

- pain in the neck or back
- tenderness over the spine
- unusual steps or irregularity in the shape of the spine
- loss of strength and/or control of the limbs – the casualty may not be able to move their arms or legs
- loss of sensation or abnormal sensations in the limbs such as burning or tingling
- bladder or bowel problems following the injury
- breathing difficulty following the injury

What you need to do:

- Always follow **DR-CABC**

If the casualty is unresponsive because of a head injury, be aware of the risk of a potential spinal injury and protect the spine appropriately

If the casualty is responsive and NOT confused:

- reassure them
- if the casualty is able to get out of their vehicle, assist them to do so.
- Follow **DR-CABC**, call for help
- ask the casualty to keep their head as still as possible
- the application of a cervical collar by a First Aider is NOT recommended

If the casualty is unresponsive:

- Follow **DR-CABC** taking care to move the head and neck as little as possible – the technique for this is called "**log-rolling**" where the casualty is turned carefully in a coordinated manner by a group of at least four First Aid responders
- check the airway and breathing:
  - if the casualty is **breathing normally**, leave the casualty in the position in which you find them until further help arrives.
  - if the casualty remains unresponsive and is **not breathing normally**, the casualty will need to be rolled onto their back as carefully as possible to avoid causing further injury. The priority will always be keeping the airway open.
  - If the casualty remains unresponsive and is not breathing, start CPR (**see page 21**).

While waiting for help to arrive, keep checking their breathing and level of response. If the casualty is uncooperative or confused, attempts to force the casualty to keep their neck still must be avoided. Allow the casualty to find their own comfortable position and avoid restraining them. If their condition deteriorates, follow **DR-CABC**.

Abdominal injuries

Any casualty complaining of significant pain in the abdomen following trauma, especially associated with signs of a failure of circulation **(see page 57**) or vomiting, will require urgent medical assistance. For example, the specific abdominal injury from falling onto the end of the handle-bars of a bicycle is an often under-appreciated mechanism and can lead to life-threatening organ damage.

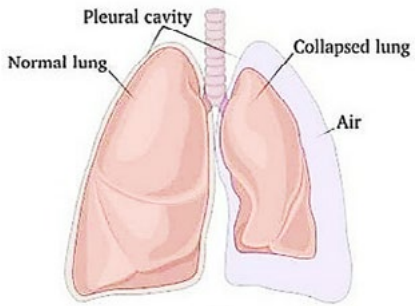
Seek urgent medical advice if you have any concerns. Always follows **DR-CABC**.

Chest and Lung injury

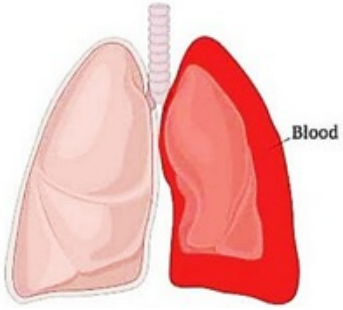
Injuries to the chest can damage the muscles and ribs. The common signs and symptoms of a chest wall injury are swelling and/or bruising, and pain - especially on movement, breathing deeply or coughing.

Although these injuries can be extremely painful, in young people they are usually not dangerous and simple pain relief is all that is required. Those with more severe injury may have difficulty breathing, feel short of or unable to get breath, or be coughing up blood.

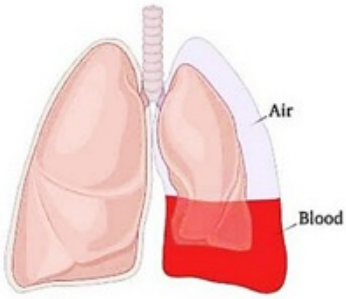
Casualties with any breathing difficulty should be directed to urgent medical assistance. Any obvious deformity (abnormal dents or asymmetrical shape) may suggest a more serious injury. More severe symptoms will be present if multiple ribs are fractured, or internal injury with bleeding (a "**haemothorax**"), collapse of the lung (a "**pneumothorax**"), or both – see below:



63. Pneumothorax (air)



64. Haemothorax (blood)



65. Haemo-pneumothorax (both)

All casualties complaining of significant chest pain after a fall should be encouraged to seek further help from a healthcare professional, especially for suitable pain relief and to help avoid secondary complications. If the casualty deteriorates or becomes unresponsive always follow **DR-CABC**.

Casualties with chest injuries should ideally be managed sitting up if comfortable to do so, as this may help their breathing. If the recovery position is necessary, they should ideally be placed with the injured side downwards.

Open chest wounds

Some injuries to the chest may result in something called an "**open**" wound. This means there is a hole from the outside into the inside of the chest. This is a potentially life-threatening injury requiring urgent professional medical assistance. Follow **DR-CABC**, calling for help early.

The ERC guidelines currently recommend NOT to put anything onto the wound that will block up the hole in the chest initially. The wound should be left exposed to drain freely. Special ("**occlusive**" or "**vented**") dressings are available that allow the wound to drain and prevent air movement back in. Apply these if you are trained and equipped to do so.

Back pain

Back pain, particularly lower back pain, is a very common problem affecting over 80% of people at some point in their life. It usually improves within a few weeks but can sometimes last longer or keep coming back. Back pain can have many causes, although often gets better on its own. A common cause of back pain is an injury like a pulled muscle. Sometimes medical conditions, such as a slipped disc, can cause back pain.

Back pain does not usually require treatment as an emergency, unless it is the immediate result of a fall from height or other serious accident.

What you should do:

- ask the casualty to be less active but try to continue with routine daily activities
- avoid strenuous activities
- advise doing some gentle stretches
- advise not to stay in bed or laid flat for long periods of time
- consider appropriate pain relief medication and local agents/creams
- try a heat pack (or hot water bottle) wrapped in a tea towel to relieve muscle spasms

"Red flag" features:

If the casualty is experiencing severe back pain with any of the following symptoms, they should be advised to seek urgent medical attention:

- a high temperature or there is a lump or swelling in the back
- pain, tingling, weakness or numbness in either or both legs
- numbness or tingling around the genitals or buttocks
- any change of bladder, bowel or sexual function
- associated with chest or abdominal pain
- it started after a significant injury or a fall from height

Heat illness

If the body gains more heat than it can lose, the body temperature will continue to rise. This can occur due to hot weather, physical activity, or a combination of both.

If the body temperature rises too far above the normal range, organs in the body stop working properly. This is called heat illness, and can range from mild to severe and life-threatening (which may be referred to as "**heat stroke**"). Early recognition and active cooling is essential.

Exertional heat illness (EHI)

The spectrum of conditions that may be termed "heat cramps" to "heat exhaustion" occur due to over-heating from physical effort. Factors such as clothing, adequate rest and hydration, build-up training (conditioning), the weather and situation (e.g. enclosed working or poor ventilation) can all contribute to the risk of EHI.

Climatic (non-exertional) heat illness

Without adequate acclimatisation (process of adjusting to a new climate), or an opportunity to cool the body, together with poor hydration, being in a hot environment can lead to developing climatic heat illness even without physical effort. Older or frail persons, or those unable to modify their environment (think of babies in cars in hot weather) are most at risk.

Simple measures may be life-saving and may prevent the casualty's condition worsening.

In the early stages of heat illness casualties will usually:

- feel hot and thirsty, tired or light-headed
- experience cramping in the limbs and abdomen
- sweat excessively, or they may get pale, clammy skin

What you should do:

- move them to a cool, shaded place
- remove unnecessary clothing
- cool their skin by water spraying, fanning or cold packs
- If they are able, encourage the casualty to drink cool water

Most casualties will improve rapidly with cooling, but if their condition progresses, the casualty may become confused, disorientated or agitated, may collapse and become unresponsive or experience seizures. If a method is available to measure core temperature, a reading above 40 °C is likely to represent severe heat illness.

If you have to help someone with severe heat illness you should:

- always follow **DR-CABC**
- move the casualty to a cool, shaded place if not already done so
- if you can, remove all clothing from the casualty down to at least underclothes
- ideally, if the casualty is responding normally and appropriate facilities are available, bathe them in cold or icy water making sure that their head is well above water

STRIP SOAK / SPRAY FAN

- alternatively – if facilities are not available to soak/ immerse - reducing their temperature as rapidly as possible by applying cool water by spray and fanning them to increase evaporation
- if available, place cool (ice) packs over their body, especially in armpits and groins
- if they are fully responsive, encourage them to drink cool fluids
- cool actively until the measured core temperature falls below 39 °C (if able to measure)

Rapid cooling is the most important treatment for heat illness

Problems associated with the Cold

Cold weather or immersion in water may make it impossible to keep the body warm enough. If the body temperature drops too low below normal range, this is called hypothermia.

Casualties can also suffer a severe localised cold injury called frostbite. It usually affects the extremities such as the toes, finger, nose or earlobes and can cause severe damage to these parts of the bodies if left untreated. A less severe cold injury is called frostnip.

Hypothermia

Hypothermia is usually mild. Severe hypothermia is rare but can be life threatening. Hypothermia is more likely when the casualty has been exposed to cold for a long period, the wind is strong ("wind-chill factor") or they are wet. People who are immobile, medically unwell or intoxicated are also at increased risk of hypothermia.

The first sign of hypothermia is usually shivering, followed by:

- confusion or disorientation
- slurring of speech
- loss of coordination

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

What you should do:

- always follow **DR-CABC**
- if possible, move the casualty to warm shelter, out of any prevailing wind
- remove their wet clothing
- cover the casualty (including the head) with warm dry clothing and blankets or place them in a sleeping bag
- if they are responsive, offer hot drinks and high energy food; **do not** give alcohol
- if you have them, put heat packs or hot water bottles on the casualty's body but not in direct contact with skin (to avoid causing burns)

DO NOT use the body of a warm person to warm up someone else with hypothermia - as all that will happen is that the warm person will end up cold as well too!

Frost nip

Frost nip is freezing of the superficial skin causing cold, numb areas. Skin may appear pale/ yellowish and feel stiff but underlying tissues remain flexible. These areas should be covered to aid local warmth. Frost nip is completely reversible and shouldn't lead to blisters or permanent damage. However, it can lead to frostbite if not cared for appropriately.

Frostbite

Frostbite is the freezing of deeper tissues. The more severe the frostbite, the deeper the tissue affected. The fingers and toes are most commonly affected.

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)

66. Frostbite

What you should do:

- move the casualty to a warm, dry place
- check for signs of hypothermia (**see page 79**)
- rewarm and cover the affected parts
- replace wet with dry clothing or warm the whole casualty – for example by removing them from the cold or wind and placing them in a sleeping bag
- **do not** vigoursly rub or massage frozen skin as this can be harmful
- **do no**t burst any skin blisters
- not allow the casualty to get cold again
- seek further help from a healthcare professional

Poisoning or Intentional Overdose

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

- always follow **DR-CABC**

What else can you do?

- ensure you protect yourself from exposure to potentially harmful substances
- if they are responsive, reassure the casualty that help is coming
- when you call for help give as much information as you can
- **do not** attempt to make the casualty vomit but support them if they do
- if safe to do so keep the substance container or packaging
- continue to observe and re-check the casualty while waiting for further medical help

Household chemicals

Most cases of ingestion of household chemical such as bleach or other cleaning products occur in young children who are not aware of the potential hazards. Occasionally they are taken as a means of self-harm, for example anti-freeze.

What you can do:

- if the casualty is drowsy, they should be placed in the recovery position and in all cases urgent medical advice should be sought.
- **do not** attempt to induce vomiting.
- empty containers in the vicinity may indicate the substance taken if the casualty does not or cannot tell you what they have taken. All the available information and the substance container, if available, should be handed on to responding health care professionals (there is no need to keep samples of vomit).

Other considerations:

Casualties who have ingested a substance with delayed action such as paracetamol may initially show no physical signs. Urgent medical attention is still vital and should be called even if the casualty says they will decline treatment.

Poisoning with plants, berries and mushrooms is uncommon, but the same approach should be taken and where possible a sample or photograph of the plant should accompany the casualty to hospital.

Bites and stings

Animal bites

Bites can damage soft tissues and may be further complicated by infection. In some cases injection of a toxin may occur (**see page 83**). You will need to treat any bite that breaks the skin to try and reduce the risk of infection.

What you should do:

- Always follow **DR-CABC**
- Stop bleeding (**see page 56**)
- External irrigation of the wound with water
- Pat dry and cover the wound with a sterile dressing, if available
- Advise the casualty to seek further help from a healthcare professional

DO NOT try to catch a potentially harmful animal or insect but consider taking a photograph if it is possible to do so safely and from a distance.

If the animal bite has punctured the skin and there is bleeding, the casualty will likely require antibiotics. The geographical location and circumstances may also suggest the risk of tetanus (soil or manure contaminated) or other endemic infections such as rabies, as well as the potential effects of a venom or toxin depending on the animal and species.

Human bites

If a bite wound has been caused by another person and has broken the skin and caused bleeding, there are additional risks that should be considered. "**Blood-borne**" viruses such as Hepatitis B or HIV may be transferred through such wounds. Further medical advice and a full risk assessment is essential as further treatment and follow-up may be required.

Insect stings

Insect stings such as from bees, wasps and hornets, can be frightening and painful but are usually not dangerous. Pain is often the first symptom followed by mild localised swelling and redness. If the pain and swelling persist or worsen rather than improving, medical advice should be sought.

Sometimes stings can generate a severe allergic reaction called "**anaphylaxis**" (**see page 85**) so it's important to look out for this (see below) 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 toxin into the wound or only partially extract an embedded insect
- recommend simple pain relief and the use of antihistamine medications
- put a cool pack on the bite or sting, or under cold running water, to reduce the swelling
- raise the part of the body that's affected
- observe closely for any signs of airway or breathing problems especially if the sting was to the mouth or throat. Sucking an ice cube or sipping cold water may provide symptom relief in this case
- Continue to follow, and repeat **DR-CABC** as required

If you notice any signs of a severe allergic reaction (**see page 85**) call for emergency medical help. Assist the casualty in the use of their own adrenaline auto-injector if they have one.

Tick bites

Ticks are small, spider-like creatures which feed on the blood of birds and mammals, including humans. They vary in size, usually between 1mm to 1cm long. They are usually found in woodland and grassland, often in known distinct geographical locations.

Ticks may carry diseases such as Lyme disease and should be removed as soon as possible. Using tweezers or a tick remover gently grasp the tick as close to the casualty's skin as possible and the pull the head upwards using slow, steady pressure. **Do not** twist as it may separate, leaving the head embedded in the skin.

Advise the casualty to seek further help from a healthcare professional for further assessment as they may require specific medication.

Other bites and stings

Scorpion stings and bites from some species of spiders can cause serious illness and may even be fatal. Bites to the mouth and throat may cause swelling that obstructs the airway, and the casualty should also be observed for the development of an allergic reaction. Pain, redness and swelling will occur at the site of the sting. A cold compress may be applied. The casualty should be advised to seek medical assessment, or an ambulance should be called if the casualty becomes unwell. Follow **DR-CABC** in this case, while waiting for help to arrive.

Jellyfish stings

Recommendations are to use sea water to rinse the area and apply a hot pack or heated water (40-45 C). Neutralising agents such as vinegar or bicarbonate of soda are not recommended.

Snake bites

Each year there are around 2 million cases of snake venom entering the skin following a bite ("**envenomation**") and up to 100,000 deaths worldwide. 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!

Instead try to get a photo, or document some identifying features

Symptoms usually begin immediately - certainly local to the bite itself - but in some cases may be delayed for an hour or even longer after the person has been bitten. Not all bites result in envenomation and may be from a defensive rather than a predatory strike. It is important to reassure the victim if they remain symptom-free.

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

- pain, swelling, bruising or minor bleeding at the bite site (sometimes delayed)
- headache, feeling faint, dizziness
- confusion and loss of responsiveness
- abdominal pain, nausea and vomiting
- blurred vision, heavy eyelids
- difficulty in speaking or swallowing, or difficulty in breathing
- limb weakness or numbness
- increased sweating or salivation

What you can do:

- follow **DR-CABC**
- call **112** / **999** for an ambulance
- lie the casualty down and ask them to keep still
- wash the wound with clean water before covering
- apply a bandage firmly, starting at the fingers for an arm bite (or at the toes for a leg bite) and wrap all the way to the top of the limb (**see figure 67**) - this can reduce the spread of the venom toxin **but must NOT be so tight that it acts as a tourniquet or cuts off the blood supply to the end of the limb**
- make a note of the time of the bite and when the bandage was applied
- reassure and stay with the casualty until further medical help arrives

67. Applying a pressure bandage and immobilising a limb following a snake bite

Allergic reactions

Allergic problems are very common, generally mild and usually require no more than symptomatic treatment. They may range from "hay fever" (seasonal) to more severe reactions to specific substances or foods e.g. nut allergy. Ideally the cause should be identified and avoided: it may be something as trivial as a change in washing powder! Occasionally, someone may be experiencing a reaction to their prescribed medication.

The casualty may already know what causes the reaction for them, and may carry appropriate anti-allergy medications or an adrenaline auto-injector for administering to themselves (e.g. an "EpiPen®"). Simple measures can help a casualty suffering from an allergic reaction.

Mild to moderate allergy

The features include:

- swelling of the skin, particularly the face or around the eyes
- a red, raised itchy rash ("**hives**") - the medical name is "**urticaria**". The raised edges of the rash can be felt when running the tips of the fingers over the area (**see figure 68**).

What you can do:

- always follow **DR-CABC**
- stop the exposure to the potential cause (for example stop taking the antibiotic) and advise the casualty seeks review by their usual medical practitioner
- encourage the casualty to take their own anti-allergy medication or seek the advice of a pharmacist
- if any airway swelling or breathing difficulty develops re-assess according to **DR-CABC**
- if you are concerned the casualty is becoming more unwell, call for help (**112** / **999**)

68. A typical rash due to an allergic reaction

Severe allergic reactions

The most severe form of allergic reaction is known as "**anaphylaxis**", which is potentially life-threatening and should be treated as a medical emergency. This may be difficult to recognise, however there are a number of features which will assist.

The casualty may show signs of shock (**see page 57**) and become unresponsive, or may even suffer a cardiac arrest.

Typical features include:

- Difficulty in breathing and/or high-pitched or noisy breathing ("**stridor**")
- Tight chest and/or wheezing, cough
- Swelling to the mouth and/or tightness of the throat and difficulty swallowing
- Difficulty speaking and/or hoarse voice
- Abdominal pain/cramps
- A widespread rash then cold, pale skin
- Clammy/ sweaty skin
- Casualty may become unresponsive

What you can do:

- assist the casualty 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 and you know how to (illustrated instructions are usually written on the device)
- help the casualty to lie in a position of comfort. If they feel faint, lie them down and raise their legs
- if there is no improvement after five minutes, a further adrenaline auto-injector can be administered, if available
- continue to follow **DR-CABC**
- call for help (**112** / **999**)
- ensure the casualty receives emergency medical care
- if the casualty deteriorates and stops breathing, **start CPR (see page 21)**

69. Example of an adrenaline auto-injector (EpiPen®)

Managing wounds

Stopping severe bleeding is one of the first three priorities of First Aid
Immediately following DANGER and RESPONSE, then CALL for help

For guidance on severe external bleeding see page 56

Types of wounds

Bruise

A bruise (or "**contusion**") is the result of a direct blow causing damage to small blood vessels under the skin which then leak a little blood into the tissues. A bruise can occur rapidly after an injury or take a few days to emerge (the longer the bruise takes to show at the surface, the deeper the injured tissue).

Elderly people and those taking anti-clotting medication ("blood thinners") are more prone to bruising or those bruises being larger with a less severe injury.

70. A typical bruise

What you can do:

Bruising can be lessened by elevation and cooling. Place a cold compress over injured soft tissue for 20 minutes after an injury to reduce the blood flow and hence the extent of any bruising. If the swelling continues to expand, the casualty may need medical assessment.

Abrasion

Abrasions or “grazes” occur when the outer layer of skin is rubbed off, often due to the friction from a scraping or sliding mechanism. The skin will appear raw and inflamed, and will often be contaminated by dirt or with embedded grit or other material such as glass.

71. A typical abrasion

What you can do:

As with any wound follow **DR-CABC**, checking for any active bleeding. Advise gentle external cleaning initially - particularly if this can be done with running water – to allow any loose dirt or other contamination to be rinsed off. Then cover the wound with an appropriate dressing.

Incision

An incision is a cut to the skin caused by a sharp implement such as a knife or edge of broken glass. The incision may extend down to deeper tissues by cutting through muscles, tendons, blood vessels, nerves and even solid organ structures below.

72. An incised wound

What you can do:

Follow **DR-CABC**, checking for any active bleeding. If so, follow the advice on **page 56**. Firm pressure and elevation should stop the bleeding in most cases. For example, if the cut is to your hand or arm, raise it above your head or if the injury is to a leg or foot, lie down and raise the affected area above the level of your heart.

If the bleeding is not controlled, and the incisional wound is to a limb, a tourniquet should be applied (**see pages 59)**. If bleeding is controlled, cover with an appropriate dressing. Remember that wounds can extend deeper than is visible or involve injury to other anatomy and should be assessed by professional help.

Laceration

Lacerations are tears of the surface of the skin and soft tissues usually caused by blunt trauma from a rough object or a fall. These are distinguished from an incision which should appear as a “clean cut”. Deeper lacerations can also occur, such as to abdominal organs.

73. A skin laceration

What you can do:

Follow **DR-CABC**, checking for bleeding. Wounds can look wide open and ragged, and there may be visible underlying structures such as tendons or bone. There may also be dirt and other contamination in the wound, including foreign bodies such as glass. If the bleeding is controlled effectively, consider gentle external cleaning or rinsing under running water before covering the wound. If there is active bleeding, follow the advice on **page 56** and as for incisional wounds.

Puncture wound

74. A puncture wound

A puncture wound is typically a small diameter or narrow hole which can be deep, depending on the cause or object involved. This may include animal bites or a penetrating injury from a sharp pointed object (such as standing on a nail) or from a stabbing weapon. The path this item has taken should be a straight line although it can be hard to predict, being determined by both the direction it took, but also by the position of the casualty's body at the time.

What you can do:

Follow **DR-CABC** in all cases. There may be no active bleeding at all, and the wound may even be quite hard to see at all. In some cases, the object responsible may still be embedded. If so, **do not** try to remove this. Instead cover the wound with an appropriate dressing.

Puncture wounds by their nature will be difficult to irrigate to remove all possible dirt or other contamination. For this reason it is likely that professional medical assessment and further care will be required. Investigations such as x-ray may be required. Antibiotic medications are also likely to be necessary.

General wound care advice

Use of a self-adhesive sterile dressing will usually allow a minor wound to heal by itself in a few days after which the dressing can be removed. If the wound is a small superficial graze, it may be left open to air to dry out and heal by itself.

Professional medical help should only be required if bleeding is difficult to control or the casualty takes anti-clotting (blood-thinning) medications, there is a high risk of infection or you think the wound is already infected. In the case of a higher-risk wound, casualties who are not sure about whether they have immunity for tetanus (previous vaccination) should also seek appropriate medical advice or check with their usual medical practitioner. Tetanus vaccination may be necessary with contaminated wounds, within 48 hours of the injury.

Wounds that may be higher-risk include:

- those where you cannot stop the bleeding
- bleeding is bright red or comes in spurts ("**pulsatile**")
- loss of sensation beyond the wound
- contaminated wounds (dirt, bodily fluids)
- foreign body in the wound (e.g. glass)
- complex wounds to the face
- caused by an animal or human bite

Signs of an infected wound include:

- swelling, redness and increasing pain
- pus forming in/around the wound
- feeling unwell, or developing a fever
- swollen glands e.g. the neck, armpits or groin

Blisters

75. Example of a skin blister

Blisters usually occur from repeated friction on the skin (for example when the skin rubs against the inside of a new shoe). Blisters may also occur as a result of burns. The damaged tissue leaks a clear fluid that builds up beneath the skin which forms the raised blister.

If a blister forms, keep the area clean and dry. There is no clear evidence whether to or "de-roof" a blisters. If the blister has already burst, clean the area but leave the "roof" of the blister in place and cover with a soft plaster or padded dressing.

If there are no signs of infection, such as those listed for wounds as above, no other specific treatment is advised other that protecting the area and allowing it to heal by itself. Signs of infection may include increasing redness around the blister, and/or yellow or green pus forming within it. If there are signs of infection, seek further help from a healthcare professional.

Foreign objects in a wound

A foreign object is anything that might get stuck into or under the skin from an injury. This may include wood splinters, thorns or spines, slivers of glass or metal. Do not attempt to remove well-embedded foreign objects such as pieces of glass or grit from a wound. Surface contamination could be gently brushed/swept away, or irrigated with clean water.

Retained objects can increase the risk of infection and may need to be removed by a healthcare professional using sterile equipment. Trying to remove these without suitable experience, training or equipment may also worsen the injury or its complications. The wound should simply be covered and further medical assistance sought.

If there is a large protruding object in the wound, you may need to build up padding around the object to stabilise it before applying a dressing (**see figure 48, page 61**).

Ear, Nose and Throat (ENT) problems

ENT problems are amongst some of the most common minor issues that people will suffer and most can be safely managed with simple self-care or First Aid treatments.

Ear pain

Ear pain, discharge or loss of hearing can develop from many different conditions such as infections, following air travel (from pressure changes), due to a cold or influenza, or when objects have become stuck in the ear canal. If appropriate, advise the casualty or parent to seek advice from their own doctor, walk-in urgent care centre or local emergency department.

Objects stuck in the ear canal

Young children are particularly prone to putting small objects into their ear (and nose).

Do not try to remove a foreign object from the ear canal unless it is clearly visible and easily retrievable, you have training and the correct equipment to do so. Failed attempts may push the object further in or cause additional injury to deeper structures such as the ear drum.

Sore throat

Most sore throats are often due to a mild infection such as a common cold which is caused by a virus and therefore would not benefit from treatment with antibiotics. Advise adequate fluid intake and softer food may also help. Regular pain-killer medications will help including anti-inflammatory sprays. Sometimes a sore throat causes swelling at the back of the throat which may prevent swallowing of fluids or medications, or may progress to obstruct the airway. If there are signs of airway obstruction follow the **DR-CABC** approach.

Signs that may signify a more serious throat problem include being unable to swallow (for example own saliva), hoarse or croaky voice, difficulty in talking or any difficulty in breathing.

A sudden pain in the throat associated with eating, followed by being unable to swallow properly may be due to obstruction from a piece of food – called a "bolus". If this, or any other swallowing problem leads to choking you should follow the advice **on page 33**.

Nosebleeds ("epistaxis")

Nosebleeds are not usually a sign of anything serious. They are common, particularly in children, and most can be easily treated with simple First Aid measures. They are also more common and may be more prolonged in those receiving anti-clotting medications ("blood-thinners") or with raised blood pressure. In children they are usually the result of minor trauma.

What you can do:

- ask the casualty to sit down and lean forward, with the head tilted forward
- pinch their nose firmly just above the nostrils for at least 10 minutes continuously
- the casualty can try holding a cool-pack (e.g. a small bag of frozen peas wrapped in a tea towel) on the top of the nose which may help reduce the blood flow and stop the bleeding
- once the bleeding has stopped, ask the casualty to:
  - not blow or pick their nose/ scabs
  - avoid hot drinks or alcohol
  - avoid any heavy lifting or strenuous exercise for at least 24 hours
- If the bleeding has not stopped, then pinch the nostrils for a further 10 minutes and then check again, if still bleeding then try for a third continuous period of 10 minutes

When to seek further emergency care:

- the nosebleed lasts longer than 30 minutes despite attempts to control it
- the bleeding started after a head injury
- the casualty starts feeling weak or dizzy
- the casualty is having any difficulty in breathing

Dental problems

Toothache

Toothache is usually the result of a decaying tooth. It may also be a sign of an abscess, a collection of infection below the tooth, or of infection of the gum beside the tooth. The pain experienced may be made worse by higher sensitivity to hot or cold food or drinks.

If an infection is present and worsens it can cause swelling to that side of the face and/or neck. The casualty should be advised to visit a dentist. In some cases, a more severe infection may require urgent medical attention, particularly if the casualty is feeling unwell or has a high temperature.

Tooth injuries

If an adult (permanent) tooth has been knocked fully out ("avulsed") try to avoid touching the root. Clean the tooth under cold running water for no more than 10 seconds. Wrap it in cling-film or place in a container with oral rehydration solution or milk. Advise the casualty to attend their dentist– intact teeth can often be re-implanted. Casualties may even be able to do this themselves at the scene with appropriate guidance. If the tooth socket is bleeding get the casualty to rinse out with cold water, and control bleeding by biting against a damp compress.

For "knock-out" tooth injuries to "baby" (non-permanent) teeth in children **do not** try to re-implant the tooth – it may damage the healthy tooth below.

Eye problems

Many accidents involve eye injuries that can range from more common, minor problems such a "**corneal abrasion**" to more serious, potentially eyesight-threatening issues.

The signs and symptoms to look for are:

- pain or redness in the eye or eyelid
- visible wound to the eye or around the eye
- any affected vision
- discomfort or sensitivity to light
- watering/tearing

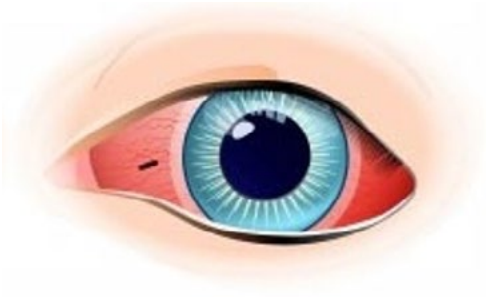
It is important that the casualty avoids rubbing their eye to prevent further damage.

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

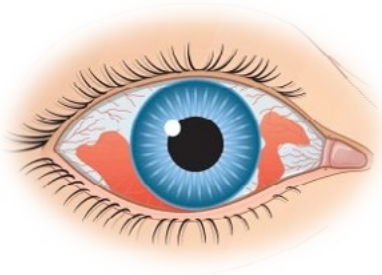
- look for any wounds, handling gently.
- **do not** attempt to wash out the eye if the foreign object appears to have penetrated the eyeball.
- if you can see something on the surface of the eye, attempt to dislodge it by washing it out (irrigating) gently with clean water (ideally a specific eye-wash fluid from an eye-safety station).
- when irrigating, pour over the inner corner of the eye with the casualty's head tilted or laid injured side downwards, so as to avoid causing any spill and then issues with the opposite eye.
- if this doesn't help seek further help from a healthcare professional.

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

- Tell the casualty to try to rest and stay still
- Protect the eye if possible with a specific pad/cover (taking care not to put any pressure onto the eye)
- Tell them to seek urgent medical assistance



76. Penetrating eye injury



77. Non-penetrating eye injury

If the casualty has a chemical in their eye, such as an acid, commence irrigation immediately with any available water-based fluid. If plain water is not available, even soft drinks will do – anything that will dilute and rinse.

If a **chemical** has got into the eye(s) you should:

- irrigate the eye as quickly as possible with a large volume of clean running water for at least **10-20 minutes**, tilting the head with the affected eye facing downward (to avoid contamination of the other eye).
- some working areas have specific “eye wash stations” or “pods” and these are ideal for First Aid treatment.
- tell the casualty to seek urgent medical assistance
- call for help (**112 / 999**).
- if in doubt, always follow **DR-CABC.**

About JOIN

Johanniter International (JOIN) is the partnership of the four protestant Orders of St John and their national charities. Our member organisations, based in Europe and the Middle East, work in close cooperation and are supported by more than 100,000 volunteers. They serve humanity with medical services and First Aid, social care, international aid, disaster relief and youth work. The services of JOIN member organisations are open to everyone. Core to our values is our Christian heritage which underlines our work.

JOIN central office in Brussels advocates the interest of the St John charities towards European and international bodies and facilitates international projects and working groups.

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johanniter international