**HLTAID011 - Provide First Aid**
**HLTAID009 - Provide Cardiopulmonary Resuscitation**

# LEARNER GUIDE

Upskills QLD
People Focused Training

# EMERGENCY CONTACT NUMBERS

| | |
|---|---|
| **000** | In an emergency call this number for:<br>• Ambulance<br>• Fire<br>• Police |
| **112** | From a mobile you can call this number or 000 |
| **13 11 26** | Poisons information centre call |

When calling for emergency assistance it is important that you provide as much information as possible including:

- Your location (street, property number, nearest crossroad)
- The condition of the casualty
- Any hazards or other relevant information

You should then stay on the line and maintain contact with emergency services until they arrive at the scene.

## First Aid Overview

### About these Learner Notes

These learner notes have been developed to provide the learner with the information needed for first aid in line with the Australian Resuscitation Guidelines. The notes have been developed in line with the requirements of the unit of competency and the recommendations of the Australian Resuscitation Council.

### Structure of Learner Notes

The structure of these notes follows the order of the performance criteria for the nationally recognised units of competency and where possible the order of information and recommendations provided by the Australian resuscitation Council.

### Renewal of First Aid

| Unit of competency | Renewal requirements |
|---|---|
| HLTAID009 Provide Cardiopulmonary resuscitation | Annually |
| HLTAID011 Provide First Aid | Every 3 Years |
| HLTAID004 Provide an emergency first aid response in education and care setting | Every 3 years |
| HLTAID006 Provide Advanced First Aid | Every 3 years |
| HLTAID007 Provide Advanced Resuscitation | Annually |

### NVR and ARC Guidelines

All first aid and resuscitation techniques and assessment processes must meet the Australian Resuscitation Council guidelines and must be delivered and assessed in accordance with the RTO's registration under the National Vet Regulator (NVR), and the requirements and recommendations of the Australian Skills Quality Authority (ASQA).

**Who is the Australian Resuscitation Council?**

The Australian Resuscitation Council is a voluntary co-ordinating body which represents all major groups involved in the teaching and practice of resuscitation. The Australian Resuscitation Council is sponsored by the Royal Australasian College of Surgeons and the Australian and New Zealand College of Anaesthetists. The Australian Resuscitation Council produces Guidelines to meet its objectives in fostering uniformity and simplicity in resuscitation techniques and terminology. Guidelines are produced after consideration of all available scientific and published material and are only issued after acceptance by all member organisations. This does not imply, however, that methods other than those recommended are ineffective. It is the policy of the Australian Resuscitation Council to respect the autonomy of member organisations.

### The ARC Guidelines

The Australian Resuscitation Council produces Guidelines to meet its objectives in fostering uniformity and simplicity in resuscitation techniques and terminology. The guidelines can be viewed at https://resus.org.au/guidelines/

### The ARC

The aims of the ARC are to:

1. Provide a forum for discussion of all aspects of resuscitation.
2. Promote uniformity and standardisation of resuscitation techniques.
3. Act as a voluntary co-ordinating body.

The objectives are to:

1. Foster interest in, and promulgate information regarding resuscitation.
2. Gather and collate scientific information regarding resuscitation techniques; to recommend a modification of those techniques where appropriate on the basis of such information.
3. Promote simplicity and uniformity in techniques and terminology regarding resuscitation.
4. Provide an advisory and resource service regarding techniques, teaching methods and teaching aids.
5. Foster research into methods of teaching and practice of resuscitation.
6. Encourage the development of standards for training.
7. Establish regular communications with other bodies with similar objectives, both in Australia and overseas.
8. Consider and advise on the means of preventing circumstances in which resuscitation may become necessary.
9. Do all such acts and things as are incidental, or subsidiary to all or any of the above objectives.

## Australian National Peak Clinical Bodies

### First Aid Industry Alliance (FAIA)

(formerly Australian Emergency Care Providers)

First Aid Industry Alliance (FAIA) is the new name of Australian Emergency Care Providers Ltd, a national peak industry association formed to represent the interests of commercial companies involved in the provision of training in the areas of pre-hospital emergency care, first aid, life saving and occupational health and safety, ambulance and other emergency response systems.

**FAIA aims:**

To consult effectively with government, employers and providers in the pre-hospital emergency care industry, to support best-practice first aid and to encourage research into pre-hospital care methods.

### National Institute of First Aid Trainers (NIFAT)

Formed in 2014, NIFAT has grown to be the largest professional development group for first aid training professionals in Australia. NIFAT currently has over 400 individual and corporate members who engage in professional development activities such as webinars and the National First Aid Trainers Conference. We provide products and services to first aid educators from the public and private sector. NIFAT is not a regulator of first aid training, nor is it associated with any peak clinical bodies or associations. NIFAT is a division of The First Aid Group Pty Ltd.

**NIFAT aims to** :

- Distribute information and resources to the first aid training industry by means of social media, membership, and our national conference.
- Seek advice from peak clinical bodies, VET sector agencies and our panel of industry experts on training queries raised by members and non-members.
- When necessary, utilise the hundreds of years of experience held by our members to provide feedback to the Service Skills Organisation (SSO) to facilitate constructive industry consultation and continuous improvement.
- Provide educators with professional development opportunities for continued educational growth.
- Organise the largest national conference of first aid professionals annually.
- Provide the opportunity to share information on new products and initiatives from national and international suppliers.
- Provide links to external organisations relevant to the first aid training sector.
- Promote the sharing of information and opportunity for benchmarking with other providers.
- Provide businesses relevant to the industry to advertise products and services to our members.

### Royal Life Saving Society

Royal Life Saving Society - Australia works to prevent drowning and facilitate healthy, active lifestyles by equipping all Australians with water safety skills. There is no one reason Australians drown, so there is no one simple solution. For that reason, RLSS's approach needs to reflect the complexity of the range of issues that result in drowning deaths.

**RLSS aims to:**

**Lead efforts to reduce drowning and increase swimming, water safety and lifesaving skills. Their strategy includes:** The Royal Life Saving Society has always sought to reduce drowning, increase physical activity, especially in and around the water, and contribute to the creation of more resilient communities, Australia wide. Achieving these long term goals requires a deliberate effort to promote change.

This change is best identified as:

- Shifts in knowledge and advances in the evidence base
- Newly developed and adjusted policies that impact drowning prevention or that promote water safety
- Increases in community water safety awareness and education
- Increased adoption of the risk management systems that make aquatic environments safer
- Shifts in individual and community behaviours, particularly among those at greatest risk

**RLSS will focus on eight priority areas:**

- Drowning prevention leadership
- Research, policy and advocacy
- Community awareness and action
- Swimming, lifesaving, water safety pathway
- Drowning prevention leadership abroad
- Safer aquatic locations
- Organisational cohesion and growth
- People and culture

### The Council of Ambulance Authorities (CAA)

The Council of Ambulance Authorities (CAA) represents the eleven statutory ambulance services across Australia, New Zealand and Papua New Guinea, which employ paramedics who are sought after across the world for their clinical skills, knowledge and experience. CAA represents a unified voice for the pre-hospital sector working to respond to changing community needs with casualty-centred practices. Ambulance service representatives on three committees, four forums and eight working groups contribute to CAA's focus on evidence-based initiatives and projects designed to keep ambulance services at the forefront of paramedicine. CAA's national events and representations in international forums build on strategic relationships with government and agencies to help address challenges and deliver optimum services.

**CAA aims to implement the following strategy for Service Delivery:**

1. **Responding to changing community needs**
   Community needs and expectations are shifting with changing demography, population shifts, evolving technology, and the extent and type of care needed.
2. **Contemporary service models**
   With increasing demand and scope of service needs, traditional ambulance service models are not sustainable or well-suited.
3. **Evidence-based, high quality practice**
   We are all focused on a casualty-centred practice and we will not compromise on health outcomes and safety as priority goals. This requires us to continually invest in research and to adopt evidence-based practices. Doing this together makes sense.

# General: About First Aid

## What is First Aid?

First Aid is emergency care given to an injured or ill casualty before medical assistance arrives.
Medical assistance would be:

- Ambulance
- Doctor
- Nurse

## The Aims of First Aid

First aiders are not medical professionals and do not diagnose or attempt complicated medical treatments. The aims of first aid are:

- To preserve life
- To protect the unconscious
- To prevent the condition worsening
- To promote recovery
- To seek medical assistance

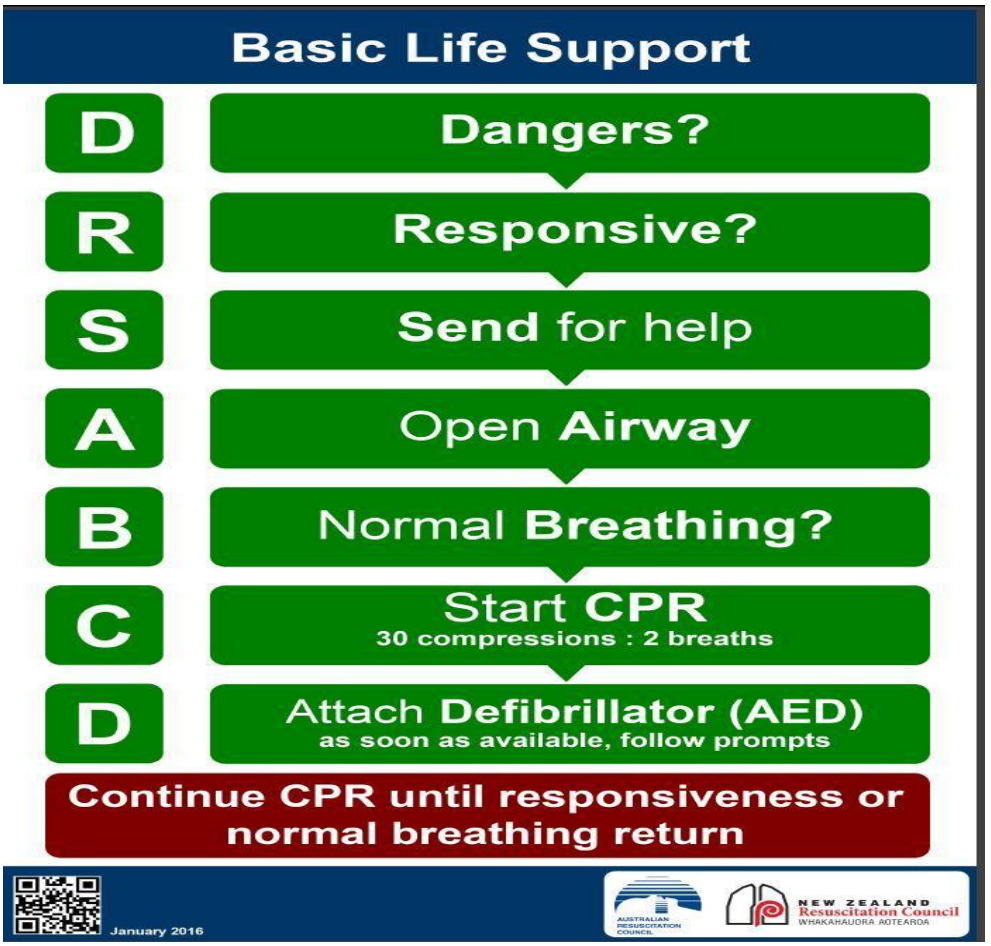

The general principles of management of a collapsed or injured casualty are:

- Checking the response to verbal and tactile stimuli (touch)
- Sending for help
- Care of the airway, breathing and circulation
- Control of bleeding
- Protection from the environmental elements
- Other first aid measures depending on the circumstances
- Gentle handling

- Reassurance
- Continued observation

# Considerations for First Aiders

(In line with ANZCOR Guideline 10.5)




## Who does this guideline apply to?

This guideline applies to adults, children and infant casualties.

## Who is the audience for this guideline?

This guideline pertains to the important but limited number of legal and ethical issues concerning resuscitation encountered by:

- First-aiders
- First-responders
- Healthcare professionals

Some, but not all situations related to resuscitation are considered by Common and Statute law. Circumstances not considered by Statute law are subject to Common law.

## Duty to Rescue

A frequent question is whether lay persons, by-standers, first-responders and healthcare personnel off- duty have a duty to assist (rescue) a person in need of emergency care.

The legal issues surrounding resuscitation by lay persons, trained volunteers and those who have a duty of care to rescue are clear in only a few circumstances.

While 'Good Samaritans' and 'Volunteers' have no duty of care to rescue, many differences in legislation exist between jurisdictions which provide protection for 'Good Samaritans' and Volunteers when they do assist a person in need of emergency care. Medical practitioners are subject to legal, ethical and professional principles.

## Duty in Australia

Only the Northern Territory has legislation that requires a duty to rescue by any person without a duty of care.

In that jurisdiction, any person who callously fails to provide rescue, resuscitation, medical treatment, first aid or succour of any kind to a person urgently in need of it and whose life may be endangered is guilty of a crime and is liable to imprisonment for 7 years (Criminal Code Act 2014, s155).

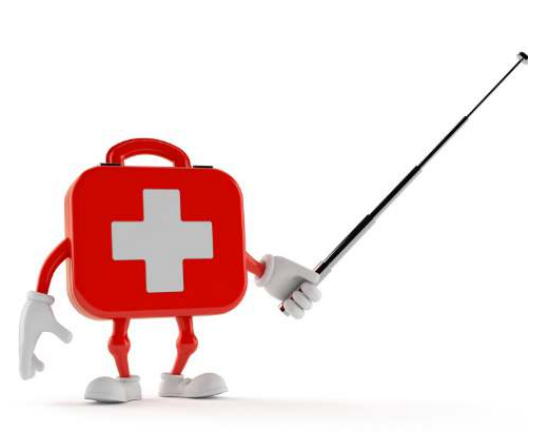
## Good Samaritans and Volunteers

A 'Good Samaritan' is defined in legislation as a person acting without expecting financial or other rewards for providing assistance. Although jurisdictional differences exist, Volunteers are generally (circuitously) defined as a member of a Volunteer organization performing voluntary community work. Laypersons or Volunteers acting as 'Good Samaritans' are under no legal obligation to assist a fellow human being, that is, they have no legal "duty to rescue". Having decided to assist, a rescuer is expected to display a standard of care appropriate to their training (or lack of training). Generally speaking, that legal standard is low. Rescuers need not fear litigation if they come to the aid of a fellow human in need. No 'Good Samaritan' or Volunteer in Australia, or probably elsewhere, has ever been successfully sued for consequences of rendering assistance to a person in need. Indeed, legal protection is provided. All Australian States and Territories have enacted Statutes that provide some measure of protection for the 'Good Samaritan' and/or the Volunteer. They are required to act at least with 'good faith' and 'without recklessness'. In New South Wales and Queensland, the 'Good Samaritan' or Volunteer is required to act with reasonable care and skill – a standard which is in fact no different from the common law standard which predated the legislation. However, Volunteers must act within the scope of activity and instructions of their organisation. However, the legislation does not afford the same protection to the organisation which controls the Volunteer. The standard of care required of a person who has a duty of care to respond is higher. Like other

persons in our community who hold themselves out to have a skill, they must perform their tasks to a standard expected of a reasonably competent person with their training and experience. However, this does not mean that the standard of care given must be of the highest level. Note: Any first aider is not expected to be an expert and a court would consider:

- the first aider's level of training,
- what a prudent and reasonable person could be expected to do with the same level of training and in the same or similar circumstances

## Duty of Care



In relation to your duty of care, there is no legal obligation for first aiders to provide first aid in a general public context except for those located in the Northern territory.

However, first aid officers in workplaces and school teachers are assumed to have a duty of care when on duty, however, the ARC advises that this has not been verified..

Once a first aider begins to provide first aid, a duty of care is established and the first aider then has a legal obligation to fulfil the duty of care. If a road user is involved in an accident, there is a legal requirement to stay at the scene, assist the injured and report the incident to the police.

Commencement of first aid is assumed as soon as you offer your assistance and it is agreed to by the casualty or another relevant stakeholder.

Not fulfilling a duty of care leaves the first aider open to questions of negligence. So once treatment has been commenced, ongoing care should only be stopped when signs of life return, we cannot physically continue or when we are relieved by another First Aider or an Ambulance officer or Medical Professional.

## Consent

Where a casualty is conscious and aware the first aider must ask for and receive consent to assist the casualty before undertaking first aid' as the ARC advises this can be construed as "Medical trespass"

If the casualty declines your help or asks you to leave them alone you may not undertake first aid on them, but it is recommended that you stay nearby, call 000, and be prepared to offer first aid if asked.

## Treatment without Consent

Although treatment normally requires consent, an injured or ill person should not be deprived of treatment merely because they lack decision-making capacity.

The key legal factors which determine whether treatment can be given without consent are:

- whether the casualty has or has not decision-making capacity; whether an advance care directive exists; the degree of urgency of the situation and whether a substitute decision-maker is present, willing and able to consent.
- If the casualty is unable to give consent and no substitute decision-maker is present, the legal requirement to obtain consent before assistance or treatment is waived under Common Law and Statute law in several circumstances.

When a casualty is unconscious and not aware consent is assumed you may undertake first aid with the casualty until such time as you are relieved by emergency assistance, or the casualty becomes conscious and asks you to cease first aid.

**NOTE: For details of the legal requirements and responsibilities for each Australian state or territory, you can use the following link to go to the Australian Resuscitation Council website and view guideline 10.5 legal and ethical issues related to resuscitation https://resus.org.au/guidelines/**

## The model WHS Act

The model WHS Act is federal and is the Work Health and Safety Act 2011.

**What are my duties as a first aider under the model WHS Act?**

The model WHS Act is federal and is The work Health and Safety Act 2011.

If you are a worker who is a trained first aider, you do not have any additional duties beyond those of other workers. Anyone has a duty to:

A. take reasonable care for their own health and safety;
B. take reasonable care not to adversely affect the health and safety of others;
C. comply with any reasonable instructions given by the PCBU to allow it to comply with its duties; and
D. co-operate with any reasonable policy or procedure relating to health and safety at the workplace.

This means that workers who are first aiders need to take 'reasonable care' for their own safety and that of others in performing their normal work and in their role as a first aider. What is considered to be reasonable care will depend on what is reasonable in the circumstances taking into account your knowledge of first aid and the situation. In practical terms, the responsibility of first aiders is to provide care only to the level of their first aid training.

## Legislation, regulations, and codes of practice

Each State or Territory will have legislation relevant to first aid and in some cases a number which relates to different

industries, and/or certain occupations. For example, Queensland has the first aid code of practice 2004, as well as Guardianship and Administration Act 2000, July 2014. Any first aider who undertakes first aid as a part of the job role should ensure they understand any legislation, regulations, and codes of practice relevant for the role and in the state in which they operate. Details of state and territory requirements may be viewed at: https://resus.org.au/guidelines/
Guideline 10.5 Legal and Ethical Issues related to Resuscitation

## Stress and the First Aider

Responding to an emergency situation including those where CPR is required is a stressful event for any number of persons including the casualty, first aiders, bystanders, emergency response personnel, and family members. It is important that first aiders deal with any stress whether they are aware of it or not by debriefing and seeking the support and guidance of other stakeholders which may include:

- ambulance officers
- other first aiders
- other emergency services or medical personnel
- relevant persons such as counsellors
- supervisors
- other relevant stakeholders

Stress is not always obvious and unless the levels of stress for the first aider are dealt with and maintained correctly, then over time stress can build and lead to other emotional and/or psychological problems.
The first aider needs to ensure they have a support structure in place as well as a sound stress management regime, and strategies to identify stress and choose appropriate tactics to deal with it. This may include physical and mental support services, such as exercise and/or counselling.

## The Importance of Reassurance

By easing anxiety and pain levels you help promote recovery of the injured person by:

- Decreasing the pulse rate
- By decreasing the pulse rate you slow blood loss
- By slowing blood loss you slow the shock process

When communicating with a casualty the first aider should remain calm and adopt a communication style which is suitable for the casualty's level of consciousness.

## The First Aider's Responsibilities

We live in a society which includes and embraces many cultures, religions, and ideologies. As first aiders, we need to treat any casualty as a person and respect their beliefs or culture.
First aiders need to:

- Be culturally aware, sensitive and respectful
- Respect casualty confidentiality
- Work within their own skills and limitations
- Understand the importance of debriefing

## Privacy and confidentiality

In any first aid situation, you must take steps to assist the person to maintain personal privacy. This means things like, keeping crowds away, putting up a screen if necessary, and covering any exposed body parts with blankets, or sheets, if available. The National Privacy Act (1988) impinges upon all first aid interactions. You therefore need to take steps to maintain confidentiality. This means not talking about the incident to other people, or answering questions from the media, unless you have permission from the person involved in the accident.

## First aiders own skills and limitations

First aiders need to be aware of the level of their own skills and limitations that are imposed by this. Any first aider trying to undertake first aid or medical activities beyond the level of their training may be putting the welfare of the casualty at risk, as well as breaking the law. First aiders are not medical personnel and should not attempt anything above the level of training and accreditation they have received. This is, of course, different for persons who are medical personnel as well as being first aiders.

## Currency

First aiders are required to keep their skills and knowledge current and a part of this process is recertification. Each first aid certification has a requalifying period which means that these certifications expire and are no longer valid after the requalifying period has elapsed. For example:

## CPR needs to be renewed every 12 months.

**First Aid** needs to be renewed every three years (This can be confusing to some people who do not understand that although CPR is embedded in normal first aid courses, that component of the courses needs to be renewed annually.

### Advance Resuscitation needs to be renewed annually'

**Advance first** aid needs to be renewed every three years. Registered Training Organisations supply the expiry dates for all units on its certifications.

### Debriefing

Debriefing is important for several reasons including:

- That allows the first aider to share and lighten the load of any incidents and it is, therefore, a good stress management strategy.
- It allows the organisation and or emergency services to understand an incident and plan to prevent or deal with future incidents.
- It is important for legal considerations (ie: any litigation that may arise from the incident).

### Written Report

Completing a written report ensures an accurate record of what has occurred but may also be useful to an ambulance, medical staff, other authorities, in dealing with the situation and/or future situations.

### Organisational Policies and Procedures

Most first aiders will be attached to some form of organisation whether it be their workplace, a club, sporting organisation, etc. Each of these organisations should have policies and procedures that deal with the operation of the organisation including WHS, emergencies, and the provision of first aid.This may include guidance on the legal requirements of an organisation that is subject to a particular compliance regime imposed by legislation, industry bodies, or other administrative bodies. Policy and procedure may also determine the scope of the first aider's duties and/or the processes which need to be followed. For example, first aid in a childcare setting is very different than in an office. There are legislative requirements in the childcare setting that need to be met and which do not apply in an office. There are also requirements in a childcare setting for first aiders to have separate anaphylaxis and asthma certifications, whereas in an office setting these are embedded in normal first aid albeit to a lower level. Childcare settings, therefore, have policies and procedures which specify the need for this extra certification and how first aiders will apply their skills and knowledge. Ask your supervisors managers to provide you with the relevant policies and procedures for your organisation that deals with first aid. Study them well and act in accordance with them to ensure your activities as a first aider are legal, and will ensure that you are legally protected.

## Risks & Hazards

| **RISK**<br>**A risk is the probability of a hazard causing harm to the rescuer or the casualty.** | | |
|---|---|---|
| **HAZARD**<br>**A hazard is something that has the potential to cause death, injury, illness, damage, or loss.** | | |
| **Environmental Dangers:** | Such as: Electricity, Road Traffic, Chemicals, Fumes, andFalling objects. |  |
| **Cross Infection:** | Take precautions if necessary. Use 'barrier devices' if possible. Such as: Gloves, masks and spacers |  |
| **Manual Handling:** | Follow the principles of safe moving and handling. Get assistance if necessary. |  |

Remember, the first thing to do for electrical hazards is to isolate the power by turning off the main.

**Don't be the next casualty!**

### Cross Infection and Hygiene

(In line with ANZCOR Guideline 10.3)

Cross infection and hygiene are real risks to the first aider, other stakeholders, and possibly even to the casualty themselves. It is important that when undertaking first aid, the first aider do their best to ensure hygiene and reduce the risk of cross-infection, including by:

- Wearing rubber gloves and mask when providing first aid, and other protective equipment as needed
- Using disposable one way (barrier) resuscitation mask or Laerdal masks
- Safe disposing of medical waste
- Correctly disposing of sharps
- Washing hands and cleaning clothes and other items after first aid

Depending on the casualty's condition and ailment, cross-infection can occur from the fluid transfer, skin contact, and in some cases by inhalation (airborne). Failure to use correct hygiene techniques, including the use of protective equipment can see the first aider or others infected and becoming casualties themselves.

**Don't be the next casualty!**

## Casualty Assessment Principles

| | |
|---|---|
| **History:** | The event or occurrence of the situation which is obtained from the surroundings, casualty or bystanders. |
| **Signs:** | What can be seen that might indicate priorities, e.g. bleeding, swelling etc? |
| **Symptoms:** | Features indicating a condition can be advised by the casualty, e.g. nausea, pain etc. |

## Contents of First Aid Kit

The following information is taken from First Aid in the Workplace Code of Practice.

Anyone must be able to access a first aid kit. This will require at least one first aid kit to be provided at their workplace.

The first aid kit should provide basic equipment for administering first aid for injuries including:

- cuts, scratches, punctures, grazes and splinters
- muscular sprains and strains
- minor burns
- amputations and/or major bleeding wounds
- broken bones
- eye injuries
- shock.

The contents of first aid kits should be based on a risk assessment. For example, there may be higher risk of eye injuries and a need for additional eye pads in a workplace where:

- chemical liquids or powders are handled in open containers
- spraying, hosing or abrasive blasting operations are carried out
- there is any possibility of flying particles causing eye injuries
- there is a risk of splashing or spraying of infectious materials
- welding, cutting or machining operations are carried out.

Additional equipment may be needed for serious burns and remote workplaces.

### Example of contents for a first aid kit

For most workplaces, a first aid kit should include the following items:

A first aid kit for a workplace where the risk of injury or illness is low should include at least the following:

- Adhesive strips (assorted sizes) for minor wound dressing.
- Splinter probes (single use, disposable).

- Non-allergenic adhesive tape for securing dressings and strapping.
- Eye pads for emergency eye cover.
- Triangular bandage for slings, support and/or padding.
- Wound/combine dressings to control bleeding and for covering wounds.
- Hospital crepe or conforming bandage to hold dressings in place.
- Non-adhesive dressings for wound dressing.
- Safety pins to secure bandages and slings.
- Scissors for cutting dressings or clothing.
- Kidney dish for holding dressings and instruments.

- Small dressings bowl for holding liquids.
- Gauze squares for cleaning wounds.
- Forceps/tweezers for removing foreign bodies.
- Disposable nitrile, latex or vinyl gloves for infection control.
- Sharps disposal container for infection control and disposal purposes.
- Sterile saline solution or sterile water for emergency eye wash or for irrigating eye wounds. This saline solution must be discarded after opening.
- Resuscitation mask to be used by qualified personnel for resuscitation purposes.
- Antiseptic solution for cleaning wounds and skin.
- Plastic bags for waste disposal.
- Note pad and pen/pencil for recording the injured or ill person's condition and treatment given.
- Reusable ice-pack for the management of strains, sprains and bruises.

Medication, including analgesics such as paracetamol and aspirin, should not be included in first aid kits because of their potential to cause adverse health effects in some people including asthmatics, pregnant women and people with medical conditions. The supply of these medications may also be controlled by drugs and poisons laws. Workers requiring prescribed and over-the-counter medications should carry their own medication for their personal use as necessary. Some types of workplaces may require additional items to treat specific types of injuries or illnesses.

### Outdoor work

If work is performed outside and there is a risk of insect or plant stings or snake bites, assess whether the following items should also be included in the first aid kit:

- a heavy duty crepe bandage
- sting relief cream, gel or spray.

### Remote work

Where people work in remote locations, a first aid kit should include:

- splint to immobilise limb after a snake bite or fractures
- heavy smooth crepe roller bandages, 10cm wide and sufficient quantity to bandage lower
- limbs to immobilise limb after a snakebite
- Instructions for providing first aid – including cardio-pulmonary resuscitation (CPR) flow chart.
- hydrogel burn dressings if there is no cool water supply
- large clean sheeting (for covering burns)
- thermal/emergency blanket for the management of shock and to assist portability of a casualty
- first aid manual or book
- whistle (for attracting attention)
- torch and/or flashlight for use at night and for attracting attention.
- note pad and pen/pencil for recording the injured or ill person's condition, and treatment given.

The appropriate contents will vary according to the nature of the work and its associated risks.

### Burn injuries

If your workers are at risk of receiving burns, you should include the following items:

- burn treatment instructions on two water-proof instruction cards: one for the first aid kit and
- the other to be located on the wall next to the emergency shower or water supply
- hydro gel (8 × 3.5gram sachets)
- hydrogel dressings
- clean polythene sheets (small, medium and large)
- 7.5cm cotton conforming bandage.

# PRIORITIES OF FIRST AID

### Primary Survey

**Life-threatening problems are dealt with first in strict order of priorities:**

The primary survey is the initial examination and care process undertaken by the first aider and follows the steps defined in D.R.S.A.B.C.D. If at any point during this process, there is an issue that needs to be dealt with before moving on to the next section. For example, the "D" in D.R.S.A.B.C.D. Stands for danger, so your first step is to undertake a hazard assessment and check for danger (risk and hazard) to the casualty and yourself. You would not move to the next step until you are sure it was safe to do so. The Flowchart on the next page is provided by the Australian Resuscitation Council and may be freely downloaded from their website and used under the conditions published along with the Basic Life

Support Flowchart, page 10.Each of these seven sections will be explained separately after the Basic Life Support Flowchart.

## Danger

Danger refers to risks and hazards that may present a danger to the casualty and or the first aider, and possibly others as well. For example, if a casualty is lying in water near an electrical board, it should be assumed that there may be an electrical hazard. Before approaching the casualty to administer first aid, the first aider should ensure that there is no electrical hazard, preferably by ensuring power is off at the mains, or by otherwise determining that there is no electrical hazard which could harm them as well as the casualty. The golden rule is "Don't be the next casualty!" If you act rashly and without ensuring that it is safe to attend a casualty, you may also be injured or harmed, and now there would be 2 casualties instead of 1.

## Response

The response is in trying to gain a response from the casualty firstly to see if they are conscious and aware and if so to seek the history, signs, and symptoms which will allow us to determine the best strategies for the provision of first aid. A long-established method of seeking a response is "Look, Listen, and Feel" in other words while trying to gain a response from the casualty you look for signs of consciousness and awareness, listen to the signs of consciousness and awareness, and feel for signs of consciousness and awareness, and/or breathing. The following strategy called COWS is a way of applying **look, listen and feel**.

| | |
|---|---|
| **C** | **C**an you hear me? |
| **O** | **O**pen your eyes |
| **W** | **W**hat is your name? |
| **S** | **S**queeze my hand |

You would usually use statements like those above as you are approaching the casualty, and also once you have reached them and have commenced contact, such as a gentle shake or stimulation (perhaps a shoulder), push, pinch, or other touch that may gain a reaction from a conscious and aware casualty. At the same time, you are doing this, you could be leaning your head over and listening for a response, and or to feel exhaled breath on your cheek or ear. If the casualty responds when you undertake C.O.W.S. then you can ask them if they agree to you assisting them, and if so you can continue with a secondary survey and provide first aid as needed and within your level of training and experience, however, if casualty refuses your help you may not do anything except to contact emergency services, and stay close and be prepared to assist them if they change their mind.


If the casualty does not respond, you may continue with your primary survey and move to send for help. **Send for help:** Over the last few years, this section found its way into existence because most people now have a mobile phone and can call for help while undertaking the primary survey and putting the phone on speaker so that they may continue to assess or assist casualty while speaking to emergency services. Other ways of sending for help if you do not have a mobile phone is to yell loudly for help and if someone responds send them for help, or to send someone present at the time.

## Airway

The airway takes precedence over other injuries as without oxygen brain damage or death will result in very quickly. While undertaking a primary survey if the casualty is not breathing the airway will need to be checked for obstruction and clear the airway ASAP.

## Breathing

If the casualty is not breathing it may be due to an airway obstruction or it may be that the casualty has stopped breathing for another reason such as drowning, or cardiac arrest which will be dealt with in the next section. Remember when an unconscious person is lying on their back their airway can become blocked or obstructed, so a breathing casualty should be placed in the lateral position.

## Checking the airway

The airway should be checked with the casualty's head in the neutral position (no head tilt). Open the mouth and look inside for any obvious obstruction. If found to be

obstructed, the casualty should be placed in the lateral position also known as the recovery position to drain or clear. After the airway has been checked and is found to be cleared (or cleared by rolling the person to the lateral position and using a finger sweep if necessary), open the casualtys' airway using the 'head tilt - chin lift' technique. Remember to put on your gloves before treatment begins to reduce the risk of cross contamination occurring. (Note: Pregnant women should only be placed in the left lateral, side-lying recovery (lateral recumbent) position to avoid harm to themselves and the foetus).

### Assess the casualty's airway

- Open the mouth and look inside for any obvious obstruction.
- If an obstruction (solid or liquid) is visible, or it is a submersion injury, place the casualty into the recovery position, and
- clear the airway Open the casualtys' airway using the 'head tilt – chin lift' technique.

### Assess the casualty's breathing

- Look for chest movement, listen for breath sounds and feel for expired air.
- Assess for no longer than 10 seconds before deciding whether breathing is absent.
- You are assessing for breathing which is more than the occasional gasp!

### Is the casualty breathing normally?

IF YES:

- Place the casualty in the recovery position if not already done.
- Call 000 and reassess at 1-minute intervals.

### The Recovery Position

**This position is used to maintain an open and clear airway in the unconscious casualty**

| Step 1 | Step 2 | Step 3 |
|---|---|---|
|  |  |  |

**If the casualty is not breathing:** Send someone to call 000 and Commence CPR - Resuscitation

### Compressions

Given the store of oxygenated blood already in the circulatory system, it stands to reason that undertaking compressions (cardiac compressions) will assist in supplying this oxygenated blood to the brain, while the compression process manually assists the lungs in compressing and expanding creating the inhalation and exhalation of air. After every 30 compressions, the ARC recommends two rescue breaths which assist with certain conditions but do not need to be undertaken if the first aider is concerned with cross- contamination, or feels they are unable to deliver the rescue breaths effectively.


### Defibrillation

The early use of an AED (automated external defibrillator) has saved numerous lives as it can deliver an electrical shock to restart the heart, can guide the first aider on when and if CPR is needed, and can monitor the condition of the casualty after CPR.

## Managing an Emergency

(in line with ANZCOR Guideline 2)
Relates to assistance by:

- Bystanders
- first aiders
- first aid providers
- first responders
- health professionals.

In all emergency, the rescuer should:

1. Quickly assess the situation
2. Ensure safety for the rescuer, person in need and bystanders (this may mean moving the person in need)
3. Send for help (call an ambulance)

Individuals who are unresponsive and breathing normally should be positioned into a lateral, side-lying recovery (lateral recumbent) position. If the person in need is unresponsive and not breathing normally, follow the ANZCOR Basic Life Support Flowchart. Where more than one person requires attention, the care of an unconscious person has priority.

## Priorities in an Emergency

Early recognition is a key step in initiating early management of an emergency situation. In all emergencies, the rescuer should:

- quickly assess the situation
- ensure safety for the rescuer, person in need and bystanders (this may mean moving the person in need)
- send for help (call an ambulance)

If the person is unresponsive and not breathing normally, follow the ANZCOR Basic Life Support Flowchart

**Where there is more than one person requires attention**
**THE CARE OF AN UNCONSCIOUS PERSON HAS PRIORITY**

## General Principles of Management

After ensuring safety for the person in need, rescuer and bystanders and sending for help, the management of the collapsed or injured person involves:

- prevention of further harm or injury
- checking the response to verbal and tactile stimuli (“talk and touch”)
- care of airway, and breathing
- control of bleeding (Guideline 9.1.1)
- checking for physical (eg. alert jewellery) or electronic alert devices (eg. smartphone application) that may be relevant to assessment or management
- protection from the weather
- other first-aid measures depending on the circumstances
- gentle handling
- reassurance
- continued observation.

## Moving a person in need

The condition of a collapsed or injured person may be made worse by movement, increasing pain, injury, blood loss and shock. However, a person lying in a hazardous area, for example, on a road or railway, may need to be moved to ensure safety.

**A rescuer should move a person when needed to:**

- ensure the safety of both rescuer and the person in need
- protect from extreme weather conditions
- enable evacuation from difficult terrain
- enable the care of the airway and breathing (e.g. turning the unconscious breathing person onto the side or turning a collapsed person onto their back to perform cardiopulmonary resuscitation)
- enable the control of severe bleeding.

## The unresponsive person who is breathing

Position into a lateral, side-lying recovery (lateral recumbent) position

**The Lateral, Side-Lying Recovery Position**

**This position is used to maintain an open and clear airway in the unconscious casualty**

| Step 1 | Step 2 | Step 3 |
|---|---|---|
|  |  |  |

It is reasonable to roll a face-down unresponsive person onto their back to assess airway and breathing and initiate resuscitation. Concern for protecting the neck should not hinder the evaluation process or life-saving procedures. Ideally, the most experienced rescuer should take charge and stay with the person in need while another rescuer is sent to seek help. If movement is necessary, and help is available, the rescuer in charge should explain clearly and simply the method of movement to the assistants, and the person in need if they are conscious.

## When ready to move the person in need:

- Avoid bending or twisting the person's neck and back: a spinal injury (Guideline 9.1.6) can be aggravated by rough handling
- Try to have three or more people to assist in support of the head and neck, the chest, the pelvis and limbs while moving the person. A spine board may be used if available
- A single rescuer may need to drag the person. Either an ankle drag or arm-shoulder drag is acceptable
- Make prompt arrangements for transport by ambulance to the hospital

## Specific management of a person in need at a Road Accident

- Approach with caution and make the accident scene as safe as possible.
- Do not touch a vehicle, or attempt to rescue a person from within ten metres of a fallen power line unless an appropriate electrical authority has declared the area safe.
- Use hazard lights, road triangles, or torches to warn oncoming traffic of the accident scene. Bystanders may also be used where it is safe to do so.
- Turn off the ignition of a crashed vehicle and activate the parking brake. If unable to activate the parking brake, place a chock under a wheel. Be cautious that airbags that have not deployed may activate following a crash.
- Remove a motorbike helmet from a person if it is necessary to manage the airway, assist breathing or control bleeding.
- If an unconscious breathing person can be managed within the vehicle, do not remove them from the vehicle unless there is a threat to life. Clear the airway of a foreign material; maintain head tilt and jaw support and continuously reassess the airway and breathing.
- If the person in the vehicle is unconscious and not breathing normally despite opening the airway, remove the person from the vehicle if possible and commence CPR immediately following the ANZCOR Basic Life Support Flowchart.

## Specific Management of Electric Shock

- When power lines are in contact with a vehicle or a person, do not approach until the situation is declared safe by authorities. The rescuer should ensure that all bystanders remain at least ten metres clear of any electrified material; examples being :
  - a car body
  - cable
  - pool of water.
  - Metal and water conduct electricity and may be extremely hazardous.
- In a **domestic** or similar situation, it is essential to separate the person in need from the electricity supply promptly. Turn off the supply of electricity and, if possible, unplug the appliance from the power outlet. Until the power is off, avoid direct skin contact with the person or any conducting material.
- If the person is unresponsive and not breathing normally, follow the ANZCOR Basic Life Support Flowchart.
- Other injuries may require treatment. Burns are common and should be managed following ANZCOR Guideline

9.1.3.

- Promptly refer all who have suffered an electric shock for medical assessment.
- Assess the person who has been struck by lightning: if unresponsive and not breathing normally, follow the ANZCOR Basic Life Support Flowchart.

## Recognition and First Aid Management of the Unconscious Person

(In line with ANZCOR Guideline 3)

**What is unconsciousness**

**Unconsciousness** is a state of unrousable, unresponsiveness, where the person is unaware of their surroundings, and no purposeful response can be obtained.


Relates to assistance by:

- Bystanders
- first aiders
- first aid providers
- first responders
- health professionals.

**Causes of Unconsciousness**

The causes of unconsciousness can be classified into four broad groups:

- Low brain oxygen levels
- Heart and circulation problems (e.g. Fainting, abnormal heart rhythms)
- Metabolic problems (e.g. Overdose, intoxication, low blood sugar)
- Brain problems (e.g. Head injury, stroke, tumour, epilepsy). Combinations of different causes may be present in an unconscious person, e.g. a head injury due to the influence of alcohol.

### Recognition

Before the loss of consciousness, the person may experience yawning, dizziness, sweating, change from normal skin colour, blurred or changed vision, or nausea. Assess the collapsed person's response to verbal and tactile stimuli (‘talk and touch’), ensuring that this does not cause or aggravate any injury. This may include giving a simple command such as, “open your eyes; squeeze my hand; let it go”. Then grasp and squeeze the shoulders firmly to elicit a response.

A person who fails to respond or shows only a minor response, such as groaning without eye-opening, should be managed as if unconscious1 [Class B; LOE Expert Consensus Opinion].

### Management

If the person is unresponsive and not breathing normally, follow ANZCOR Basic Life Support Flowchart. With an unconscious breathing person, care of the airway takes precedence over any injury, including the possibility of a spinal injury. An unconscious person must be handled gently and every effort made to avoid any twisting or forward movement of the head and spine. ANZCOR suggests that an unresponsive person who is breathing normally be positioned into a lateral, side- lying recovery (lateral recumbent) position

1. Ensure the safety of both the person and the rescuer.
2. Assist the unconscious person to the ground and position them on the side. Ensure their airway is open (Guideline 4). Do not leave the person sitting in a chair nor put their head between their knees.
3. **Call an ambulance**.
4. Promptly stop any bleeding (Guideline 9.1.1).
5. Constantly re-check the person’s condition for any change.
6. Ideally, the most experienced rescuer should stay with the person.

**If the person is unresponsive and not breathing normally follow ANZCOR Basic Life Support Flowchart**

### General

(in line with ANZCOR Guideline 4)

Relates to assistance by:

- Bystanders
- first aiders
- first aid providers
- first responders
- health professionals.

# General Principles

When someone is unconscious, all muscles are relaxed. If they are left lying on their back, the tongue, which is attached to the back of the jaw, falls against the back wall of the throat and blocks air from entering the lungs. Other soft tissues of the airway may worsen this obstruction. The mouth falls open, but this tends to block, rather than open, the airway. The

unconscious person is further at risk because of being unable to swallow or cough out foreign material in the airway. This may cause airway obstruction, or laryngeal irritation and foreign material may enter the lungs. For this reason, the rescuer should not give an unconscious person anything by mouth, and should not attempt to induce vomiting. If foreign material irritates the vocal cords, a protective reflex muscular spasm (laryngeal spasm) prevents the entry of material into the lungs. This may result in partial or complete airway blockage of the entrance to the trachea (windpipe) with the person often making an abnormal noise (stridor) during attempts to breathe. Airway closure due to laryngeal spasm can be complete; in this case, there is no noise (stridor) because there is no airflow. That can persist until the person becomes blue or unconscious from lack of oxygen. When consciousness is lost, the spasm usually relaxes.

**In an unconscious person, care of the airway takes precedence over any injury**, including the possibility of spinal injury. All who are unconscious should be handled gently with no twisting or bending of the spinal column and especially the neck. If it is necessary, move the head gently to obtain a clear airway. Where possible, an assistant should support the head when an injured person is being moved, but no time should be wasted in detailed positioning.The person should not be routinely rolled onto the side to assess airway and breathing—leave them in the position in which they have been found. This has the advantages of simplified teaching, taking less time to perform and avoids movement. The exceptions to this would be where the airway is obstructed with fluid (water or blood) or matter (sand, debris, vomit). Here, the person should be promptly rolled onto their side to clear the airway. The mouth should be opened, and the head turned slightly downwards to allow any obvious foreign material (e.g. food, vomit, blood and secretions) to drain. Loose dentures should be removed, but well-fitting ones can be left in place. Visible material can be removed by using the rescuer's fingers. If the airway becomes compromised during resuscitation, promptly roll the person onto their side to clear the airway. Once the airway is clear, reassess for responsiveness and normal breathing, then begin resuscitation as appropriate following the ANZCOR Basic Life Support Flowchart

## Regurgitation

**Regurgitation** is the passive flow of stomach contents into the mouth and nose. Although this can occur in any person, regurgitation and inhalation of stomach contents is a major threat to an unconscious person. It is often unrecognised because it is silent, and there is no obvious muscle activity.

## Vomiting

**Vomiting** is an active process during which muscular action causes the stomach to eject its contents. In resuscitation, regurgitation and vomiting are managed in the same way: by prompt positioning the person on their side and manual clearance of the airway before continuing rescue breathing.If the person begins to breathe normally, they can be left on their side with an appropriate head tilt. If not breathing normally, the person must be rolled on their back and resuscitation commenced.

## Airway Management

**Airway Management**

Airway management is required to provide an open airway when the person:

- Is unconscious
- Has an obstructed airway
- Needs rescue breathing.

For unresponsive adults and children, it is reasonable to open the airway using the head tilt-chin lift manoeuvre.

## Head Tilt/Chin Lift

One hand is placed on the forehead or the top of the head. The other hand is used to provide Chin Lift. The head (NOT the neck) is tilted backwards (see Figure 1). It is important to avoid excessive force, especially where neck injury is suspected. When the person is on their side, the head will usually remain in this position when the rescuer's hands are withdrawn.3,4

**Figure 1: Head tilt/chin lift manoeuvre**

Chin lift is commonly used in conjunction with Backward Head Tilt. The chin is held up by the rescuer's thumb and fingers to open the mouth and pull the tongue and soft tissues away from the back of the throat. A suggested technique is to place the thumb over the chin below the lip and support the tip of the jaw with the middle finger and the index finger lying along the jawline. Be careful that the ring finger does not squash the soft tissues of the neck. The jaw is held open slightly and pulled away from the chest.

## Children and Infants

An **infant** is defined as younger than one year, a child as one to eight years of age. In both cases, the principle is to maintain an open airway.

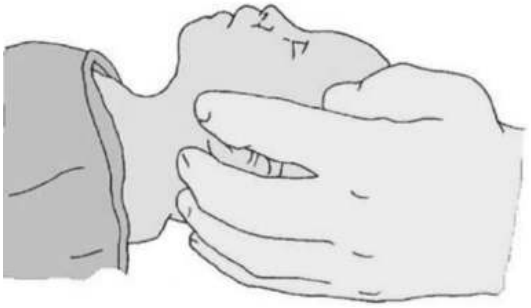
## Children

Children should be managed as adults.

## Infants

In an infant, the upper airway is easily obstructed because of the narrow nasal passages, the entrance to the windpipe (vocal cords) and the trachea (windpipe). The trachea is soft and pliable and may be distorted by excessive backward head tilt or jaw thrust. Therefore, in an infant, the head should be kept neutral and maximum head tilt should not be used (Figure 2). The lower jaw should be supported at the point of the chin while keeping the mouth open. There must be no pressure on the soft tissues of the neck. If these manoeuvres do not provide a clear airway, the head may be tilted back very slightly with a gentle movement. [Class A; LOE Expert Consensus Opinion]

**Figure 2: Infant in a neutral position**



Infant in Neutral Position
(Reproduced Courtesy of European Resuscitation Council)

## Recognition of Upper Airway Obstruction

Airway obstruction may be partial or complete, and present in the conscious or the unconscious person. Typical causes of airway obstruction may include, but are not limited to:

- relaxation of the airway muscles due to unconsciousness
- inhaled foreign body
- trauma to the airway
- anaphylactic reaction.

The symptoms and signs of obstruction will depend on the cause and severity of the condition. Airway obstruction may occur gradually or suddenly and may lead to complete obstruction within a few seconds. As such the person should be observed continually. In the conscious person who has inhaled a foreign body, there may be extreme anxiety, agitation, gasping sounds, coughing or loss of voice. This may progress to the universal choking sign, namely clutching the neck with the thumb and fingers (as shown in Figure 3).

## Universal choking sign

Airway obstruction will cause the diaphragm muscle to work harder to achieve adequate ventilation. The abdomen will continue to move out but there will be loss of the natural rise of the chest (paradoxical movement), and in-drawing of the spaces between the ribs and above the collar bones during inspiration.

**A partial obstruction** can be recognised where:

- Breathing is laboured
- Breathing may be noisy
- Some escape of air can be felt from the mouth.

**Complete obstruction** can be recognised where:

- There may be efforts at breathing
- There is no sound of breathing
- There is no escape of air from nose and/or mouth

Airway obstruction may not be apparent in the non-breathing unconscious person until rescue breathing is attempted.

## Management of Foreign Body Airway Obstruction (Choking)

Choking is the mechanical obstruction of the flow of air from the environment into the lungs. Choking prevents breathing, and can be partial or complete; with partial choking allowing some, although inadequate, the flow of air into the lungs.
A Foreign Body Airway Obstruction (FBAO) is a life-threatening emergency. Chest thrusts or back blows are effective for relieving FBAO in conscious adults and children.1 Life-threatening complications associated with the use of abdominal thrusts have been reported in 32 case reports. Therefore, the use of abdominal thrusts in the management of FBAO is not

recommended and, instead, back blows and chest thrusts should be used. These techniques should be applied in rapid sequence until the obstruction is relieved. More than one technique may be needed: there is insufficient evidence to determine which should be used first.

## Assess Severity

The simplest way to assess the severity of an FBAO is to assess for effective cough.

## Effective Cough (Mild Airway Obstruction)

The person with an effective cough should be given reassurance and encouragement to keep coughing to expel the foreign material. If the obstruction is not relieved, the rescuer should call an ambulance.

## Ineffective Cough (Severe Airway Obstruction)

**Conscious person**

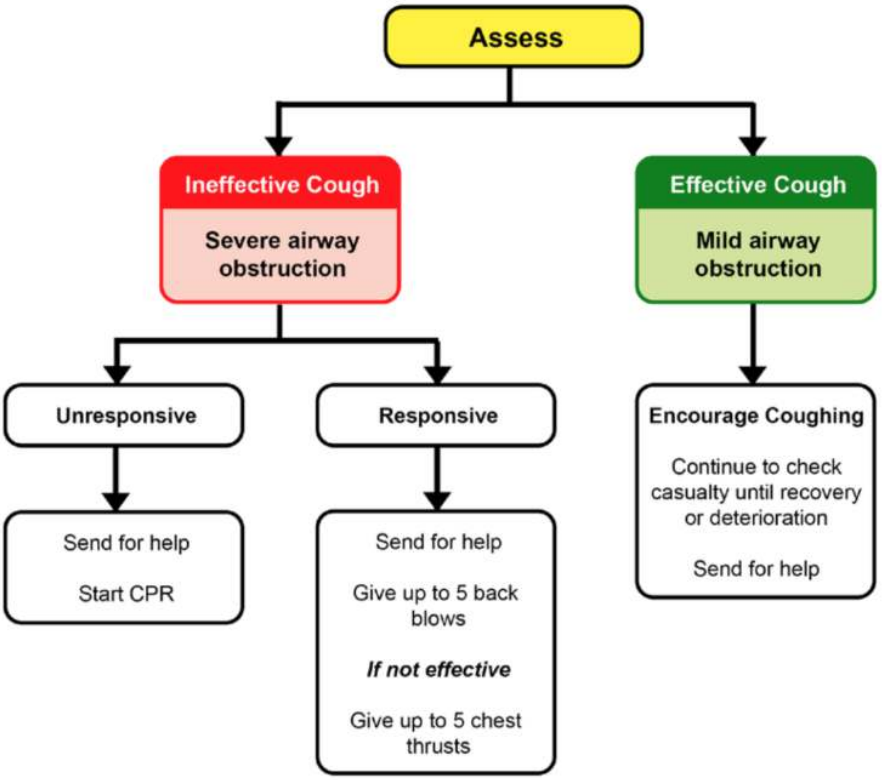
If the person is conscious, send for an ambulance and perform up to five sharp, back blows with the heel of one hand in the middle of the back between the shoulder blades. Check to see if each back blow has relieved the airway obstruction. The aim is to relieve the obstruction with each blow rather than to give all five blows. An infant may be placed in a head downwards position before delivering back blows, i.e. across the rescuer's lap If back blows are unsuccessful, the rescuer should perform up to five chest thrusts. To perform chest thrusts, identify the same compression point as for CPR and give up to five chest thrusts. These are similar to chest compressions but sharper and delivered at a slower rate. The infant should be placed in a head downwards and on their back across the rescuer's thigh, while children and adults may be treated in the sitting or standing position [Class B; LOE IV].1,2 With each chest thrust, check to see whether the airway obstruction has been relieved. The aim is to relieve the obstruction rather than deliver all five chest thrusts. If the obstruction is still not relieved and the person remains responsive, continue alternating five back blows with five chest thrusts.

**Unconscious person**

If the person becomes unresponsive, a finger sweep can be used if solid material is visible in the airway.

**Call an ambulance and start CPR.**

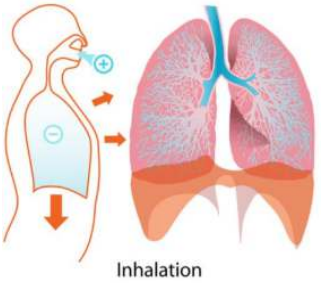
## Management of Foreign Body Airway Obstruction (Choking) Algorithm



# Breathing

(In line with ANZCOR Guideline 5)

## Causes of Ineffective Breathing of Acute Onset


Inhalation

Breathing may be absent or ineffective as a result of:

- direct depression of, or damage to, the breathing control centre of the brain
- upper airway obstruction
- paralysis or impairment of the nerves and/or muscles of breathing
- problems affecting the lungs
- drowning
- suffocation.

## Assessment of Breathing

There is a high incidence of abnormal gasping (agonal gasps) after cardiac arrest.1 All rescuers should use a combination of unresponsiveness and absent or abnormal breathing to identify the need for resuscitation. The rescuer should maintain an airway and assess for normal breathing:

- **LOOK** for movement of the upper abdomen or lower chest
- **LISTEN** for the escape of air from nose and mouth
- **FEEL** for movement of air at the mouth and nose

Movement of the lower chest and upper abdomen does not necessarily mean the person has a clear airway. Impairment or complete absence of breathing may develop before the person loses consciousness.

## Rescue Breathing

If the unconscious person is unresponsive and not breathing normally after the airway has been opened and cleared, the rescuer must immediately begin chest compressions and then rescue breathing.

Give 30 compressions and then two breaths, allowing about one second for each ventilation following the ANZCOR Basic Life Support Flowchart

ANZCOR suggests that those who are trained and willing to give breaths do so for all persons who are unresponsive and not breathing

## Mouth to mouth

- Kneel beside the casualty's head. Maintain an open airway
- Take a breath, open your mouth as widely as possible and place it over the person's slightly open mouth.
- While maintaining an open airway, pinch the nostrils (or seal nostrils with the rescuer's cheek) and blow to inflate the person's lungs. (Because the hand supporting the head comes forward some head tilt may be lost, and the airway may be obstructed. Pulling upwards with the hand on the chin helps reduce this problem.)
- For the mouth to mouth ventilation, it is reasonable to give each breath in a short time (one second) with a volume to achieve chest rise regardless of the cause of cardiac arrest.

## Care should be taken not to over-inflate the chest.

Look for the rise of the chest during each inflation. If the chest does not rise, possible causes are:

- Obstruction in the airway (tongue or foreign material, or inadequate head tilt, chin lift)
- Insufficient air being blown into the lungs
- Inadequate air seal around mouth and or nose

If the chest does not rise, ensure correct head tilt, adequate air seal and ventilation.

After inflating the lungs, lift your mouth from the person's mouth, turn your head towards their chest and listen and feel for air being exhaled from the mouth and nose.

## Mouth to nose

The mouth to nose method may be used:

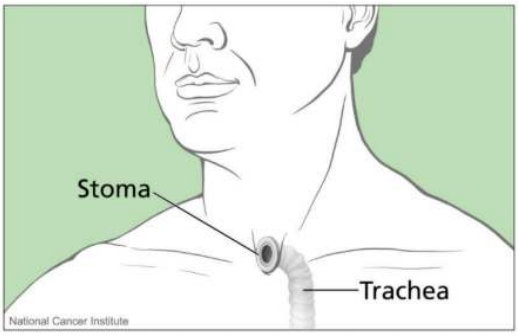
- Where the rescuer chooses to do so
- Where the person's jaws are tightly clenched
- When resuscitating infants and small children.

The technique for mouth to the nose is the same as for mouth to mouth except for sealing the airway. Close the mouth with the hand supporting the jaw and push the lips together with the thumb. Take a breath and place your widely opened mouth over the person's nose (or mouth and nose in infants) and blow to inflate the lungs. Lift your mouth from the person's nose. Look for the fall of the chest, and listen and feel for the escape of air from the nose and mouth. If the chest does not move, there is an obstruction, an ineffective seal, or insufficient air being blown into the lungs. In mouth-to-nose resuscitation, a leak may occur if the rescuer's mouth is not open sufficiently, or if the person's mouth is not sealed adequately. If this problem persists, use mouth-to-mouth resuscitation. If blockage of the nose prevents adequate inflation, the rescuer should use mouth-to-mouth resuscitation.

## Mouth to mask

Mouth to mask resuscitation is a method of rescue breathing which avoids mouth-to-mouth contact by using a resuscitation mask.

Rescuers should take appropriate safety precautions when feasible and when resources are available to do so, especially if a person is known to have a serious infection. Position yourself at the person's head and use both hands to maintain an open airway and to hold the mask in place to maximise the seal. Maintain head tilt and chin lift. Place the narrow end of the mask on the bridge of the nose and apply the mask firmly to the face. Inflate the lungs by blowing through the mouthpiece of the mask with sufficient volume and force to achieve chest movement. Remove your mouth from the mask to allow exhalation. Turn your head to listen and feel for the escape of air. If the chest does not rise, recheck head tilt, chin lift and mask seal. Failure to maintain head tilt and chin lift is the most common cause of obstruction during resuscitation.




### Mouth to neck stoma

A person with a laryngectomy has had the larynx (voice box) removed and breathes through a hole in the front of their neck (stoma).

A stoma will be more obvious when the person is on their back for Rescue Breathing, and the head is put into a backward tilt. If a tube is seen in the stoma, always leave it in place to keep the hole open for breathing and resuscitation. The rescuer should place their mouth over the stoma and perform rescue breathing as described above. If the chest fails to rise, this may be due to a poor seal over the stoma, or the person having a tracheostomy rather than laryngectomy thus allowing air to escape from the mouth and nose or a blocked stoma or tube. If the stoma or tube is blocked use back blows and chest thrusts in an attempt to dislodge the obstruction.

**Risks**

No human studies have addressed the safety, effectiveness, or feasibility of using barrier devices to prevent person-to-rescuer contact during rescuer breathing. Nine clinical reports advocate the use of barrier devices to protect the rescuer from transmitted disease: three studies showed that barrier devices could decrease transmission of bacteria in controlled laboratory settings. The risk of disease transmission is very low and need not deter rescue breathing without a barrier device. If available, rescuers should consider using a barrier device.

## Compressions

(In line with ANZCOR Guideline 6)

### Applies to all persons who are unresponsive and not breathing normally.

Relates to assistance by:

- Bystanders
- First aiders
- First aid providers
- First responders
- Health professionals.

All rescuers should perform chest compressions for all persons who are unresponsive and not breathing normally.

### Recognition of the need for Chest Compressions

All rescuers, including health care professionals, should use unresponsiveness and absence of normal breathing to identify the need for resuscitation.

### Locating the site for Chest Compressions

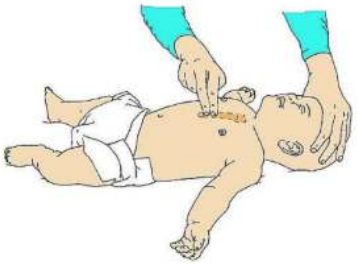
ANZCOR suggests performing chest compressions on the lower half of the sternum.
Avoid compression beyond the lower limit of the sternum. Compression applied too high is ineffective, and if applied too low may cause regurgitation and/or damage to internal organs.

### Method of Compression

**Infants**

In infants, the two-finger technique should be used by lay rescuers to minimise transfer time from compression to ventilation.2 Having obtained the compression point the rescuer places two fingers on this point and compresses the chest (Figure 2). [Class A; LOE Expert Consensus Opinion]

## Method of compression for infants

(adapted courtesy of European Resuscitation Council)

**Children and Adults**
Either a one or two hand technique can be used for performing chest compressions in children
**Administering compressions using one- and two-handed techniques**

(adapted courtesy of European Resuscitation Council)

Interruptions to chest compressions must be minimised.

A person requiring chest compressions should be placed on their back on a firm surface (e.g. backboard or floor) before chest compressions to optimise the effectiveness of compressions.

Compressions should be rhythmic with equal time for compression and relaxation. The rescuer must avoid either rocking backwards and forwards, or using thumps or quick jabs. Rescuers should allow complete recoil of the chest after each compression.

## Pregnant women

Good quality, uninterrupted chest compressions, as described above, should be the immediate priority in all pregnant women who are unresponsive and not breathing normally. In noticeably pregnant women, standard CPR should be commenced immediately. Once CPR is in progress, if there are sufficient resources available, rescuers should place padding such as a towel, cushion or similar object under the right hip to tilt the woman's hips (approximately 15-30 degrees) to the left but leave her shoulders flat to enable good quality chest compressions. The reason for this position in pregnant women is to move the weight of the pregnant uterus off of her major blood vessels in the abdomen. If a tilted position is not possible or tilting the hips compromises the quality of chest compressions, then chest compressions should be performed as described as above with the woman on her back.

**Padding the noticeably-pregnant woman**

## Depth of Compressions

The lower half of the sternum should be depressed approximately one-third of the depth of the chest with each compression. This equates to more than 5cm in adults, approximately 5cm in children 1,2 and 4 cm in infants.

## Rate of Compressions

Rescuers should perform chest compressions for all ages at a rate of 100 to 120 compressions per minute (almost 2 compressions/second).2 [CoSTR 2015, strong recommendation, very-low-quality evidence] This does not imply that 100

compressions will be delivered each minute since interruptions will reduce the number for breaths given by rescue breathing.3 ANZCOR acknowledges that compression rates will vary between and within providers and survival rates are optimised at compressions rates of 100-120 compressions per minute. There is some evidence that compressions rates less than 100 or greater than 140 compressions per minute are associated with lower rates of survival.2,4,5 [CoSTR 2015, Values and Preferences Statement].

### CPR Quality

The compression rate and depth are variable among rescuers and compressions may be worse in the first 5 minutes of the arrest. One manikin study of rescuer CPR showed that compressions became shallow within one minute, but providers became aware of fatigue only after 5 min. When performing compressions, if feasible, change rescuers at least every two minutes to prevent rescuer fatigue and deterioration in chest compression quality, and changing rescuers performing chest compressions should be done with a minimum of interruptions to compressions.

### Feedback

There is no high-level evidence that the use of CPR feedback devices during real-time CPR improves survival or return of spontaneous circulation.

### Risks

Rib fractures and other injuries are common but acceptable consequences of CPR given the alternative of death. In making this recommendation, ANZCOR places a higher value on the survival benefit of CPR initiated by laypersons for casualties in cardiac arrest against the low risk of injury in casualties not in cardiac arrest


## Automated External Defibrillation

(In line with ANZCOR Guideline 7)

The early use of an AED (automated external defibrillator) has saved numerous lives as it can deliver an electrical shock to restart the heart, can guide the first aider on when and if CPR is needed, and can monitor the condition of the casualty after CPR

The importance of defibrillation has been well established as part of overall resuscitation, along with effective cardiopulmonary resuscitation (CPR). An Automated External Defibrillator (AED) must only be used for persons who are unresponsive and not breathing normally.

With cardiac arrest, time to defibrillation is a key factor that influences a person's chance of survival. A defibrillator should be applied to the person who is unresponsive and not breathing normally as soon as it becomes available so that a shock can be delivered if necessary.

**Applies to all persons who are unresponsive and not breathing normally.**

Relates to assistance by:

- Bystanders
- first aiders
- first aid providers
- first responders
- health professionals

### Defibrillation Background

The importance of defibrillation has been well established as part of overall resuscitation, along with effective cardiopulmonary resuscitation (CPR). An Automated External Defibrillator (AED) must only be used for persons who are unresponsive and not breathing normally. CPR must be continued until the AED is turned on and pads attached. The rescuer should then follow the AED prompts. The time to defibrillation is a key factor that influences survival. For every minute defibrillation is delayed, there is approximately 10% reduction in survival if the casualty is in cardiac arrest due to Ventricular Fibrillation (VF). 1 CPR alone will not save a person in VF. Hence a defibrillator should be applied to the person in need as soon as it becomes available so that a shock can be delivered if necessary. The development of AEDs has made defibrillation part of basic life support. AEDs can accurately identify the cardiac rhythm as "shockable" or "non shockable".

### Which rescuers should use an AED?

**AED use is not to be restricted to trained personnel.**

The use of an AED is not restricted to trained personnel, however formal training can be beneficial in saving life. When using and AED the first aider should follow the prompts and instructions given verbally by a recorded voice on the AED. Such instructions will include the placement of pads, instructions for the safe use of the machine for casualties and first aiders, and in many cases the machine will supply instructions and timing for CPR.

### Public Access to AEDs

Deployment of home AEDs for high-risk individuals who do not have an implantable cardioverter- defibrillator (ICD) is safe and feasible, and may be considered on an individual basis, but has not been shown to change overall survival rates. Use

of AEDs in public settings (airports, casinos, sports facilities, etc.) where witnessed cardiac arrest is likely to occur can be useful if an effective response plan is in place.

### An AED can and should be used on pregnant women who are in cardiac arrest.

Use of AEDs is reasonable to facilitate early defibrillation in hospitals. Studies to date have shown AEDs are effective in decreasing the time to the first defibrillation during in- hospital cardiac arrest.

### Pad placement – Adults

Effective pad placement ensures that a shock is delivered on an axis through the heart. Place pads on the exposed chest in an anterior-lateral position: one pad slightly below the collar bone on the person's right chest and one pad on the person's left side below the armpit. In large-breasted individuals, it is reasonable to place the left electrode pad lateral to the left breast to avoid breast tissue.All pads have a diagram on the outer covering demonstrating the area suitable for pad placement.Avoid placing pads over implantable devices. If there is an implantable medical device, the defibrillator pad should be placed at least 8cm from the device. Do not place AED electrode pads directly on top of a medication patch because the patch may block delivery of energy from the electrode pad to the heart and may cause small burns to the skin. Remove medication patches and wipe the area before attaching the electrode pad.

### Pad placement – Children and Infants

Standard adult AEDs and pads are suitable for use in children older than 8 years. Ideally, for those under 8 years, paediatric pads and an AED with a paediatric capability should be used. These pads also are placed as per the adult and the pads and come with a diagram of where on the chest they should be placed. If the AED does not have a paediatric mode or paediatric pads, then it is reasonable to proceed with standard adult AED pads. Ensure the pads do not touch each other on the child's chest. Apply the pad firmly to the bare chest in the anterior-lateral position as shown for adults in. If the pads are too large and there is a danger of pad-to-pad arcing, use the front-back position (anteroposterior): one pad placed on the upper back (between the shoulder blades) and the other pad on the front of the chest, if possible slightly to the left.

### Defibrillation Safety

Rescuers should follow the prompts: care should be taken not to touch the person during shock delivery. There are no reports of harm to rescuers from attempting defibrillation in wet environments. In the presence of oxygen, there are no case reports of fires caused by sparking when shocks were delivered using adhesive pads.

## Cardiopulmonary Resuscitation

(In line with ANZCOR Guideline 8)

**Applies to all persons who are unresponsive and not breathing normally.**

**R**elates to assistance by:

- Bystanders
- first aiders
- first aid providers
- first responders
- health professionals

### What is Cardiopulmonary Resuscitation?

Cardiopulmonary resuscitation (CPR) is the technique of chest compressions combined with rescue breathing. The purpose of CPR is to temporarily maintain a circulation sufficient to preserve brain function until specialised treatment is available. Rescuers must start CPR if the person is unresponsive and not breathing normally.

**Even if the person takes occasional gasps, rescuers should start CPR.**

Airway composed of:

- Nose and mouth
- Pharynx (back of the throat)
- Larynx (voice box)
- Trachea (windpipe)
- Bronchi (tubes to each lung)
- Bronchioles (smaller sections of the Bronchi)
- Alveoli (air sacs)

**Chest Compressions**

Place the heel of one hand in the centre of the lower half of the casualty's chest with the other hand on top. Position yourself vertically over the casualty with arms straight Depress 1/3 the depth of the chest.

30 compressions followed by 2 rescue breaths. (5 cycles in 2 minutes)

**Rescue breaths**

**TILT:** Ensure head tilt/chin lift. (Pistol Grip)
Seal nose with cheek or by pinching closed fingers
**BLOW:** Take a breath and make a good seal over their mouth with yours while pinching nostrils or sealing them with your cheek, then blow to inflate the casualty's lungs.

**LOOK LISTEN AND FEEL:** Turn your head to take a breath and watch their chest fall. If it does not, then possible problems could be:

- Obstruction of the airway
- Insufficient air being blown into lungs
- Inadequate seal around the casualty's mouth or nose
- Insufficient head tilt

**If you are unable or unwilling to give rescue breaths, giving continuous chest compressions only is better than "no attempt".**

## Bystander CPR

Early high-quality CPR saves lives, and CPR should be started for presumed cardiac arrest without concerns of harm to persons not in cardiac arrest

## Compression-to-Ventilation Ratio

ANZCOR suggests a compression–ventilation ratio of 30:2 compared with any other compression– ventilation ratio in people in cardiac arrest. Compressions must be paused to allow for ventilation.

## Steps of Resuscitation

Initial steps of resuscitation are:

**DRSABCD**

1. **D**ANGERS Check for danger (hazards/risks/safety)
2. **R**ESPONSIVENESS Check for a response (if unresponsive)
3. **S**END Send for help
4. **A**IRWAY Open the airway
5. **B**REATHING Check breathing (if not breathing / abnormal breathing)
6. **C**PR Start CPR (give 30 chest compressions followed by two breaths)
7. **D**EFIBRILLATION Attach an Automated External Defibrillator (AED) as soon as available and follow the prompts.

## Chest Compressions

All rescuers should perform chest compressions for all those who are unresponsive and not breathing normally. If rescuers do continuous chest compressions, they should be at a rate of approximately 100 – 120 /min.

## Minimise Interruptions to Chest Compressions

CPR should not be interrupted to check for response or breathing. ANZCOR places a high priority on minimising interruptions for chest compressions.

## Multiple Rescuers

When more than one rescuer is available to ensure:

- That an ambulance has been called
- All available equipment has been obtained (e.g. AED).

## Duration of CPR

The rescuer should continue cardiopulmonary resuscitation until any of the following conditions have been met:

- The person responds (e.g. vomits) or begins breathing normally
- It is impossible to continue (e.g. Exhaustion)
- Another rescuer takes over
- A health care professional arrives and takes over CPR
- A health care professional directs that CPR be ceased.

## Risks

CPR should be initiated for presumed cardiac arrest without concerns of harm to persons not in cardiac arrest ANZCOR places a higher value on the survival benefit of CPR initiated by rescuers for persons in cardiac arrest against the low risk of injury in persons not in cardiac arrest. The risk of disease transmission during training and actual CPR performance is

very low. If available, the use of a barrier device during rescue breathing is reasonable. After resuscitating a person, the rescuer should reassess and re-evaluate for resuscitation-related injuries.

### Automated External Defibrillation

The use of an AED is not restricted to trained personnel, however formal training can be beneficial in saving life. When using an AED the first aider should follow the prompts and instructions given verbally by a recorded voice on the AED. Such instructions will include the placement of pads, instructions for the safe use of the machine for casualties and first aiders, and in many cases the machine will supply instructions and timing for CPR.

## Safety when using an AED

All that is required to use an AED is to recognise that someone who has collapsed may be in cardiac arrest and attach the AED's two adhesive pads (electrodes) to the casualty's bare chest. These pads allow the AED to monitor the heart's electrical rhythm and will deliver a shock if it is needed. The AED will provide verbal prompts and some models also provide visual prompts on a screen. The AED will analyse the heart's electrical rhythm and if it detects a rhythm likely to respond to a shock (a rhythm such as VF/VT), it will charge itself ready to deliver a shock. Some devices then deliver the shock automatically without needing any further action by the rescuer; others prompt the rescuer to press a button to deliver the shock (these are often referred to as 'semi-automatic' AEDs or SAEDs). The AED will then prompt the rescuer to give the casualty CPR for two minutes. After two minutes, the AED will again prompt the rescuer/s not to touch the casualty while it checks the heart rhythm to determine if another shock is required. The AED will continue to provide prompts as required. These should be followed until advanced life support (i.e. paramedics) arrive and are ready to provide further treatment. Modern AEDs are reliable and will only shock a casualty when it is required. They are safe for both the casualty and the rescuer, and present minimal risk of a rescuer receiving a shock. Care should be taken not to touch the person during shock delivery. There are no reports of harm to rescuers from attempting defibrillation in wet environments. The easy maintenance features of AEDs make them suitable for use by members of the public with little or no training, and for use in PAD schemes. As well as having an AED on site (and people prepared to use it) it is also vital that as many people as possible learn CPR. This includes learning how to recognise cardiac arrest, call 000 (Triple Zero) and performing CPR (chest compressions and rescue breaths). Providing CPR helps maintain the blood flow and oxygen supply to the brain and other vital organs, it can also contribute to helping restore an effective heart beat during defibrillation.

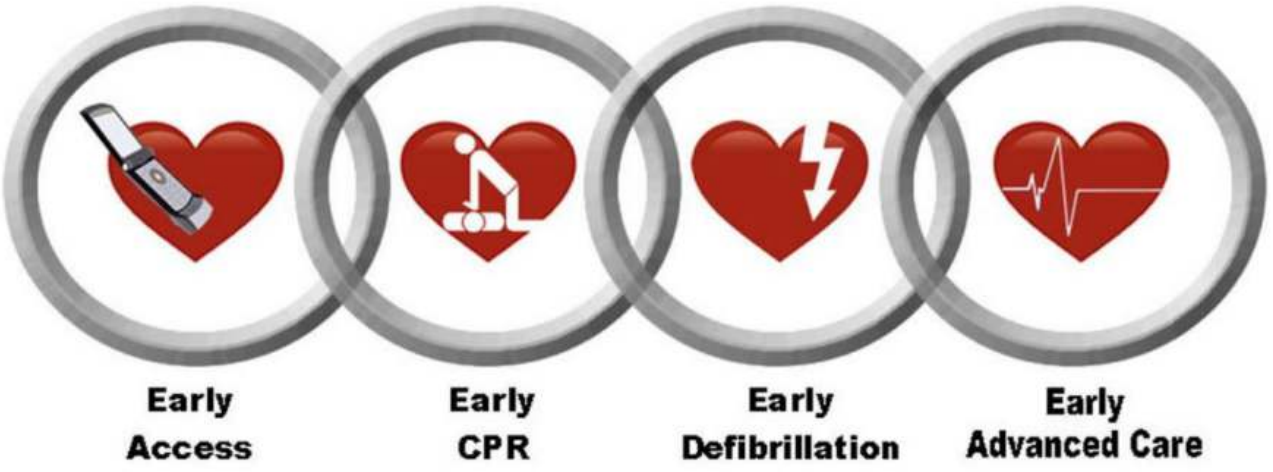
## Maintaining an AED

AEDs require minimal routine maintenance or servicing; most perform daily self-checks and display a warning if they need attention. Most AEDs currently offered for sale have a minimum life-expectancy of ten years. The batteries and pads have a long shelf-life, allowing the AED to be left unattended for long intervals. If the AEDs pads have been used, they require immediate replacement. Expired batteries and AED pads and other consumable items (e.g. shears, towel and plastic gloves) should be replaced in line with their expiration dates (usually 3-5 years).

In all cases the manufacturer's recommendations should be followed. All currently available AEDs perform regular self-checks and if a problem is detected it will be indicated. In most cases they show this by a warning sign or light visible on the front of the machine, or by an audible alert much the same as a failing smoke detector battery.

Those owning or maintaining an AED should have a process in place for it to be checked regularly and frequently (ideally daily) and for appropriate action to be taken when necessary. If this task is delegated to individuals, allowance must be made to ensure that the checks are not neglected during absence of staff on holidays or sick leave etc.

Some manufacturers provide a replacement AED while one is removed for servicing, and the arrangements for this should be clarified and agreed during the process of buying the AED.Chain of Survival



The chain of survival refers to a series of actions that, when put into motion, reduce the mortality associated with cardiac arrest. Like any chain, the chain of survival is only as strong as its weakest link. The four interdependent links in the chain of survival are early access, early CPR, early defibrillation, and early advanced cardiac life support.

# Bleeding

(In line with ANZCOR Guideline 9.1.1)

## Applies to adult, child, and infant casualties.

- Relates to assistance by:
- Bystanders
- First aiders
- First aid providers

## External Bleeding

Usually, external bleeding can be controlled by the application of pressure on or near the wound to stop further bleeding until help arrives. The main aim is to reduce blood loss from the casualty. The use of direct pressure is usually the fastest, easiest and most effective way to stop bleeding. Other methods should be used if direct pressure does not control severe bleeding. There is no evidence that elevation of a bleeding part aids control of bleeding, and there is the potential to cause more pain or injury. If there is an obvious embedded object use indirect pressure.

## Pressure

Attempt to stop the bleeding by applying sustained direct or indirect pressure on or near the wound as appropriate.
Call for an ambulance (Dial Triple Zero - 000).

## Bleeding Management

- Use standard precautions (e.g. gloves, protective glasses) if readily available.
- Lie the casualty down if bleeding from the lower limb or severe bleeding.
- Call an ambulance.
- If the casualty is unresponsive and not breathing normally, follow the Basic Life Support Flowchart.

The need to control the bleeding is paramount. The risks associated with the use of haemostatic dressings or a tourniquet are less than the risk of severe uncontrolled bleeding, though these are temporary measures and transfer to hospital remains of high importance.

## Direct Pressure Method

Where the bleeding point is identified control bleeding by applying pressure as follows:

- Apply firm, direct pressure sufficient to stop the bleeding
- Apply pressure using hands or a pad, ensuring that sufficient pressure is maintained and that the pressure remains over the wound. If bleeding continues, apply another pad and a tighter dressing over the wound.

To assist in controlling bleeding, where possible:

- Restrict movement
- Immobilise the part
- Advise the casualty to remain at total rest.

If bleeding continues, it may be necessary to remove the pad(s) to ensure that a specific bleeding point has not been missed. The aim is to press over a small area and thus achieve greater pressure over the bleeding point. For this reason, an unsuccessful pressure dressing may be removed to allow a more direct pressure pad and dressing on the bleeding location.

## Tourniquet

Tourniquets should only be used for life-threatening bleeding from a limb that cannot be controlled by direct pressure. A wide bandage (of at least 5cm) can be used as a tourniquet 5-7 cm above the bleeding point. The bandage should be tight enough to stop all circulation to the injured limb and control the bleeding. The time of application must be noted and passed on to emergency/ambulance personnel. Once applied, the casualty requires urgent transfer to hospital, and the tourniquet should not be removed until the casualty receives specialist care.

A tourniquet **should not** be applied over a joint or wound, and must not be covered up by any bandage or clothing.

## Indirect Pressure Methods

**Embedded Objects**

- Do not remove the embedded object because it may be plugging the wound and restricting bleeding.
- Place padding around or above and below the object and apply pressure over the pads.

## Bandages and dressing

Bandages and dressings are both used in wound management.
The purposes served by dressings include:

- To provide pressure and stop bleeding
- Protecting wounds
- Promoting healing
- Providing, retaining, or removing moisture
- To hold dressings in place
- To relieve pain
- To provide support for musculoskeletal injuries
- Make the casualty comfortable
- Elastic bandages are useful to provide ongoing pressure on wounds such as varicose veins, fractured ribs, and swollen joints.
- To protect from infection

## Abdominal Wound

**Posture for abdominal injury Management**

- Recline with head, shoulders and knees supported
- Cover wound with moistened clean dressings(Cling wrap or light bandage)

## Internal Bleeding Recognition

Internal bleeding may be difficult to recognise, but should always be suspected where there are symptoms and signs of shock.It includes bruising, haematomas and the internal bleeding associated with fractures. Severe bleeding may occur from complications of pregnancy.
Symptoms and signs may include:

- pain, tenderness or swelling over or around the affected area
- the appearance of blood from a body opening, e.g., o bright red and/or frothy blood coughed up from the lungs
- vomited blood which may be bright red or dark brown "coffee grounds."
- blood-stained urine
- vaginal bleeding or bleeding from the penis
- rectal bleeding which may be bright red or black and “tarry”.

## Internal Bleeding Management

Internal bleeding may be life-threatening and requires urgent treatment in hospital.

- Call an ambulance.

## Nose Bleed (Epistaxis)

For a nose bleed:

- Pressure must be applied over the soft part of the nostrils, below the bridge of the nose
- The casualty should lean with the head forward to avoid blood flowing down the throat
- The casualty should remain seated at total rest for at least 10 minutes. On a hot day or after exercise, it might be necessary to maintain pressure for at least 20 minutes
- If bleeding continues for more than 20 minutes seek medical assistance.

## Closed Bleeding In Limbs

If bruising to a limb and no external bleeding, use cold pack and pressure if available

## Management of All Bleeding

Apply the following measures until ambulance arrival:

- reassure the casualty
- assist casualty into position of comfort
- monitor the signs of life at frequent intervals
- administer oxygen if available and trained to do so
- **Do Not** give anything orally, including medications and/or alcohol.

# Minor Wounds

A wound is any damage or break in the surface of the skin. Applying appropriate first aid to a wound can speed up the healing process and reduce the risk of infection. Wounds including minor cuts, lacerations, bites and abrasions can be treated with first aid.

## Control bleeding

Use a clean towel to apply light pressure to the area until bleeding stops (this may take a few minutes). Be aware that some medicines (e.g. aspirin and warfarin) will affect bleeding, and may need pressure to be applied for a longer period of time.

### Wash your hands well
Prior to cleaning or dressing the wound, ensure your hands are washed to prevent contamination and infection of the wound.

### Rinse the wound
Gently rinse the wound with clean, lukewarm water to cleanse and remove any fragments of dirt, e.g. gravel, as this will reduce the risk of infection.

### Dry the wound
Gently pat dry the surrounding skin with a clean pad or towel.

### Replace any skin flaps if possible
If there is a skin flap and it is still attached, gently reposition the skin flap back over the wound as much as possible using a moist cotton bud or pad.

### Cover the wound
Use a non-stick or gentle dressing and lightly bandage in place; try to avoid using tape on fragile skin to prevent further trauma on dressing removal.

### Seek help
Contact your GP, nurse or pharmacist as soon as possible for further treatment and advice to ensure the wound heals quickly.

### Manage pain
Wounds can be painful, so consider pain relief while the wound heals. Talk to your GP about options for pain relief.

## Sprains and Strains

### SPRAIN
Damage to ligaments due to over-extension of a joint

### STRAIN
A stretching and tearing of muscle or tendon fibres.These are both known as soft tissue injuries.

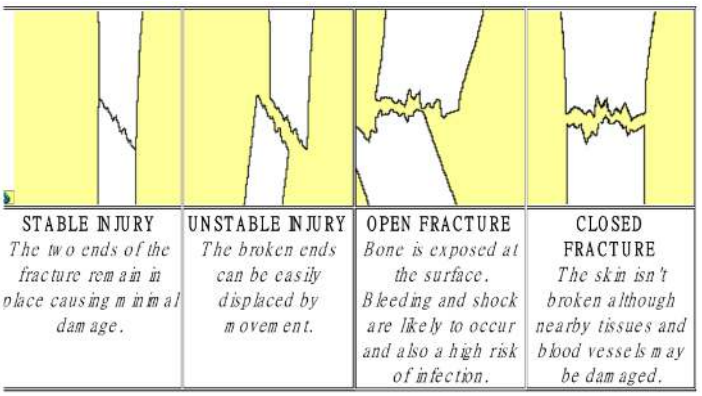
### Signs and Symptoms
- Pain & Swelling
- Tenderness and discomfort when weight bearing

### Management R.I.C.E.R.
- **R**est: reduce movement.
- **I**ce: ice pack for the pain and swelling.
- **C**ompression: bandage to support the injury.
- **E**levation: Elevate the area to restrict blood flow to help reduce swelling and pain.
- **R**eferral – Doctor

## Fractures and Dislocations

### Signs and Symptoms
- Pain, deformity, swelling, bruising
- Possible bone sticking out

### Treatment
- Control external bleeds
- Support in the most comfortable position
- Immobilize to reduce further injury and pain
- Call 000




If in doubt about the severity of an injury always treat as a fracture

### Dislocation
Do not attempt to put the dislocated body part back into place. Leave that for the ambulance or medical offices.
- Call 000
- Place casualty in a position they are most comfortable in
- Reassure the casualty

# Burns

(In line with ANZCOR Guideline 9.1.3)

## Burns Applies to adult, child, and infant casualties.

Relates to assistance by:

- Bystanders
- First aiders
- First aid providers

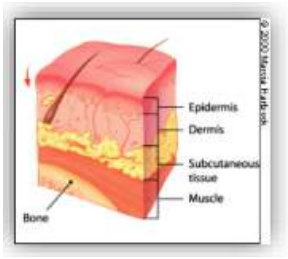
## Burn Definition

A burn is an injury caused by heat, cold, electricity, chemicals, gases, friction and radiation (including sunlight). A significant burn for the purpose of this document includes:

- burns greater than 10% of total body surface area (TBSA)
- burns of special areas—face, hands, feet, genitalia, perineum, and major joints
- full-thickness burns greater than 5% of TBSA
- electrical burns
- chemical burns
- burns with an associated inhalation injury
- circumferential burns of the limbs or chest
- burns in the very young or very old
- burns in people with pre-existing medical disorders that could complicate management, prolong recovery, or increase mortality
- burns with associated trauma.

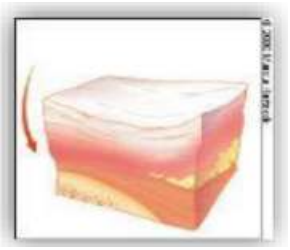
**All infants and children with burns should be medically assessed.**

Superficial Burn




Partial thickness burn

Full thickness burn



***AIMS - The aims of first aid treatment of burns should be to stop the burning process, cool the burn and cover the burn. This will provide pain relief and minimise tissue loss.***

## Heat/Thermal/Contact Burns

- These include flame, scald, blast (hot gas), inhalation injury and direct heat contact.
- **IMMEDIATELY** cool burns with cool running tap water for 20 minutes.
- If possible, remove all rings, watches, jewellery or other constricting items from the affected area without causing further tissue damage.
- Remove wet, non-adherent clothing as clothing soaked with hot liquids retains heat.
- Cover the burnt area with a loose and light non-stick dressing, preferably clean, dry, lint-free (non- fluffy) material e.g. plastic cling film.
- Cover unburnt areas and keep the rest of the casualty warm to reduce the risk of hypothermia.
- Where feasible elevate burnt limbs to minimise swelling.

**DO NOT** Peel off adherent clothing or burning substances
**DO NOT** Use ice or ice water to cool the burn as further tissue damage may result
**DO NOT** Break blisters
**DO NOT** Apply lotions, ointments, creams or powders other than hydrogel

## Minor burns

Cool with tap water for 20 minutes.

## Heat/thermal burns

These include flame, scal**d, blast (hot gas), inhalation injury and direct heat contact.**

## Flame

IMMEDIATELY run cool tap water directly onto the burn for at least 20 minutes to reduce further tissue damage and to help relieve pain.

## Scald

IMMEDIATELY run cool tap water directly onto the burn for at least 20 minutes
Keep the rest of the casualty warm; remove wet clothing and cover unburnt areas.
If cool water is not available, remove all wet, non-adherent clothing immediately because clothing soaked with hot liquids retains heat.

## Inhalation Burn

Always assume inhalation injury if there are burns to the face, nasal hairs, eyebrows or eyelashes, or if there is evidence of carbon deposits in the nose or mouth. Coughing of black particles in sputum, hoarse voice and/or breathing difficulties may indicate damage to the airway.

An inhalation burn should be suspected when an individual is trapped in an enclosed space for some time with hot or toxic gas, steam or fumes produced by a fire, chemicals etc. An inhalation injury may result from irritant gases such as ammonia, formaldehyde, chloramines, chlorine, nitrogen dioxide and phosgene. These agents produce a chemical burn and an inflammatory response.

Do not assume the burn casualty is stable following an inhalation injury simply because the casualty is breathing, talking and able to get up. Some agents produce delayed pulmonary inflammation which may develop up to 24 hours later.

- Remove to fresh air.
- Assess and manage the airway (ANZCOR Guideline 4).
- Give oxygen if available and trained to do so, following The Use of Oxygen in Emergencies
- Call for an ambulance.

## Facial burns

- Assume anyone who has a facial burn also has an Inhalation Burn.
- Burnt airways swell and cause airway obstructions.

## Electrical Burns

Electrical burns, including lightning strikes, are often associated with other injuries including involvement of the cardiac and respiratory systems, loss of consciousness and trauma. The priorities in the management of the electric shock casualty are to:

- Isolate/turn off the power supply without touching the casualty
- Commence cardiopulmonary resuscitation if required following the Basic Life Support Flow Chart
- Cool burns if safe to do so, with cool running water for 20 minutes
- Give oxygen if available and trained to do so, following The Use of Oxygen in Emergencies
- Call an ambulance.

Lightning may cause cardiac arrest.

- Commence cardiopulmonary resuscitation if required following the Basic Life Support Flow Chart.

## Radiation Burns

Radiation burns may be caused by solar ultraviolet radiation (sunburn), welder's arc, lasers, industrial microwave equipment and nuclear radiation.

- Cover radiation burns with a clean, dry dressing to prevent infection.

## Chemical Burns

Government regulations on hazardous substances and work, health and safety require the manufacturer or importer of a hazardous chemical to prepare a safety data sheet (SDS) for the chemical. A supplier must provide an SDS to a workplace at the time of first supply or upon request. These SDS's provide first aid information specific to each chemical and include information relevant to eye contact, skin contact, inhalation and ingestion.
The aim of first aid for chemical burns is not to cool the burn but to dilute the chemical.

- Avoid contact with any chemical or contaminated material, using appropriate personal protection equipment.
- Remove the casualty to a safe area.
- Remove the chemical and any contaminated clothing and jewellery as soon as practical.
- Brush powdered chemicals from the skin.
- Without spreading the chemical to unaffected areas, IMMEDIATELY run cool running water directly onto the area for one hour or until the stinging stops.
- Apply a non-adherent dressing even if no burn mark is obvious.
- If a chemical enters the eye, open and flush the affected eye(s) thoroughly with water (CoSTR 2015: weak

recommendation/very low-quality evidence)1 for as long as tolerated and refer the casualty for urgent medical attention. If only one eye is affected then flush with the head positioned so as the affected eye is down to avoid the spread of the chemical to the unaffected eye. The flushing of the eye is more important than immediate transfer for medical care.

- Refer to instructions on the container for further specific treatment.
- If available, in hard copy or on the internet, refer to Safety Data Sheets (SDS) for specific treatment.
- Call the Poisons Information Centre for further advice **13 11 26.**

**DO NOT** attempt to neutralise either acid or alkali burns, because this will increase heat generation which may cause more damage.
**DO NOT** apply cling wrap or hydrogel dressings to chemical burns.

# Head Injury

(In line with ANZCOR Guideline 9.1.4)

## Applies to adult, child, and infant casualties.

Relates to assistance by:

- Bystanders
- first aiders
- first aid providers

## Head Injury Introduction

Head injury may be caused by a number of mechanisms including falls, assaults, motor vehicle crashes, sporting injuries and, less commonly, penetrating injuries. A casualty may sustain a significant head injury without loss of consciousness or loss of memory (amnesia). Therefore, loss of consciousness or memory loss should not be used to define the severity of a head injury or to guide management.The initial first aid for a casualty with head injury includes assessing and managing the airway and breathing, whilst caring for the neck until expert help arrives.

## Head Injury Recognition

A brain injury should be suspected if the casualty has a reported or witnessed injury, has signs of injury to the head or face such as bruises or bleeding, or is found in a confused or unconscious state. A casualty may have a brain injury without external signs of injury to the head or face.

Serious problems may not be obvious for several hours after the initial injury.

**3. Management**

- **Call an ambulance** if there has been a loss of consciousness or altered consciousness at any time, no matter how brief.
- A casualty who has sustained a head injury, whether or not there has been loss of consciousness or altered consciousness, should be assessed by a healthcare professional.
- Check for response: an unconscious casualty should be managed according to ANZCOR Guideline 3.
- Ensure that the airway is clear (ANZCOR Guideline 4).
- Protect the neck whilst maintaining a clear airway (ANZCOR Guideline 9.1.6).
- Identify and control any significant bleeding with direct pressure if possible

All casualties who appear to have suffered a head injury (including a minor head injury) should be assessed by a health care professional before continuing with sport or other activity.

If the casualty is unresponsive and not breathing normally, commence resuscitation following the Basic Life Support Flowchart.

## Harness Suspension Trauma

(In line with ANZCOR Guideline 9.1.5)

**INTRODUCTION**

Suspension trauma, or orthostatic shock, has been reported to affect casualties who are suspended within a body harness for a prolonged period (5 to 30 minutes).

It presents with the development of a range of symptoms which may result in unconsciousness or death and is thought to occur as a result of low blood pressure secondary to blood pooling in the legs, pelvis and abdomen of casualties who are suspended and motionless.

**RECOGNITION**

The signs and symptoms of suspension trauma are the same as those of shock. Suspension trauma should be considered where the casualty has been suspended by a harness for a prolonged period, and are exhibiting any of the following:

- Faintness
- Breathlessness
- Sweating
- Paleness
- Nausea
- Dizziness
- Low blood pressure
- Unconsciousness

**MANAGEMENT**

- Call for an ambulance (Dial Triple Zero - 000)
- If unconscious, manage as per ARC Basic Life Support flow chart (Guideline 8)
- Rest the conscious casualty in a position of comfort, ideally lying down, and provide reassurance
- Loosen or remove the harness
- Administer oxygen if available
- Look for and manage associated injuries in all casualties, but particularly casualties who may have fallen or been electrocuted.
- Monitor the signs of life at frequent intervals

Some agencies recommend that rescuers maintain casualties in a sitting position and avoid laying them flat for 30 minutes. There is no evidence to support this practice as a treatment of suspension trauma and it may be harmful.

**Care of the airway takes precedence over any injury.**

## Management of Suspected Spinal Injury

(In line with ANZCOR Guideline 9.1.6)

**Applies to adult, child, and infant casualties.**

Relates to assistance by:

- Bystanders
- First aiders
- First aid providers
- This guideline is equally applicable to healthcare professionals working in the pre-hospital setting.

### 1. Introduction

The spine is made up of 33 separate bones, known as vertebrae, extending from the base of the skull to the coccyx (tailbone). Each vertebra surrounds and protects the spinal cord (nerve tissue).

Fractures or dislocations to the vertebral bones may result in injury to the spinal cord. The direct mechanical injury from the traumatic impact can compress or sever the nerve tissue. This is followed by a secondary injury caused by ongoing bleeding into the spinal cord as well as continued swelling at the injured site and surrounding area.

The possibility of spinal injury must be considered in the overall management of all trauma casualties. The risk of worsening the spinal injury in the prehospital period is probably less than previously thought, yet to minimise the extent of the secondary injury, caution must be taken when moving a casualty with a suspected spinal injury.

Spinal injuries can occur in the following regions of the spine:

- the neck (cervical spine)
- the back of the chest (thoracic spine)
- the lower back (lumbar spine).

The cervical spine is most vulnerable to injury, which must be suspected in any casualty with injuries above the shoulders. More than half of spinal injuries occur in the cervical region. Suspected spinal injuries of the neck, particularly if the casualty is unconscious, pose a dilemma for the rescuer because correct principles of airway management often cause some movement of the cervical spine.

### 2. Recognition

The most common causes of spinal cord injury are:

- A motor vehicle, motorcycle or bicycle incident as an occupant, rider, or pedestrian
- An industrial accident (i.e. Workplace)
- A dive or jump into shallow water or water with obstacles or being "dumped" in the surf
- A sporting accident (e.g. Rugby, falling from a horse)
- A fall from greater than a standing height (e.g. Ladder, roof)
- Falls in the elderly population
- A significant blow to the head
- A severe penetrating wound (e.g. Gunshot)

The symptoms and signs of a spinal injury depend on two factors: firstly the location of the injury and secondly, the extent of the injury – whether there is just bone injury or associated spinal cord injury, and whether the spinal cord injury is partial or complete. It will be difficult to elicit symptoms and signs in casualties with an altered conscious state.

### 2.1 Symptoms

Symptoms of spinal injury include:

- Pain in the injured region
- Tingling, numbness in the limbs and area below the injury
- Weakness or inability to move the limbs (paralysis)
- Nausea
- Headache or dizziness
- Altered or absent skin sensation.

### 2.2 Signs

Signs of spinal injury include:

- Head or neck in an abnormal position
- Signs of an associated head injury
- Altered conscious state
- Breathing difficulties
- Shock
- Change in muscle tone, either flaccid or stiff
- Loss of function in limbs
- Loss of bladder or bowel control
- Priapism (erection in males).

## 3. Management

The priorities of management of a suspected spinal injury are:

- calling for an ambulance
- management of airway, breathing and circulation
- spinal care

An awareness of the potential spinal injury and careful casualty handling, with attention to spinal alignment, is the key to harm minimisation.

### 3.1 The Conscious casualty

Tell the casualty to remain still but do not physically restrain if unco-operative. Those with significant spinal pain will likely have muscle spasm, which acts to splint their injury.

**Keep the casualty comfortable until help arrives.**

If it is necessary to move the casualty from danger (e.g. out of the water, off the road), care must be taken to support the injured area and minimise movement of the spine in any direction. Ideally, only first aid providers or health care professionals trained in the management of spinal injuries, aided by specific equipment, should move the casualty.

### 3.2 The Unconscious Casualty

Airway management takes precedence over any suspected spinal injury.

It is acceptable to gently move the head into a neutral position to obtain a clear airway.

If the casualty is breathing but remains unconscious, they should be placed in the recovery position.

**The casualty should be handled gently with no twisting.**

Aim to maintain spinal alignment of the head and neck with the torso, both during the turn and afterwards.

In casualties needing airway opening, use manoeuvres which are least likely to result in movement of the cervical spine. Jaw thrust and chin lift should be tried before head tilt.

## 4. Spinal Immobilisation Techniques and Devices

The clinical importance of prehospital immobilisation in spinal trauma remains unproven. There have been no randomised controlled trials to study immobilisation techniques or devices on trauma casualties with suspected spinal cord injury. All existing studies have been retrospective or on healthy volunteers, manikins or cadavers.

Prehospital spinal immobilisation has never been shown to affect the outcome and the estimates in the literature regarding the incidence of neurological deterioration due to inadequate immobilisation may be exaggerated. Spinal immobilisation can expose casualties to the risks associated with specific devices and the time taken in application leads to delays in transport time.

### 4.1 Cervical Collars

The use of semi-rigid (SR) cervical collars by first aid providers are not recommended
The potential adverse effects of SR cervical collars increase with duration of use and include:

- Unnecessary movement of the head and neck with the sizing and fitting of the collar
- Discomfort and pain
- Restricted mouth opening and difficulty swallowing

- Airway compromise should allow the casualty vomit
- Pressure on neck veins raising intracranial pressure (harmful to head-injured casualties)
- Hiding potential life-threatening conditions

### 4.2 Spinal Boards

First aiders can use rigid backboards placed under the casualty should it be necessary to move the casualty.
The benefits of stabilising the head will be limited unless the motion of the trunk is also controlled effectively during transport.

Casualties should not be left on rigid spinal boards.

Healthy subjects left on spine boards develop pain in the neck, back of the head, shoulder blades and lower back.

The same areas are at risk of pressure necrosis.

Conscious casualties may attempt to move around to improve comfort, potentially worsening their injury.
Paralysed or unconscious casualties are at higher risks of development of pressure necrosis due to their lack of pain sensation.

Strapping has been shown to restrict breathing and should be loosened if compromising the casualty.

Casualties may be more comfortable on a padded spine board, air mattress or bead-filled vacuum mattress; devices used by some ambulance services.

### 4.3 Log Roll

The log roll is a maneuver performed by a trained team, to roll a casualty from a supine position onto their side, and then flat again, so as to examine the back and/or to place or remove a spine board.

### 4.4 Children

After road traffic accidents, conscious infants should be left in their rigid seat or capsule until assessed by ambulance personnel.

If possible, remove the infant seat or capsule from the car with the infant/child in it.

Children under eight years of age may require padding under their shoulders (approximately 2.5cm) for neutral spinal alignment.

## Emergency Management of the Crush Casualty

(In line with ANZCOR Guideline 9.1.7)

**1. Introduction**

Crush injuries may result from a variety of situations, including vehicle entrapment, falling debris, industrial accident or by prolonged pressure to a part of the body due to their body weight in an immobile casualty

Crush syndrome refers to the multiple problems that may subsequently develop, most commonly as a result of crush injuries to the limbs, particularly the legs.

Crush syndrome results from disruption of the body's chemistry and can result in kidney, heart and other problems. The likelihood of developing acute crush syndrome is directly related to the compression time; therefore, casualties should be released as quickly as possible, irrespective of how long they have been trapped.

**MANAGEMENT**

Ensure the scene is safe, and that there is no risk of injury to the rescuer or bystanders.

Call an ambulance,

If it is safe and physically possible, all crushing forces should be removed from the casualty as soon as possible, and control any external bleeding.

A casualty with a crush injury may not complain of pain, and there may be no external signs of injury. All casualties who have been subjected to crush injury, including their own body weight, should be taken to hospital for an immediate investigation

Keep the casualty warm, treat any bleeding. (ARC Guideline 9.1.1)

Continue to monitor the casualty's condition. If the casualty becomes unresponsive and is not breathing normally, follow Australian Resuscitation Council and New Zealand Resuscitation Council Basic Life Support Flowchart if possible.

**DO NOT Leave the casualty except if necessary to call an ambulance**
**DO NOT Use a tourniquet for the first aid management of a crush injury.**

The crushing force applied to the head, neck, chest or abdomen can cause death from breathing failure or heart failure so must be removed promptly.

**Although the casualty may appear to be alert and not unduly distressed, severe and irreversible damage may have been sustained and the casualty's condition may deteriorate**

## Heart Attack

(In line with ANZCOR Guideline 9.2.1)

**Applies adult casualties**

Relates to assistance by:

- Bystanders
- first aiders
- first aid providers

### 1. Introduction

A person experiences a heart attack when there is a sudden partial or complete blockage of one of the coronary arteries that supply the heart muscle.

As a result of the interruption to the blood supply, there is an immediate risk of life-threatening changes to the heart rhythm.

If not corrected quickly, there is also a risk of serious, permanent heart muscle damage. To reduce the chance of sudden death from a heart attack, urgent medical care is required:
**"Every minute counts!"**

A heart attack is different from but may lead to, cardiac arrest. Cardiac arrest is the cessation of heart action.

Survival after a heart attack can be improved by current treatments and clot-dissolving medications that clear the blocked artery, restore blood supply to the heart muscle and limit damage to the heart.

These therapies are most effective if administered as soon as possible following the onset of symptoms with these benefits declining with delays in treatment.

**You and your heart**
From the heart foundation http://www.heartfoundation.org.au

The heart is a beating muscle that pumps blood continually to the rest of the body via a network of vessels. The heart can beat up to 100,000 times a day, which equates to over three billion heartbeats during an average lifetime.

**Heart Attack**
A heart attack happens when there is a sudden blockage to an artery that supplies blood to an area of your heart, and your heart goes into Ventricular fibrillation.

Ventricular fibrillation is a condition in which there is an uncoordinated contraction of the cardiac muscle of the ventricles in the heart, making them quiver rather than contract properly. Ventricular fibrillation is the most commonly identified arrhythmia in cardiac arrest casualties.

Your heart is a muscular pump that needs a continuous supply of oxygen. It gets oxygen from your blood, which flows to the heart muscle through arteries on its surface. These arteries are called coronary arteries. A heart attack happens when there is a sudden complete blockage of an artery that supplies blood to an area of your heart. As a result, some of your heart muscle begins to die. Without early medical treatment, this damage can be permanent.

A heart attack is sometimes referred to as a myocardial infarction (MI), acute myocardial infarction, coronary occlusion or coronary thrombosis.

## 2. Recognition

For some casualties, sudden cardiac arrest may occur as the first sign of heart attack – however most experience some warning signs

- A heart attack can occur in a casualty without chest pain or discomfort as one of their symptoms.
- The most common symptom of a heart attack in a casualty without chest pain is shortness of breath
- A casualty who experiences a heart attack may pass off their symptoms as 'just indigestion'.

### 2.1 Warning signs

If the warning signs are severe, get worse quickly, or last longer than 10 minutes, **act immediately**. The casualty may experience one or a combination of these symptoms:

- Pain or discomfort
- Pale skin
- Shortness of breath
- Nausea or vomiting
- Sweating
- Feeling dizzy or light-headed.

Discomfort or pain in the centre of the chest may start suddenly, or come on slowly over minutes. It may be described as tightness, heaviness, fullness or squeezing.
The pain may be severe, moderate or mild. The pain may be limited to or spread to, the neck, throat, jaw, either or both shoulders, the back, either or both arms and into the wrists and hands.

Atypical chest pain is defined as pain that does not have a heaviness or squeezing sensation (typical angina symptoms), precipitating factors (e.g., exertion), or usual location.

Some people are more likely to describe atypical or minimal symptoms and include:

- The elderly;
- Women;
- Persons with diabetes;
- Australian indigenous population and māori and pacific island people.

These people should seek an urgent assessment by a health care professional if they have any warning signs of heart attack, no matter how mild.

## 3. Management

- Encourage the casualty to stop what they are doing and to rest in a comfortable position.
- If the casualty has been prescribed medication such as a tablet or oral spray to treat episodes of chest pain or discomfort associated with angina, assist them to take this as they have been directed.
- Call an ambulance if symptoms are severe, get worse quickly or last longer than 10 minutes.
- Stay with the casualty until the ambulance or on-site resuscitation team arrives.
- Give aspirin (300 mg). Dissolvable aspirin is preferred. Only withhold if the casualty is known to be anaphylactic (allergic) to aspirin.
- Administer oxygen if there are obvious signs of shortness of breath and you are trained to do so, following the use of oxygen in emergencies (anzcor guideline 14.2).
- If practical and resources allow, locate the closest AED and bring it to the casualty.
- If the casualty is unresponsive and not breathing normally, commence resuscitation following the Basic Life Support Flowchart.

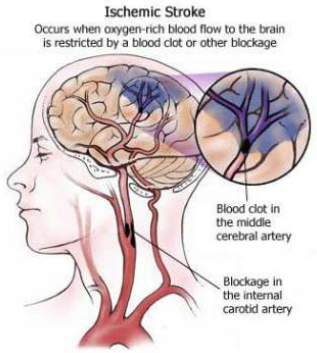
## Stroke

(In line with ANZCOR Guideline 9.2.2)

**Applies to adult and child casualties**

Relates to assistance by:

- Bystanders
- first aiders
- first aid providers




### 1. Introduction

**Stroke (previously known as a cerebrovascular accident)** is the second most common cause of death after heart disease

A stroke **occurs when the supply of blood to part of the brain is suddenly disrupted** or when spontaneous bleeding from a blood vessel within the skull occurs.

Approximately 80% of strokes are caused by an acute blockage of a blood vessel supplying part of the brain. Stroke is a medical emergency.

When an interruption causes a stroke to the blood supply to a part of the brain, that area of the brain is damaged and may die. The surrounding brain tissue is also affected and is at risk of dying.

However, if the blockage can be rapidly cleared and blood supply restored, the amount of damage to brain tissue can be significantly reduced. Rapid recognition, protection and support of the airway, breathing and circulation, and rapid access to definitive stroke care can all contribute to reducing deaths and long term damage from stroke.

### 2. Recognition

A sudden blockage of blood flow to an area of the brain, or bleeding, will produce symptoms of a stroke. Symptoms may seem to improve but should still be considered as a stroke.

First aid providers can use stroke assessment systems such as **FAST** for individuals with suspected acute stroke. FAST is a simple way of remembering the signs of a stroke.

**F** Facial weakness - can the person smile? Has their mouth or eye drooped?
**A** Arm weakness - can the person raise both arms?
**S** Speech difficulty - can the person speak clearly and understand what you say?
**T** Time to act fast – seek medical attention immediately – Call for an ambulance.

Other common symptoms of strokes include:

- Numbness of the face, arm or leg on either or both sides of the body
- Difficulty swallowing
- Dizziness, loss of balance or an unexplained fall
- Loss of vision, sudden blurred or decreased vision in one or both eyes
- Headache, usually severe and of abrupt onset or unexplained change in the pattern of headaches
- Drowsiness
- Confusion
- Reduced level of consciousness.

Symptoms of a stroke may also be caused by other conditions such as epilepsy, migraine or diabetes with low blood sugar. If trained to check a blood sugar level, this can improve the accuracy of stroke diagnosis when used in conjunction with a stroke assessment tool.

When there is doubt overdiagnosis, the casualty should be managed as having a stroke until proven otherwise.

A casualty with the symptoms of a stroke should be transported by ambulance because paramedics can start the management of stroke and make sure the casualty is taken to the most appropriate hospital for specialist stroke management. Paramedics can also notify the receiving hospital, reducing time to the start of treatment.

### 3. Management

- Call an ambulance for any casualty who has shown signs of a stroke, no matter how brief or if symptoms have resolved.
- Do not give anything to eat or drink.
- Administer oxygen if available and trained to do so. (If a pulse oximeter is available, oxygen should only be administered to casualties with oxygen saturation < 94%.
- Provide reassurance.
- If the casualty is unconscious, but breathing, lay the casualty on the side and ensure the airway is clear.
- If the casualty is unresponsive and not breathing normally, commence resuscitation following the Basic Life Support Flowchart.

## Shock

(In line with ANZCOR Guideline 9.2.3)

**Applies to adult, child, and infant casualties.**

Relates to assistance by:

Bystanders
first aiders
first aid providers

### 1. Introduction

Shock is a loss of effective circulation resulting in impaired tissue oxygen and nutrient delivery and causes life-threatening organ failure.

### 2. Causes

Some conditions which may cause shock include:

### 2.1 Loss of circulating blood volume (hypovolemic shock), e.g.:

- Severe bleeding (internal and / or external)
- Major or multiple fractures or major trauma
- Severe burns or scalds
- Severe diarrhoea and vomiting
- Severe sweating and dehydration.

### 2.2 Cardiac causes (cardiogenic shock), e.g.:

- Heart attack
- Dysrhythmias (abnormal heart rhythm).

### 2.3 Abnormal dilation of blood vessels (distributive shock), e.g.:

- Severe infection
- Allergic reactions
- Severe brain / spinal injuries
- Fainting.

### 2.4 Blockage of blood flow in or out of the heart (obstructive shock), e.g.:

- Tension pneumothorax
- Cardiac tamponade
- Pulmonary embolus
- in pregnancy, compression of large abdominal blood vessels by the uterus.

### 3. Recognition

The symptoms, signs and rate of onset of shock will vary widely depending on the nature and severity of the underlying cause. Shock is a condition that may be difficult to identify.

### 3.1 Symptoms may include:

- Dizziness
- Thirst

- Anxiety
- Restlessness
- Nausea
- Breathlessness
- Feeling cold.

### 3.2 Signs may include:

- Collapse
- Rapid breathing
- Rapid pulse which may become weak or slow
- Cool, sweaty skin that may appear pale
- Confusion or agitation
- Decreased or deteriorating level of consciousness
- Vomiting.

## 4. Management

- Place the casualty in the supine position. If the casualty is unconscious, place the casualty on side (Guideline 3).
- Control any bleeding promptly (Guideline 9.1.1).
- **Call an ambulance.**
- Administer treatments relevant to the cause of the shock.
- Administer oxygen if available and trained to do so (Guideline 10.4).
- Maintain body temperature (prevent hypothermia).
- Reassure and constantly re-check the casualty's condition for any change.
- If the casualty is unresponsive and not breathing normally, follow the Basic Life Support Flowchart.

### 4.1 Positioning of casualties with shock

Place individuals with shock in the supine position as opposed to the upright position.

For individuals with shock who are in the supine position and with no evidence of trauma, the use of PLR (passive leg raise) may provide a transient (less than 7 minutes) improvement.

## Seizures

(In line with ANZCOR Guideline 9.2.4)

### INTRODUCTION

A seizure is a sign of abnormal brain activity, which can be caused by many problems. Up to 10% of the population is likely to experience a seizure at some time in their life.2 A seizure may occur when the normal pattern of the electrical activity of the brain is disrupted. This can cause changes in sensation, awareness and behaviour, or sometimes convulsions, muscle spasms or loss of consciousness. Seizures vary greatly and most are over in less than 5 minutes. Not all seizures are considered epilepsy.

A seizure may be associated with:

- Lack of oxygen (hypoxia);
- The onset of cardiac arrest;
- Medical conditions affecting the brain, e.g. Low blood sugar, low blood pressure, head injury, neurological diseases, epilepsy;
- Trauma to the head;
- Some poisons and drugs;
- Withdrawal from alcohol and other substances of dependence;
- Fever in children under six years.

### RECOGNITION


Seizures may affect all or part of the body. Seizure activity may take many forms, and symptoms may include:

- A sudden spasm of muscles producing rigidity. If standing the casualty will fall down;
- Jerking movements of the head, arms and legs;
- shallow breathing or breathing may stop temporarily;
- Dribbling from the mouth; the tongue may be bitten leading to bleeding;
- Incontinence of urine and/or faeces;
- Changes in the conscious state from being fully alert to confused, drowsy, or loss of consciousness;
- Changes in behaviour where the casualty may make repetitive actions like fiddling with their clothes.

Generalised seizures usually involve the entire body and cause a loss or marked alteration in consciousness. Some generalised seizures result in life-threatening problems with airway or breathing, or risk of trauma from muscle spasms or loss of normal control of posture and movement.

During partial seizures, usually, only part of the body is affected and the person regains consciousness but may be frightened or confused.

Febrile convulsions are associated with fever and usually resolve without treatment.

They occur in approximately 3% of children at some stage between the age of six months and six years.

Children who suffer from a febrile convulsion are not at increased risk of epilepsy as a result of experiencing febrile convulsions.

### MANAGEMENT OF A SEIZURE

If the casualty is unresponsive and not breathing normally, follow Australian Resuscitation Council and New Zealand Resuscitation Council Basic Life Support Flowchart.

If the casualty is unconscious and actively seizing, the rescuer should:

- Follow the casualty's seizure management plan, if there is one in place;
- Manage the casualty according to (arc guideline 3);

- Call an ambulance.

The rescuer should:
- Manage the casualty as for any unconscious person (ARC Guideline 3);
- Remove the casualty from danger or remove any harmful objects which might cause secondary injury to the casualty;
- Note the time the seizure starts;
- Protect the head;
- Avoid restraining the casualty during the seizure unless this is essential to avoid injury;
- Lay the casualty down and turn the casualty on the side when practical;
- Maintain an airway;
- Reassure the casualty who may be dazed, confused or drowsy;
- Call an ambulance;
- Frequently reassess the casualty.

**Do not**
- Put a child in a bath (to lower their temperature) during a convulsion as this is dangerous;
- Do not force the casualty's mouth open nor attempt to insert any object into the mouth.
- A seizure in water is a life-threatening situation. If the seizure occurs in water:
- Support the casualty in the water with the head tilted so the face is out of the water;
- Remove the casualty from the water as soon it is safe to do so;
- Call an ambulance;
- If the casualty is unresponsive and not breathing normally, follow Australian Resuscitation Council and New Zealand Resuscitation Council Basic.

## Asthma

(In line with ANZCOR Guideline 9.2.5)

**Applies to adult and child casualties.**

Relates to assistance by:
- Bystanders
- first aiders
- first aid providers

### 1. Introduction

Asthma is a disorder of the smaller airways of the lungs. People with asthma have sensitive airways which can narrow when exposed to certain 'triggers', leading to difficulty in breathing.
Three main factors cause the airways to narrow:

1. The muscle around the airway tightens (bronchoconstriction).
2. The inside lining of the airways becomes swollen (inflammation).
3. Extra mucus (sticky fluid) may be produced.

In asthma, symptoms are made worse by 'triggers'. Every person's asthma is different, and not all people will have the same triggers.

Triggers can include:
- Respiratory infection
- Irritants (e.g. cigarette, woodfire or bushfire smoke, occasionally perfumed or cleaning products)
- Inhaled allergens (e.g. dust mite, mould spores, animal danders, grass/tree pollen)
- Cold air, exercise, laughing/crying
- Non-steroidal anti-inflammatory agents (e.g. aspirin, ibuprofen)
- Sulfite additives (food preservatives) – more common in those with poorly controlled asthma
- *Food allergy – while usually accompanied by other symptoms such as rash or vomiting, isolated severe asthma may occur as the only presentation and may result in death
- Food colours and flavours
- Emotional triggers, such as stress.

**Most fatal cases of food-induced anaphylaxis occur in those with asthma.**

In casualties with asthma known to be at risk from anaphylaxis, if it is uncertain whether the casualty is suffering from asthma or anaphylaxis, it is appropriate to administer an adrenaline autoinjector first, followed by asthma reliever medication. No harm is likely to occur by doing so in a casualty having asthma without anaphylaxis.

## 2. Recognition

The following symptoms and signs can recognise asthma:

- A dry, irritating, persistent cough, particularly at night, early morning, with exercise or activity
- Chest tightness
- Shortness of breath
- Wheeze (high pitched whistling sound during breathing).

### 2.1 Symptoms and signs of a severe asthma attack include some or all of the following:

- Gasping for breath (may have little or no wheeze due to little movement of air)
- Severe chest tightness
- Inability to speak more than one or two words per breath
- Feeling distressed and anxious
- Little or no improvement after using “reliever” medication
- ‘Sucking in’ of the throat and rib muscles, use of shoulder muscles or bracing with arms to help to breathe
- Blue discolouration around the lips (can be hard to see if skin colour also changes)
- Pale and sweaty skin
- Symptoms are rapidly getting worse or using reliever more than every two hours.2

As well as the above symptoms, young children appear restless, unable to settle or become drowsy.

A child may also ‘suck’ in muscles around the ribs and may have problems eating or drinking due to shortness of breath. A child also may have severe coughing and vomiting.

An asthma attack can take anything from a few minutes to a few days to develop.

## 3. Managing an Asthma Attack

If the casualty has a personal written asthma action plan, then that plan should be followed.
If there is no action plan in place, then use the following Asthma First Aid plan.

### 3.1 Asthma First Aid Plan

**If a casualty has any signs of a severe asthma attack, call an ambulance straight away and follow the Asthma First Aid Plan while waiting for the ambulance to arrive.**

| | |
|---|---|
| 1 | Sit the person comfortably upright. Be calm and reassuring. Do not leave the person alone. |
| 2 | Without delay give four separate puffs of a “reliever”. The medication is best given one puff at a time via a spacer device. Ask the person to take four breaths from the spacer after each puff of medication.<br><br>If a spacer is not available, simply use the inhaler. Use the casualty’s own inhaler if possible. If not, use the first aid kit inhaler if available or borrow one from someone else |
| 3 | Wait four minutes. If it is little or no improvement, give another four puffs. |
| 4 | If there is still no improvement, call an ambulance immediately.<br>Keep giving four puffs every four minutes until the ambulance arrives. |

Diagrams for the use of devices **WITH SPACER**

Assemble the spacer.

Remove the inhaler cap and shake well. Place the inhaler upright into the spacer. Place the spacer mouthpiece into the casualty's mouth, between the teeth with the lips sealed around it. Press firmly on the inhaler to fire one puff into the spacer.

Ask the casualty to breathe in and out normally for four to six breaths via the spacer. Repeat this promptly until four to six puffs have been given. Remember to shake the inhaler before each puff.

**WITHOUT SPACER**

When a spacer is unavailable, shake the inhaler.

- Place the mouthpiece into the casualty's mouth, between the teeth with the lips sealed around it. Press firmly on the inhaler to administer one puff as the casualty inhales slowly and steadily. Slip the inhaler out of the casualty's mouth.
- Ask the casualty to hold their breath for four seconds or as long as comfortable. Breathe out slowly away from the inhaler.
- Repeat this promptly until four to six puffs have been given. Remember to shake the inhaler before each puff

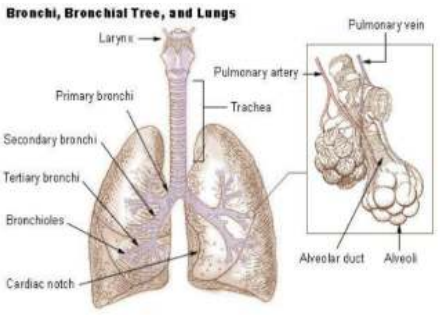
**Additional asthma information**

This information has been sourced from Asthma Australia
https://www.asthmaaustralia.org.au/qld/home

**What is Asthma?**

Asthma is a long-term lung condition. People with asthma have sensitive airways in their lungs which react to triggers, causing a 'flare-up'. In a flare-up, the muscles around the airway squeeze tight, the airways swell and become narrow, and there is more mucus. These things make it harder to breathe.

An asthma flare-up can come on slowly (over hours, days or even weeks) or very quickly (over minutes). A sudden or severe asthma flare-up is sometimes called an asthma attack.




One in ten people in Australia has asthma. It affects people of all ages. Some people get asthma when they are young; others when they are older.

Asthma cannot be cured, but for most people, it can be well controlled by following a daily management plan.

**Statistics**

**People and asthma**

1 in 10 Australians has asthma – around 2.3 million.

- It's more common in males aged 0–14, but among those aged 15 and over, asthma is more common in females.

The rate of asthma among Indigenous Australians is almost twice as high as that of non-Indigenous Australians. This is even more marked in the older adult age group.

Asthma is more common in people living in socioeconomically disadvantaged areas.

The prevalence of asthma is significantly higher in people living in inner regional areas compared with people living in major cities or outer regional and remote areas.

Only 20% of people aged 15 and over have a written asthma action plan. 41% of children (under 15) have an asthma action plan. Everyone with asthma should have a written asthma action plan.

**Cost of asthma**
$655 million was spent on asthma in 2008-9; which is 0.9% of all direct health spending on diseases.
- 50% prescription pharmaceuticals
- 30% out-of-hospital medical services
- 20% admitted casualty costs

**Impact of asthma**
There were 37,500 hospitalisations in 2012-13 where asthma was the main diagnosis (168 per 100,000 population). Children under 15 are more likely to be hospitalised with asthma (470 per 100,000 population)
than those aged 15 and over.

People with asthma are more likely to report a poor quality of life, especially those with severe or poorly controlled asthma.

34% of people report that asthma interferes with their daily living, and 21.8% of people aged 15-25 required time off work, school or study due to their asthma.

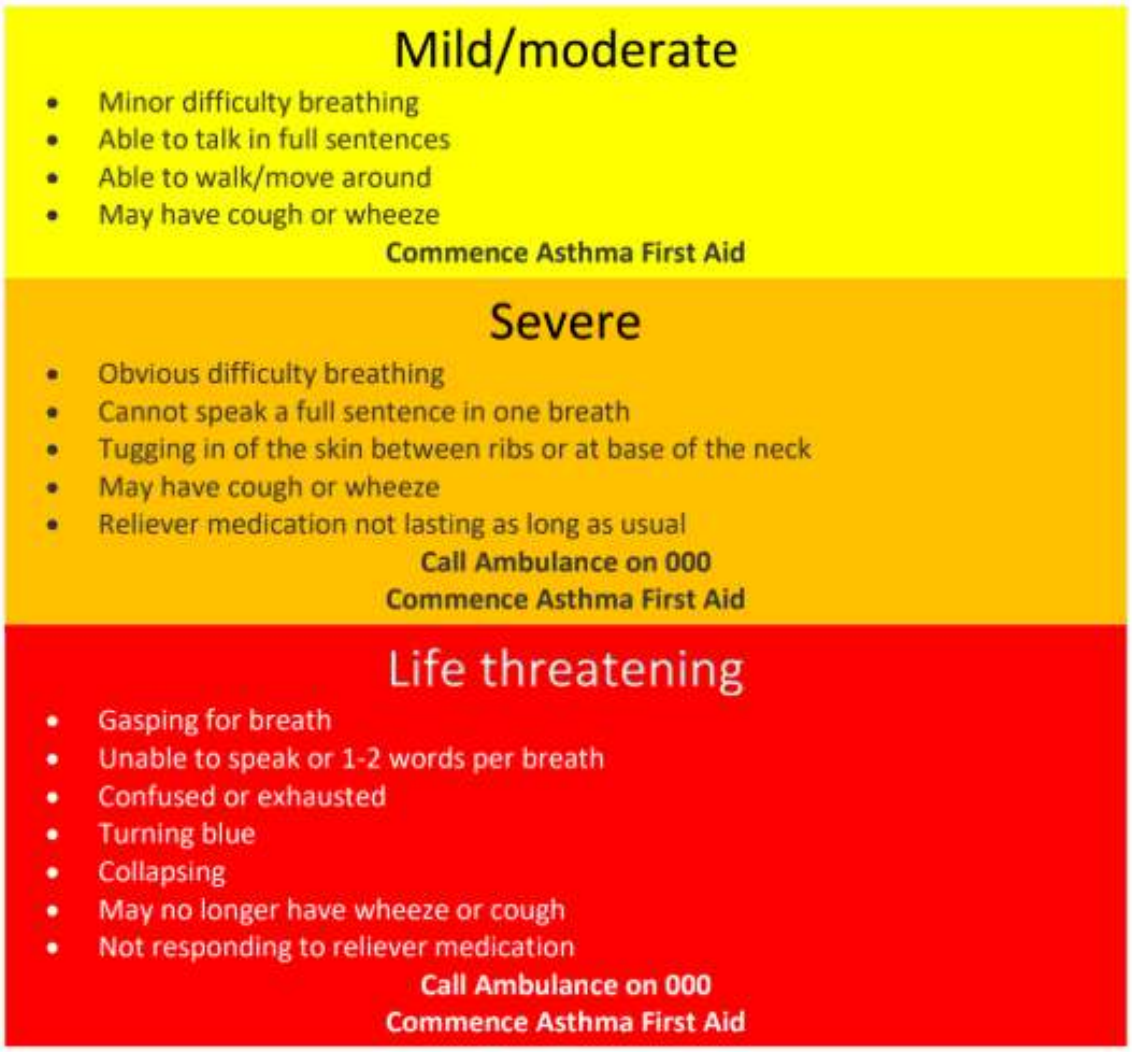
There were 394 deaths due to asthma in 2012 (0.3% of all deaths). The rate of all deaths due to asthma has remained stable since 2003, and there is a long-term declining trend in deaths due to asthma in those aged 5-34.

Asthma mortality rates are higher for people living in remote or lower socioeconomic areas, and for Indigenous Australians. From 2007-2011, the mortality rate for asthma among Indigenous Australians was 2.3 times that of non-Indigenous Australians.

**Asthma Emergency**

**RECOGNISE signs of an asthma flare-up or attack**

If you are experiencing any of these signs, start asthma first aid. Do not wait until asthma is severe.




**In children:**

- Signs of worsening asthma can be difficult to recognise
- Asthma can worsen quickly over a short period of time.
- They may complain of sore tummy or chest and be more restless
- DO NOT DELAY in starting asthma first aid

### How to respond

If you are experiencing a severe or life-threatening asthma attack, call an ambulance - Dial Triple Zero (000) and then start asthma first aid.

If you are experiencing a mild to a moderate asthma attack, start asthma first aid.

**1** **Sit the person upright**
- Be calm and reassuring
- Do not leave them alone

**2** **Give 4 separate puffs of blue/grey reliever puffer**
- **Shake** puffer
- Put 1 **puff** into the spacer
- Take **4 breaths** from the spacer

**Repeat** until **4 puffs** have been taken
**Remember: Shake, 1 puff, 4 breaths**

**3** **Wait 4 minutes**
- If there is no improvement, give **4 more separate puffs of blue/grey reliever** as above

**4** **If there is still no improvement call emergency assistance. Dial Triple Zero (000)**
- Say 'ambulance' and that someone is having an asthma attack
- Keep giving **4 separate puffs** every **4 minutes** until emergency assistance arrives


**Call emergency assistance immediately. Dial Triple Zero (000)**
- If the person is not breathing
- If the person's asthma suddenly becomes worse, or is not improving
- If the person is having an asthma attack and a reliever is not available
- If you are not sure if it's asthma
- If the person is known to have Anaphylaxis - follow their Anaphylaxis Action Plan, then give Asthma First Aid.

**Blue/grey reliever medication is unlikely to harm, even if the person does not have asthma**

## Anaphylaxis

(In line with ANZCOR Guideline 9.2.7)

**Applies to adults, children and infant casualties.**

Relates to assistance by:

- Bystanders
- first aiders
- first aid providers

### 1. Introduction

Anaphylaxis is the most severe form of allergic reaction and is potentially life-threatening. It must be treated as a medical emergency, requiring immediate treatment and urgent medical attention.

Anaphylaxis is a generalised allergic reaction, which often involves more than one body system.

A severe allergic reaction usually occurs within 20 minutes of exposure to the trigger. Severe allergic reactions may occur without prior exposure to a trigger.

It is characterised by rapidly developing airway and/or breathing and/or circulation problems usually associated with swelling, redness or itching of the skin, eyes, nose, throat or mouth.

Many substances can cause anaphylaxis, but more common causes include:

- foods (especially peanuts, tree nuts, cow's milk, eggs, wheat, seafood, fish, soy, sesame)2
- drugs (e.g. penicillin)
- venom from bites (ticks) or stings (e.g. bees, wasps or ants).

### 2. Recognition

Anaphylaxis encompasses a variety of symptoms and signs. Diagnosis is largely based on history and physical findings. Onset can range from minutes to hours of exposure to a substance.
Symptoms and signs are highly variable and may include one or more of the following:

- Difficult/noisy breathing
- wheeze or persistent cough
- Swelling of face and tongue
- Swelling/tightness in the throat
- Difficulty talking and /or hoarse voice
- Persistent dizziness/loss of consciousness and / or collapse
- Pale and floppy (young children)
- Abdominal pain and vomiting
- Hives, welts and body redness.


### 3. Management

People with diagnosed allergies should avoid all trigger agents / confirmed allergens and have a readily accessible anaphylaxis action plan and medical alert device.

Whenever possible, this information should be sought and implemented provided this does not delay emergency treatment and seeking medical assistance.

### 3.1 Emergency Treatment

The injection of adrenaline (epinephrine) is the first-line drug treatment in life-threatening anaphylaxis.

Adrenaline (epinephrine) auto-injectors are safe and effective for management of anaphylaxis. People who have had a prior episode of anaphylaxis often have prescribed medication including adrenaline (epinephrine) in the form of an auto-injector and the early administration of adrenaline (epinephrine) is the priority in the emergency treatment.

If the casualty's symptoms and signs suggest anaphylaxis, the following steps should be followed.

| |
|---|
| 1. Lay the casualty flat; do not stand or walk. If breathing is difficult, allow sitting (if able). |
| 2. Prevent further exposure to the triggering agent if possible. |
| 3. Administer adrenaline (epinephrine) via intramuscular injection preferably into lateral thigh:<br>4. • Child less than 5 years - 0.15 mg |
| 5. Older than 5 years - 0.3mg. |
| **6. Call an ambulance.** |
| 7. Administer oxygen, if available and trained to do so |
| 8. Give asthma medication for respiratory symptoms |
| 9. A second dose of adrenaline (epinephrine) should be administered by auto-injector to casualties with severe anaphylaxis whose symptoms are not relieved by the initial dose The second dose is given if there is no response 5 minutes after the initial dose. |
| 10. If allergic reaction or anaphylaxis has occurred from an insect bite or sting follow Envenomation, Tick Bites, Bee, Wasp And Ant Stings. |
| 11. If the casualty becomes unresponsive and not breathing normally, give resuscitation following the Basic Life Support Flowchart |

**Additional Anaphylaxis information**

This information has been sourced from Anaphylaxis Australia
**https://www.allergyfacts.org.au/**

### What is Allergy?

**An allergy** occurs when a person's **immune system** reacts to substances in the environment that are harmless for most people. These substances are known as **allergens** and are found in house dust mites, pets, pollen, insects, moulds, foods and some medicines.

Atopy is the genetic (inherited) tendency to develop allergic diseases. People with atopy are said to be atopic.

When atopic people are exposed to allergens they can develop an immune reaction that leads to **allergic inflammation** (redness and swelling).

Allergy a definition http://www.allergyfacts.org.au/images/pdf/what%20is%20allergy.pdf

### What is Anaphylaxis?

**ASCIA medical definition http://www.allergy.org.au/patients/about-allergy/anaphylaxis**

Anaphylaxis is the most severe form of allergic reaction and is potentially life-threatening. It must be treated as a medical emergency, requiring immediate treatment and urgent medical attention.
Anaphylaxis is a generalised allergic reaction, which often involves more than one body system (e.g. skin, respiratory, gastrointestinal and cardiovascular). A severe allergic reaction or anaphylaxis usually occurs within 20 minutes to 2 hours of exposure to the trigger and can rapidly become life-threatening.

**Do you live your life with an allergy?**

**Common triggers of severe allergies or anaphylaxis include:**

**Food**
Milk, eggs, peanuts, tree nuts, sesame, fish, shellfish, wheat and soy are the most common food triggers, which cause 90

percent of allergic reactions; however, any food can trigger anaphylaxis. It is important to understand that in some people, even very small amounts of food can cause a life-threatening reaction. Some extremely sensitive individuals can react to just the smell of particular foods being cooked (e.g. fish) or even kissing someone who has eaten the food they're allergic to.

**Bites and Stings**
Bee, wasp and jack jumper ant stings are the most common triggers of anaphylaxis to insect stings. Ticks, green ants and fire ants can also trigger anaphylaxis in susceptible individuals.

**Medication**
Medications, both over the counter and prescribed, can cause life-threatening allergic reactions. Individuals can also have anaphylactic reactions to herbal or 'alternative' medicines.

**Other**
Other triggers such as latex or exercise-induced anaphylaxis are less common. Occasionally the trigger cannot be identified, despite extensive investigation.

### Hyperventilation

(In line with ANZCOR Guideline 9.2.8)

Hyperventilation syndrome is a term used to describe the symptoms and signs resulting from over-breathing.

In this condition, the rate and depth of breathing exceed that required to maintain normal levels of carbon dioxide in the blood.

Consequently, the carbon dioxide level in the arterial blood falls, resulting in a range of signs and symptoms as below.

**Anxiety is usually present.**

**Symptoms may include:**
- Lightheadedness
- Shortness of breath
- Been unable to get enough breath in
- Chest discomfort
- A feeling of panic and impending death
- Blurred vision
- Palpitations
- A feeling of detachment and not being in full control of the body (depersonalization).

**Signs may include:**
- Rapid breathing
- Occasional deep sighing breaths
- Rapid pulse
- Alter the level of consciousness e.g. Fainting
- Hand and finger spasm (carpopedal spasm) advanced attacks. The fingers and wrists become claw-like with the thumb held stiffly across the palm

**DO NOT USE ANY BAG FOR REBREATHING**

## Diabetes

(In line with ANZCOR Guideline 9.2.9.)

Diabetes is a chronic, lifelong medical condition which occurs when the pancreas fails to produce sufficient insulin or the body develops a resistance to the action of its own insulin. Untreated, the absolute or relative lack of insulin will lead to a high blood glucose level. There are two main types of diabetes. 'Type 1 diabetes' is an auto-immune disease that often develops in childhood, and requires lifelong treatment with insulin. 'Type 2 diabetes' is more commonly recognised in adulthood, and requires a treatment combination of diet, exercise, medication, and sometimes insulin. Less commonly, 'gestational diabetes' may develop in pregnancy, and diabetes can also occur as a consequence of another disease or as a side effect of medication.

Normally our body tightly controls its blood glucose level within a 'normal' range. Having diabetes negatively interferes with this control system, and people living with diabetes need to manage their own blood glucose levels by monitoring what they eat, adjusting their insulin or medication doses, and frequently testing their own blood glucose levels.

When blood glucose levels become too high or too low, people with diabetes (and some other people without diabetes) may become unwell and need first aid, or even treatment at a medical facility.

### 2 Low blood glucose (hypoglycaemia or 'a hypo')

#### 2.1 Introduction

People with diabetes may develop low blood glucose as a result of:

- too much insulin or other blood glucose lowering medication;
- inadequate or delayed carbohydrate intake after their usual insulin or oral medication dose;
- exercise without adequate carbohydrate intake; possibly delayed for up to 12 hours or more after exercise.
- in the setting of illness; or
- excessive alcohol intake.

Competitors in ultra-marathon endurance events, who do not have diabetes, can also become energy depleted and develop low blood glucose levels requiring first aid management.

Hypoglycaemic events range from those that can be self-managed, to severe episodes, where medical help may be needed.

#### 2.2 Recognition

The brain requires a continuous supply of glucose to function normally. When blood glucose levels fall below normal levels symptoms and signs may include:

- sweating,
- pallor (pale skin), especially in young children
- a rapid pulse;
- shaking, trembling or weakness;
- hunger;
- Light headedness or dizziness;
- headache;
- mood or behavioural changes, confusion, inability to concentrate;
- slurred speech;
- being unable to follow instructions;
- unresponsive; or
- seizure

#### 2.3 Management

If a person with diabetes has a diabetes management plan then that plan should be followed. If a person with diabetes reports low blood glucose or exhibits symptoms or signs of hypoglycemia:

- Stop any exercise, rest and reassure;
- If the casualty is able to follow simple commands and swallow safely, we recommend that first aid providers administer 15-20 grams glucose tablets (4 - 5 x 4 gram glucose tablets) for treatment of symptomatic hypoglycemia
- If glucose tablets are not available, we suggest administering:
- Confectionery including:
    - jelly beans (5-20 beans depending on the brand)
    - Skittles® (20-25 candies)
    - Mentos® (5-10 mints)

- Sugary drinks or sugar-sweetened beverages (approx. 200 mL), but DO NOT administer 'diet' or 'low-cal' or 'zero' or 'sugar free' beverages;
- Fruit juices (approx. 200 mL);
- Honey or sugar (3 teaspoons);
- Glucose gels (15 g of glucose gel); and
- Monitor for improvement – resolution of symptoms would be expected within 15 minutes.

If symptoms or signs of hypoglycemia persist after 10-15 minutes, and the casualty is still able to follow simple commands and swallow safely, administer a further 4 x 4g glucose tablets or alternatives as listed above. Once recovered, give a snack with longer acting carbohydrate, for example: 1 slice of bread OR 1 glass of milk OR 1 piece of fruit OR 2-3 pieces of dried fruit OR 1 snack size tub of yoghurt (not diet or 'sugar free' yogurt). If it is a usual meal time, then eat that meal. If the casualty deteriorates, does not improve with treatment, is seizing or is unconscious, call for an ambulance.

- If the casualty is unresponsive and not breathing normally, commence resuscitation following the Basic Life Support Flowchart [ANZCOR Guideline 8].
  If the casualty is unconscious but breathing, lie the casualty on their side and ensure the airway is clear

**Insulin Pumps**
If the casualty is wearing an insulin pump, then they themselves may 'suspend' their own pump if part of a personal diabetes management plan.

First aiders should not touch any insulin pump being worn by the casualty. They should manage and provide treatment for hypoglycemia as listed above.

### 2.4 Use of glucagon to treat severe hypoglycaemia
Family members of, and carers for, people with diabetes may be trained in the use of the GlucaGen® HypoKit®. These kits contain an injection of glucagon, which works by triggering the liver to release stored glucose, resulting in raised blood glucose levels. The glucagon is administered by injection.

If trained to do so, give Glucagon in the case of a severe hypoglycemic event, when the casualty is unconscious or seizing, and/or is unable to swallow safely

## 3 High blood glucose (hyperglycaemia)
### 3.1 Introduction
Hyperglycemia means having a high blood glucose level. Common causes of hyperglycemia include inadequate levels of insulin or incorrect doses of diabetes tablet medications, infections, excess carbohydrate intake, and stressful situations. Hyperglycemia can develop over hours or days, and many people do not experience symptoms from hyperglycaemia until their blood glucose levels are extremely high. Hyperglycemia can also occur at the time of initial diagnosis of diabetes, and may go unrecognised until the casualty is clearly unwell. If untreated, the casualty gradually deteriorates, and can go into a diabetic coma.

### 3.2 Recognition
When blood glucose levels remain above normal levels symptoms and signs may include:
- excessive thirst;
- frequent urination;
- dry skin and mouth, with sunken eyes (signs of dehydration);
- recent weight loss;
- rapid pulse;
- nausea and vomiting;
- abdominal pain;
- rapid breathing;
- fruity sweet smell of acetone on the breath (similar to paint thinner or nail polish remover); and
- confusion, a deteriorating level of consciousness, or unresponsiveness.

### 3.3 Management
If a person with diabetes has a diabetes management plan then that plan should be followed. If the casualty has no management plan and has symptoms or signs of hyperglycaemia they should be assessed by a healthcare professional.
- If the casualty is unresponsive and not breathing normally, commence resuscitation following the Basic Life Support Flowchart [ANZCOR Guideline 8]
- If the casualty is unconscious but breathing, lie the casualty on their side and ensure the airway is clear

[ANZCOR Guideline 3].

## 4 Management when unsure if the blood glucose level is high or low

When unsure if the casualty has a high or low blood glucose level, the safest option is to treat as for hypoglycemia (low blood glucose level). Treatment may lead to a marked improvement if the blood glucose level is low, and is unlikely to do harm if the blood glucose level is high.

### 4.1 Use of blood glucose measuring devices (Glucometers)

If trained to do so and a glucometer is available, checking the casualty's blood glucose level will guide management, and can confirm hypoglycaemia or hyperglycaemia. Normal blood glucose concentrations are between 4.0 and 7.8 mmol/L.

A blood glucose level between 3.0 mmol/L and 4.0mmol/L is an "alert value", meaning that to prevent progression to a more serious, clinically important hypoglycaemia, it is time for a normal food intake, either a snack or meal, depending on the time of day and usual food intake habits.

Clinically important hypoglycemia is defined as a blood glucose level less than 3.0 mmol/L, where there is decreased neuro-cognitive function and evidence of increased morbidity and mortality.

Symptoms of hypoglycaemia may be mimicked by other conditions such as stroke, epilepsy, or migraine. If trained, checking blood glucose will improve the accuracy of diagnosing hypoglycemia. If blood glucose concentration is normal, and symptoms and signs of hypoglycaemia persist, consider other diagnoses.

Hyperglycemia is defined as a blood glucose level above the normal reference range. Severe hyperglycemia is defined as a blood glucose concentration greater than 15 mmol/L.

## Drowning

(In line with ANZCOR Guideline 9.3.2)

**INTRODUCTION**

Drowning is the process of experiencing respiratory impairment from submersion/immersion in liquid. Drowning outcomes are classified as death, morbidity and no morbidity – the latter two now referred to as “non-fatal drownings”.

The most important consequence of drowning is an interruption of the oxygen supply to the brain. Early rescue and resuscitation by trained first responders or first aiders at the scene offer the casualty the best chance of survival.

**POSSIBLE SEQUENCE OF EVENTS**

- Immersion of the face in the water (or other liquid). Water entering the mouth is spat out, swallowed or aspirated.
- Breath-holding, usually lasting no more than a minute.
- Vigorous breathing efforts. These may continue, even after the loss of consciousness. Some amount of water is aspirated into the airways causing coughing and sometimes laryngeal spasm, which temporarily prevents further water from entering the lungs.
- Swallowing of air and water, often in large amounts. This usually causes vomiting or regurgitation of stomach contents, which may be aspirated into the lungs.
- Respiratory impairment causes brain hypoxia, leading to unconsciousness and cessation of breathing efforts.
- The heart rate initially increases with exercise and panic. With hypoxia, the heart rate and blood pressure begin to fall, progressing finally to a cardiac arrest, requiring CPR.

**MANAGEMENT**

- Remove the casualty from the water as soon as possible but do not endanger your own safety. Throw a rope or something to provide buoyancy to the casualty. Call for help; plan and effect a safe rescue.
- In minor incidents, removal from the water is often followed by coughing and spontaneous resumption of breathing.
- In more serious incidents, assess the casualty. If unconscious or not breathing normally, commence resuscitation following the Australian Resuscitation Council and New Zealand Resuscitation Council Basic Life Support flow chart.
- Assess the casualty on the back with the head and the body at the same level, rather than in a head-down position. This decreases the likelihood of regurgitation and vomiting and is associated with increased survival.
- The casualty should not be routinely rolled onto the side to assess airway and breathing. Assessing the airway of the casualty without turning onto the side (i.e. leaving the casualty on the back or in the position in which they have been found) has the advantages of simplified teaching, taking less time to perform and avoids movement.
- The exceptions to this would be where the airway is obstructed with fluid (water or blood) or particulate matter (sand, debris, vomit). In this instance, the casualty should be promptly rolled onto the side to clear the airway. The mouth should be opened and turned slightly downwards to allow any foreign material to drain using gravity.
- Vomiting and regurgitation often occur during the resuscitation of a drowned casualty. If the casualty has been rolled to the side to clear the airway, then reassess their condition. If breathing commences, the casualty can be left on the side with an appropriate head tilt. If not breathing normally, the casualty should be promptly rolled onto the back and resuscitation recommenced as appropriate.
- Avoid delays or interruptions to CPR. Do not empty a distended stomach by applying external pressure. Do not attempt to expel or drain clear water or frothy fluid that may re-accumulate in the upper airway during resuscitation.
- Casualties who appear to have been successfully rescued and resuscitated require close monitoring to detect a relapse into cardiopulmonary arrest. This can occur in the minutes or hours following return of spontaneous circulation and breathing, due to persisting lung damage and hypoxic injury to the heart.
- Call an ambulance for all casualties of an immersion event, even if seemingly minor or the casualty appears recovered.

**NOTES**

**Oxygen**

The administration of oxygen is beneficial in the resuscitation of drowned casualties, but resuscitation efforts should not be delayed while waiting for oxygen equipment to become available.

**Medical conditions leading to sudden incapacitation in the water**

Not all water-related deaths are primary drowning. Sudden incapacitation leading to swimming failure, unconsciousness and subsequent water in the airway can occur due to heart attacks, cardiac rhythm disturbances, seizure disorders, hyperventilation, drugs and alcohol, dementia, frailty and other conditions causing loss of consciousness, e.g. low blood sugar in a person with diabetes. These conditions should be suspected in known competent swimmers found drowned unexpectedly. In some casualties, these medical conditions can be aggravated by the shock of sudden immersion in cold water.

**Spinal injuries occurring in the water**
Spinal injury occurring concurrently with drowning is rare, estimated at less than 0.5% but should be suspected if the casualty dived into shallow water, is found in an area of dumping surf, rocks or after an accident involving a boat or other aquatic craft. Remove the casualty from the water taking care to keep the airway clear of wave splash while minimising movement of the spine in any direction. Airway management takes precedence over a suspected spinal injury and an unconscious, the non-breathing casualty, should be removed immediately from the water by whatever means possible.

**Concurrent hypothermia**
No evidence drowning in colder water has an increased survival rate compared with warmer water, yet the literature yields many case reports of successful outcomes of casualties rescued from icy waters, even after prolonged resuscitation efforts. Hypothermia is more likely due to prolonged immersion time and ongoing cooling during resuscitation at the scene, in a wet, open environment.

**In-water resuscitation**
In-water resuscitation may improve survival of casualties who are in the initial stages of the drowning sequence but delays time to full assessment and CPR.3,5 Remove the casualty from the water as soon as possible, and only begin in water rescue breathing if immediate removal from the water is delayed or impossible. Rescue breathing in deep water requires an appropriately trained rescuer and floatation aid such as a rescue board, tube or buoyancy vest. In water, chest compressions are ineffective and should not be attempted.

**Use of the AED**
If available, the AED should be attached, and the prompts followed. Dry the casualty's chest before applying pads. Although the rhythm deterioration in drowning is usually to a non-shockable rhythm, the AED may be lifesaving in ~6% of drowning casualties who, on initial assessment, are found to have a shockable cardiac rhythm.6

**Compression-only CPR is not the recommended resuscitation method**
The primary cause of cardiac arrest in drowning is a lack of breathing. Compression-only CPR circulates oxygen-poor blood and fails to address the casualty's need for immediate ventilation. It is not the recommended resuscitation method in a casualty of drowning and should only be used temporarily if the rescuer is unable or unwilling to perform rescue breathing before the arrival of a barrier device, face mask or bag-valve-mask device.

## Hypothermia

(In line with ANZCOR Guideline 9.3.3)

**Common causes**

- Environmental: exposure to cold, wet, or the conditions; cold water immersion/submersion; exhaustion
- Trauma: Trauma, immobility and Burns
- Drugs: alcohol and all sedatives
- Neurological: stroke and altered consciousness
- Endocrine: impaired metabolism
- systemic illness: severe infections, malnutrition

**Recognition**

- Mild hypothermia
  - Shivering
  - Pale cool skin
  - Impaired coordination
  - Slurred speech
  - Responsive but with apathy or confusion
- Moderate to severe hypothermia
  - Absence of shivering
  - Increasing muscle stiffness
  - A progressive decrease in consciousness
  - Slow a regular pulse
  - Hypotension

**Management**

- DRSABCD
- Call 000
- remove from cold environment
- remove the sources of heat loss, for example, wet clothing
- do not remove wet clothing if no dry blanket or another suitable cover
- dry the casualty if wet
- given warm oral fluids (not alcohol), and only the casualty is fully conscious
- if the casualty is in a remote location and not shivering the rescuer should initiate active rewarming:
  - cautiously apply a source of external heat such as heat pack or body to body contact
  - to avoid Burns ensure that any heat source is warm or tepid, but not hot
  - do not place the casualty in a warm bath

## Hyperthermia

(In line with ANZCOR Guideline 9.3.4)

**Applies to adults, children and infant casualties.**

Relates to assistance by:

Bystanders
first aiders
first aid providers

### 1. Introduction

Heat-induced illness may be caused by:

- excessive heat absorption from a hot environment
- excessive heat production from metabolic activity
- failure of the cooling mechanisms
- an alteration in the body's set temperature.

Factors which may contribute to heat-induced illness include:

- excessive physical exertion
- hot climatic conditions with high humidity
- inadequate fluid intake
- infection (particularly a viral illness)

- inappropriate environments (e.g. unventilated hot buildings)
- wearing unsuitably heavy, dark clothing on hot days
- drugs which affect heat regulation.

The very young and very old are more prone to heat-induced illness.

**2. Prevention**

On warm, humid or hot days:

- Keep infants and the elderly in cool, ventilated areas and provide ample oral fluids wear light-coloured, loose-fitting clothing during physical exertion and hats during outside activities
- Take adequate fluids during exertion on hot days – thirst is a useful guide to required fluid intake.
- For participants in, and organisers of sporting events:
- Allow six weeks for acclimatisation with progressive exercise before a competition
- Avoid vigorous exercise during a viral illness
- Plan to conduct events in the early morning or late evening or in the cooler months of the year
- Provide regular drink stations
- Follow the support guidelines relevant to specific activities.

**At no time should children or the elderly be left unattended in parked cars.**

For workers in outdoor or potentially hot environments, refer to occupational health guidelines relevant to the particular environment. Work environments that may be particularly prone to precipitating hyperthermia and heat-induced illness include those in which there is a high ambient temperature with reduced air movement, the worker is exposed to radiant heat and there is difficulty in maintaining adequate hydration.

**3. Recognition**

Mild elevation in body temperature is normally controlled with sweating, which allows cooling by evaporation. Once the individual becomes too dehydrated to sweat, body temperature can rise rapidly and dramatically.

**3.1 Heat Exhaustion**

Heat exhaustion is recognized by fatigue associated with headache, nausea, vomiting, malaise and dizziness, which may be accompanied by collapse. Body temperature will be less than 40°C and conscious state will become normal once the casualty is lying down5.

**3.2 Heat Stroke**

Heatstroke is the most serious form of heat-related illness and may lead to unconsciousness and death. All body organs may be affected. Heatstroke may be recognised by lack of sweating, temperature above 40°C, an altered conscious state, hot, dry skin (however, in some casualties profuse sweating is common) and collapse5.

**4. Management**

The management of heat-induced illness is aimed at removing the cause and assisting the normal cooling mechanisms of evaporation, conduction, radiation and convection.

**4.1 Heat Exhaustion**

- lie the casualty down in a cool environment or in the shade
- loosen and remove excessive clothing
- moisten the skin with a moist cloth or atomiser spray
- cool by fanning
- give water to drink if fully conscious
- call for an ambulance if not quickly improving.

**4.2 Heat Stroke**

**Heatstroke is a life-threatening condition**

- call for an ambulance
- resuscitate following the Basic Life Support Flow Chart
- place the casualty in a cool environment
- moisten the skin with a moist cloth or atomiser spray and fan repeatedly
- apply wrapped ice packs to the neck, groin and armpits.

ANZCOR suggest a 3-8% carbohydrate-electrolyte fluid [any commercially available “sports drink”] for the treatment of exertion related dehydration

If carbohydrate-electrolyte fluid is unavailable, water is an acceptable alternative.

### 4.3 Febrile Convulsions

- Follow First Aid Management of a Seizure (ANZCOR Guideline 9.2.4).

## Resuscitation of Divers who have used Compressed Gas

(In line with ANZCOR Guideline 9.3.5)

**INTRODUCTION**

Compressed gas’ divers breathe gas (usually air) while underwater. Most commonly, divers use SCUBA (Self-contained Underwater Breathing Apparatus) and breathe from cylinders carried underwater, but the breathing gas can also be supplied from the surface (hookah supply).

Whichever method is used to supply the gas, breathing compressed gas underwater can lead to several unique medical problems, the most significant being decompression illness (DCI) and pulmonary barotrauma ( rupture of small airways). In addition, divers may suffer from the same aquatic mishaps as swimmers, snorkelers and boating enthusiasts.

Decompression illness and pulmonary barotrauma require special first aid considerations, including the prompt and continued administration of near-100% oxygen.

Diagnosis of the exact problem in an ill or injured diver is often unnecessary for effective first aid; it is, however, important to also consider non-diving-related causes of the presenting condition.

**BACKGROUND**

**Decompression Sickness**

During an air dive, nitrogen from the inhaled gas is dissolved in the diver’s blood. Unless the diver ascends slowly enough to allow the excess nitrogen to leave the body in a controlled manner, nitrogen bubbles may form in the diver’s blood and body tissues. These bubbles, and the biochemical changes associated with them, can reduce the blood supply to various organs causing hypoxia and subsequent damage. This is known as Decompression Sickness (DCS). Some deep divers breathe mixtures of gas containing helium and may face the same problems due to helium bubbles.

**Pulmonary Barotrauma**

As a diver ascends, the gas in the lungs expands and, unless expanding gas is adequately exhaled, the diver’s lungs can distend and tear. This can result in a collapsed lung (pneumothorax) and/or trapping of gas in the mediastinum (mediastinal emphysema), or under the skin (subcutaneous emphysema). Escaped gas may also enter the cerebral arterial circulation (cerebral arterial gas embolism or CAGE) causing confusion and irritability similar to that of a stroke.

**Decompression Illness**

The term *decompression illness* (DCI) is commonly used to collectively describe both DCS and CAGE. Whether a diver has suffered DCS or has a CAGE may be very difficult to tell, particularly in the context of an emergency, the treatment strategy is the same for both conditions. It is, however, critical to rapidly identify and treat any large pneumothorax (collapsed lung) that may potentially impede breathing.

**RECOGNITION**

**Decompression Illness**

- Extreme fatigue
- Numbness/tingling or altered sensations
- Headache or other body pain, especially at or around joints
- Poor balance or coordination
- Irritability, confusion or reduced consciousness,
- Weakness, paralysis, physical collapse
- Rash
- Speech, visual or hearing disturbances

**Pulmonary Barotrauma**

- Chest pain
- Difficulty breathing
- Coughing
- The blueness of lips and tongue (cyanosis)
- Voice changes
- Difficulty swallowing
- 'Crackly' skin around the neck (crepitus)
- Reduced responsiveness
- Signs/symptoms of decompression illness may also be present

**MANAGEMENT**

- If the casualty is unconscious, manage as per ARC Basic Life Support Flowchart. A casualty of DCI may regain consciousness and appear to have recovered but still needs to be managed for suspected DCI due to the possibility of relapse.
- Promptly provide as close to 100% oxygen as possible and continue to do so until the ambulance arrives and takes over management.
- If DCI is suspected, lay the casualty flat if possible.
- Seek immediate diving medical advice by calling the DAN Diving Emergency Service hotline on 1800-088-200 (from within Australia) and +61-8-8212 9242 (from outside Australia).
- Assist with any transfer to a recompression chamber if requested to do so.
- An alert and stable casualty thought to be suffering from DCI may drink non-alcoholic fluids, such as water, isotonic/electrolyte fluids (as long as they have no stomach cramps, nausea, urinary retention or paralysis)
- Record details of the dive(s), the first aid given and the response to first aid.

**NOTES**

- The Divers Alert Network (DAN) Diving Emergency Services (DES) is a 24-hour emergency hotline available to all diving-related injuries. The hotline provides advice and management on diving-related illness and injury.
- Entonox (50% nitrous oxide gas in oxygen) must not be used in diving accidents [

**RATIONALE**

A flat (horizontal) posture without leg elevation is recommended in injured diver's suspected of DCI as it has been shown to increase the rate of inert gas elimination. It may also reduce the likelihood of arterial bubbles migrating to the brain.

However, if a conscious diver has increased difficulty breathing when supine, they can be placed in a position of comfort.

Administration of 100% oxygen reduces the size and number of gas bubbles in the bloodstream and tissues by helping to eliminate the inert gas in the bubbles and blood.

## Cold Injury

(In line with ANZCOR Guideline 9.3.6)

Exposure to cold conditions can lead to generalised cooling of the body (hypothermia) or localised cold injury. The latter may be either Freezing Cold Injury (frostbite) or Non-Freezing Cold Injury (NFCI or trench foot).

### FREEZING COLD INJURY

Frostbite results from the freezing of tissues causing ice crystal formation and blocking of small blood vessels. The areas most commonly affected are those exposed to cold, windy conditions (e.g. the face, inc. ears), and those with the most peripheral blood supply (e.g. fingers and toes). Frostbite can most simply and usefully be classified into superficial frostbite in which only the skin is frozen and can still be moved in relation to the underlying tissue; and deep frostbite which involves deeper tissues. The vast majority of cases that occur in Australia are of the superficial type.

### Management of Superficial Frostbite

- Seek shelter. Get out of the cold and wind.
- DO NOT rub the frozen tissue.
- DO NOT use radiant heat to rewarm the part.
- Rewarm the affected part immediately by gently placing the affected fingers in the opposite armpit, or by placing a warm hand over a frost nipped cheek or ear. Feet can be reheated on the warm abdomen (under clothing) of a companion. Rewarming can be very painful.
- Ensure that re-freezing does not occur. Once the colour and consistency of the skin have been restored the person can safely resume normal activity provided they increase their insulation and are especially vigilant against recurrence.

### Management of Deep Frostbite

- Seek shelter. Get out of the cold and wind.
- Remove constrictive or damp clothing if dry replacement clothing is available.
- Wrap in warm blankets and give warm fluids by mouth.
- If tissue is still frozen at the time of presentation, the best tissue survivability results from placing the injured part in a warm water bath with circulating water (40-42°C, that is, comfortably hot to the back of a rescuer's hand) until the affected part thaws. This may take 30 minutes or more. Such management is best achieved under hospital conditions where infection-control and adequate pain relief can be provided.
- If the tissue has spontaneously thawed by the time of presentation (as is often the case) the 4042°C water bath is not required, but affected tissue can be cleaned and bathed at a more comfortable temperature (30-35°C). Rewarming can be very painful.
- Elevate the affected part.
- DO NOT use radiant heat to rewarm the part.
- DO NOT break blisters.
- NEVER thaw apart if there is any likelihood of it being refrozen: thawing and refreezing results in far more tissue damage than leaving the tissue frozen for even several hours.

### NON-FREEZING COLD INJURY

Prolonged exposure of limbs to low temperatures above freezing may lead to "trench foot" or "immersion foot". When first seen, the injured part is pale, anaesthetic, pulseless and immobile, but not frozen. The pathophysiology is not fully understood. Although there is no formation of ice crystals in the tissue, the cold temperature alone appears to cause damage to nerves and the lining of small blood vessels, leading to occlusion and stasis of blood flow.

The treatment of Non-Freezing Cold Injury is still controversial, as no single treatment method has been demonstrated to result in better tissue survivability than other treatments.

- Dry the footwell. Keep the body warm but the foot cool.
- Do not let the casualty walk on affected feet. Rather they should lie down with their feet elevated.
- DO NOT use radiant heat to rewarm the part.

## Australian Snake Bite

(In line with ANZCOR Guideline 9.4.1)

### INTRODUCTION

Many of the snakes found in Australia are capable of lethal bites to humans. These include Taipans, Brown snakes, Tiger snakes, Death Adders, Black snakes, Copperhead snakes, Rough Scaled snakes and many Sea snakes.

Snakes produce venom in modified salivary glands, and the venom is forced out under pressure through paired fangs in the upper jaw. Snake venoms are complex mixtures of many toxic substances which can cause a range of effects in human casualties. The life-threatening early effect in Australian snake bite is neurotoxic muscle paralysis, which kills by causing breathing failure.

Other significant effects include:
- bleeding due to coagulation failure
- muscle damage causing kidney failure

### RECOGNITION

The bite may be painless and without visible marks. Other symptoms and signs may include:
- paired fang marks, but often only a single mark or a scratch mark may be present (localised redness and bruising are uncommon in Australian snake bite)
- headache
- nausea and vomiting
- occasionally, initial collapse or confusion followed by partial or complete recovery
- abdominal pain
- blurred or double vision, or drooping eyelids
- difficulty in speaking, swallowing or breathing
- swollen tender glands in the groin or axilla of the **bitten** limb
- limb weakness or paralysis
- respiratory weakness or respiratory arrest.

**Note:**
Life-threatening effects may not be seen for hours. However, when massive envenomation occurs, especially in children, symptoms and signs may appear within minutes.

### MANAGEMENT

The rescuer should:
- Keep the casualty at rest, reassured and under constant observation
- commenced resuscitation if necessary, following the Australian Resuscitation Council and New Zealand Resuscitation Council Basic Life Support Flowchart
- apply the pressure immobilisation technique transport the casualty to a medical facility, preferably by ambulance

**Note:**
DO NOT cut or incise the bite
DO NOT use an arterial tourniquet
DO NOT wash or suck the bite

**Snake identification**
Identification of venomous snakes can be made from venom present on clothing or the skin using a Venom Detection Kit. For this reason, do not wash or suck the bite or discard clothing. **It is not recommended to kill the snake for purposes of identification**, because medical services do not rely on visual identification of the snake species.

Antivenom is available for all venomous Australian snake bites.

### RATIONALE FOR PRESSURE IMMOBILISATION

Most snake venom reaches the bloodstream via the lymphatic system.

Research has shown that very little venom reaches the circulation, even after several hours, if the pressure immobilisation

technique is applied immediately and maintained.

**Pressure immobilisation bandage:**

1. **Apply a pressure bandage overbite area**

2. **Bandage from digits up the limb**

3. **Splint the bandaged limb**

## Spider Bite

(In line with ANZCOR Guideline 9.4.2)

**Introduction**

The bites of many Australian spiders may cause pain but only bites from
Some Funnel-web spiders are an immediate threat to life.

If serious symptoms or signs developed from any spider bite, transport the casualty to the hospital.

**Funnel-web spiders**

a bite from a large (greater than 2 cm) dark-coloured spider, especially in the regions of Sydney, Blue Mountains, Central, Northern, Southern Highlands or south coast of NSW, or south-Eastern Queensland, should be considered as a dangerous bite and immediate treatment given.

**Recognition**

Symptoms and signs of a funnel-web spider bite may include:

- Pain at the bite site, but the little local reaction
- Tingling around the mouth
- Profuse sweating
- Copious secretions of saliva
- Abdominal Pain
- Muscular Twitching
- Breathing Difficulty
- Confusion leading to unconsciousness

**Note: Life threatening effects may occur within 10 minutes.**

**Management**

- Call an ambulance
- Apply pressure immobilisation technique immediately

If the casualty is unresponsive not breathing normally, follow the Australian Resuscitation Council and New Zealand Resuscitation Council Basic Life Support Flowchart

**Note: Antivenom is available for treatment of funnel-web spider envenomation.**

**Red-Back spiders**
This spider has an approximate body length of 1 CM, and has a characteristic red, Orange or pale striped on its back.

A bite may threaten the life of the child, but apart from pain, it is really serious for an adult.

**Recognition**

Symptoms and signs may include:
- Immediate pain at the bite site which becomes hot, red and swollen
- Intense local pain which increases and spreads
- Nausea vomiting and abdominal pain
- Profuse sweating, especially at the bite site
- Swollen tender glands in the groin or armpit of the inventor mated limb

**Notes**
Local pain develops rapidly at the bite site and may become widespread, but the venom acts slowly so a serious illness is unlikely in less than three hours.

Pain can be treated with Antivenom in a hospital where resuscitation facilities are available.

A related species, the cupboard spider (resembles the Red-back without the striped) may be treated with the Red-back spider Antivenom.

**Management**

The rescuer should:
- Keep the casualty under constant observation
- Apply an ice or cold compress to lessen the pain (for periods no longer than 20 minutes)
- Transport the casualty to a medical facility preferably by ambulance, if the casualty is a young child or collapse occurs, or pain is severe.

**Note: The pressure immobilisation technique is not used because the venom acts slowly and any attempt to retard its movement tends to increase local pain.**

**Antivenom is available for Redback spider envenomation.**

**White-tailed spider**
Although the bite of the white-tailed spider may cause severe inflammation.

Contrary to popular opinion, there have been very few cases of severe local tissue destruction.

Other causes of necrotic ulcers should be sought, especially when a spider has not been seen.

**The pressure immobilisation technique should NOT be used.**

**Other Australian spiders**
All other spider bites should be treated symptomatically (apply ice or cold compress to lessen the pain )

**Tick Bites and Bee, Wasp and Ant Stings**
(In line with ANZCOR Guideline 9.4.3)

**Applies to adults, children and infant casualties.**

Relates to assistance by:
- Bystanders
- First aiders
- First aid providers

## 1. Introduction

Single stings from a bee, wasp or ant, while painful, seldom cause serious problems except for persons who have an allergy to the venom.

Multiple insect stings can cause severe pain and widespread skin reaction.

Stings around the face can cause serious envenomation and difficulty breathing even if the person is not known to be allergic.

It is important to remember that bee stings with the venom sac attached continue to inject venom into the skin, while a single wasp or ant may sting multiple times.

Ticks can inject a toxin that may cause local skin irritation or a mild allergic reaction. However, most tick bites cause few or no symptoms.

**In susceptible people tick bite or other bites/stings may cause a severe allergic reaction or anaphylaxis, which can be life-threatening.**

This can also occur in casualties with no previous exposure or apparent susceptibility.

## 2. Recognition

Symptoms and signs may include:

### 2.1 Minor

- Immediate and intense local pain.
- Local redness and swelling.

### 2.2 Major/Serious

- Allergic reaction/anaphylaxis.
- Abdominal pain

Airway obstruction may result from swelling of the face and tongue due to anaphylaxis, or from insect stings in or around the mouth. This may occur immediately or over several hours and always requires urgent medical care.

## 3. Management

- If the casualty is unresponsive and not breathing normally, commence resuscitation, follow the Basic Life Support Flowchart
- If the casualty has signs of anaphylaxis, follow Anaphylaxis Guideline
- In the case of a bee sting, remove the sting, by any means, as quickly as possible
- In the case of a tick bite, if there is no history of tick allergy, immediately remove the tick
- If the casualty has a history of tick allergy, the tick must be killed where it is, rather than removed
- If in a remote location, consultation with healthcare professionals is recommended.
- Move the casualty to a safe place.
- Apply a cold compress to help reduce pain and swelling.
- Monitor the casualty for signs of an allergic reaction (difficulty speaking, breathing difficulties, collapse and generalised rash).
- Refer the casualty to a hospital if the sting is to the face or tongue.

Instructional information regarding auto-injectors can be accessed from the Australian Society of Clinical Immunology and Allergy's (ASCIA) webpage: http://www.allergy.org.au/health-professionals/anaphylaxis-resources

Instructional information regarding killing and removing ticks can be accessed from the web link:

Tick-induced Allergies Research and Awareness (TiARA) www.tiara.org.au

## Jellyfish Stings

(In line with ANZCOR Guideline 9.4.5)

**For advice concerning any marine envenomation contact**
**Australian Venom Research Unit 1300 760 451**
**or**
**Poisons Information Centre**
**13 11 26**

### INTRODUCTION

The mechanism of jellyfish envenomation.

Stinging by jellyfish is caused by the simultaneous discharge of many thousands of microscopic stinging capsules called nematocysts. These are located on the surface of tentacles and in some species on the body of a jellyfish. Nematocysts contain coiled threads (tubules) loaded with venom. Upon contact, the nematocysts 'discharge' their tubules into the casualty's skin like mini-harpoons. The more tentacles which make skin contact, the more venom is injected.

Stings cause immediate, sharp pain and an acute inflammatory skin reaction at the sting site consisting of redness, wheal and swelling which may progress to local skin destruction. Some stings cause rapid collapse. In Australia, life-threatening stings generally occur in tropical areas, with few in southern regions. Because of their smaller body size, children are at a greater risk of the effects of envenomation.

Most stings are not serious, and over-treatment of minor stings should be avoided. Wearing a full-body Lycra suit or equivalent provides good protection from stings.

### Tropical envenomation

Two jellyfish types in Australian waters cause potentially fatal envenomation.

#### Box Jellyfish

The Australian, *Chironex fleckeri,* has a large (box-like) bell up to 20 x 30 cm and multiple tentacles. It inhabits estuarine and on-shore coastal waters. Contact with tentacles causes severe immediate pain and whip-like marks on the skin. A sting with several metres of tentacles can cause respiratory and cardiac arrest within a few minutes. Approximately 80 deaths have been recorded.

#### Jellyfish causing Irukandji syndrome

Approximately 10 small to medium-sized offshore and onshore jellyfish [including *Carukia barnes and species of the Carybdea, Malo , Alatina , Georgia* and *Morbakka* genera] are known or suspected to produce an "Irukandji syndrome". [5-8] These jellyfish have only 4 tentacles and some are too small to be seen by the casualty.

A minor sting on the skin with no tentacle visible is followed in 5-40 (typically 20-30) minutes by severe generalised pain (often cramping in nature), nausea and vomiting, difficulty breathing, sweating, restlessness and a feeling of "impending doom". Casualties may develop heart failure, pulmonary oedema and hypertensive stroke.

### Prevention of further stinging by nematocyst inhibition

When a sting occurs, pieces of tentacles and non-discharged nematocysts may be left on the casualty's

skin. In large or life-threatening stings it is important to inhibit non-discharged nematocysts so that subsequent handling or treatment does not cause further envenomation.
Nematocysts from different species of jellyfish are either inhibited or stimulated to discharge by different substances used for first-aid.

### Vinegar


- Vinegar (4-6% acetic acid) inhibits nematocyst discharge of Box jellyfish but does not provide pain relief from the venom already injected.
- Although not proven to inhibit nematocyst discharge of all jellyfish causing Irukandji syndrome, its use is considered a good first-aid practice.
- Vinegar causes nematocyst discharge of some other jellyfish, including *Physalia* ("Bluebottle") and is therefore recommended only for tropical areas where Box jellyfish and Irukandji stings occur.

**RECOGNITION**
Since it is usually difficult to recognise which species of jellyfish has caused a sting, management is based on the risk of serious stings in the known geographical distribution of dangerous species. Jellyfish able to cause life-threatening stings primarily occur along the tropical coastline of Australia i.e. from Bundaberg (Queensland) northwards, across the northern coastline and down to Geraldton (Western Australia).

**Tentacles on the skin**
- Long lengths of easily-visible large tentacles on the skin in association with severe pain should be regarded as Box jellyfish tentacles.
- In the setting of large numbers of blue jellyfish washed up on the beach or floating on the surface of the water, tentacles are probably from a *Physalia* species ("Bluebottle").
- Tentacles from hundreds of other species of jellyfish in Australian waters are difficult to identify. Often no tentacles remain.

**Skin markings**
A variety of skin markings are associated with the stings of various jellyfish species and could include the following:
- An inconspicuous mark which may develop a red flare
- An inconspicuous mark with goose pimples or an orange-peel appearance
- An inconspicuous mark with profuse sweating only at the sting site
- An irregularly shaped blotchy wheal
- White wheels with a surrounding red flare
- Multiple whip-like wheals on the skin or a "frosted ladder pattern" suggest a sting by a box jellyfish
- Later blistering or darkening of the string pattern.

**Pain**
- Skin pain is generally immediate and varies in intensity from mild irritation to very severe sharp or burning pain
- Generalised muscle aches
- Severe muscle cramps in the limbs, chest and abdomen.

**Symptoms and signs of severe stings**
- Difficulty or cessation of breathing
- Cardiac arrest
- Severe pain
- Restlessness and irrational behaviour
- Nausea and vomiting, headache
- Physical collapse
- Profuse sweating, sometimes only in the sting area.

**FIRST AID MANAGEMENT**
- No one nationwide recommendation for first-aid can be made because of differences between jellyfish species around Australia.
- In most cases, first-aid providers are unlikely to be able to identify the jellyfish.
- In the tropics, because of the risk (even if small) that the casualty has been stung by a potentially lethal jellyfish, the

priority must be to preserve life. If the species causing the sting cannot clearly be identified as harmless, or due to a "Bluebottle", it is safer to treat the casualty with vinegar.
- Outside the tropics, where huge numbers of non-life-threatening stings occur, the primary objective is pain relief with heat or cold.

**TROPICAL AUSTRALIA**
- Remove the casualty from the water and restrain if necessary.
- If the casualty has more than a single localized sting, or who looks/feels unwell, call an Ambulance (Dial Triple Zero - 000) and seek assistance from a lifesaver/lifeguard if available.
- Assess casualty and commence resuscitation as necessary following the ARC BLS flowchart
- Liberally douse/spray the stung area with vinegar for 30 seconds to neutralise invisible stinging cells, then pick off remaining tentacles.
- If the casualty has **clearly** been stung by a "Bluebottle" (see above) and is assessed as having a localised sting, is stable and not requiring an ambulance, vinegar should **not** be applied and the casualty managed as per stings in non-tropical Australia.
- If vinegar is unavailable, pick off any tentacles (this is not harmful to the rescuer) and rinse the sting well with seawater.
- Apply a cold pack or ice in a dry plastic bag for analgesia. Do not allow or apply freshwater directly onto the sting because it may cause the discharge of undischarged nematocysts.
- Antivenom is available for *Chironex fleckeri* and other multi-tentacled box jellyfish stings. In tropical coastal areas, hospitals keep and ambulances carry antivenom.
- Casualties who initially appear stable but experience severe symptoms in the following 30 minutes may be suffering from Irukandji syndrome and need urgent medical care.

**NON-TROPICAL AUSTRALIA**
- Keep the casualty at rest, reassure and keep under constant observation.
- Do not allow rubbing of the sting area.
- Pick off any tentacles (this is not dangerous to the rescuer) and rinse the sting area well with seawater to remove invisible nematocysts.
- Place the casualty's stung area in hot water (no hotter than the rescuer can comfortably tolerate) for 20 minutes."
- If local pain is unrelieved by heat, or if hot water is not available, apply a cold pack or ice in a dry plastic bag.
- If pain persists or is generalised, if the sting area is large (half of a limb or more), or involves sensitive areas (eg the eye) call an ambulance (Dial Triple Zero — 000) and seek assistance from a lifesaver/lifeguard if available.

## Blue Ringed Octopus and Cone Shell

(In line with ANZCOR Guideline 9.4.6)

**For advice concerning any marine envenomation contact**
**Australian Venom Research Unit 1300 760 451**

### INTRODUCTION

Blue-ringed octopuses *(Hapalochlaena spp)* inhabit all Australian coastal waters and are often found in tidal pools. If handled, these small animals may inflict a potentially fatal bite, injecting venom stored in salivary glands.

Many species of cone shell *(Conus spp)* are found in tropical waters. They fire a dart-like barb to deliver venom when handled.

Although different, venoms from both these creatures can cause paralysis and death from respiratory failure within 30 minutes. This can be treated with Basic Life Support

### RECOGNITION

Symptoms and signs may include:
- a painless bite: a spot of blood visible

- numbness of lips and tongue
- the progressive weakness of muscles of respiration, leading to inadequate or cessation of breathing.

## MANAGEMENT

- Call an ambulance **000**
- Keep the casualty at rest, reassured and under constant observation.
- Use the pressure immobilisation technique if possible
- Transport the casualty to a medical facility, preferably by ambulance.

If the casualty is unresponsive and not breathing normally, follow Australian Resuscitation Council and New Zealand Resuscitation Council Basic Life Support Flowchart

**NOTE:**
Despite being unable to move, the casualty may be able to hear spoken comments.

## Fish Stings

(In line with ANZCOR Guideline 9.4.7)

**For advice concerning any marine envenomation contact**
**Australian Venom Research Unit 1300 760 451**

### INTRODUCTION

Many fish have spines with attached venom glands. When trodden upon, the spines of the marine Stonefish *(Synanceia* spp) and the freshwater Bullrout *(Notesthes robusta)* penetrate deeply and deposit venom causing excruciating pain. General cardiovascular toxic effects can occur but are rare. Handling these or similar fish is also potentially dangerous.

Stonefish

Bullrout

The barbed spines on the tails of stingrays can inflict a serious gash or penetrating stab injury with subsequent venom-induced tissue death. Organs and blood vessels may be damaged and fragments of spine may remain in the wound requiring surgical removal. Injuries usually occur when the casualty stands on an unseen fish, pulls a captured fish into a boat or swims too closely over a fish on the sea-floor.

### RECOGNITION

Symptoms and signs may include:

- Intense pain, leading to irrational behaviour
- Swelling
- Sometimes a local grey/blue discolouration
- An open wound
- Bleeding

### MANAGEMENT

- Call an ambulance
- If the sting is to the trunk (chest, abdomen), assess the casualty for signs of bleeding and treat as per ARC Guideline 9.1.1 Principles of Control of Bleeding for First Aiders
- If there is an embedded object (eg. a barb from a stingray sting), do not remove it as it may be plugging the wound and restricting bleeding. Place padding around or above and below the object and apply pressure over the pads.
- If the sting is to a limb, place the casualty's stung hand or foot in hot water (no hotter than the rescuer can comfortably tolerate)" (Class A, LOE W).
- Transport the casualty to a medical facility.

If the casualty is unresponsive and not breathing normally, follow Australian Resuscitation Council and New Zealand Resuscitation Council Basic Life Support Flowchart

Note:

**DO NOT use the Pressure Immobilisation Technique.**

Antivenom is available for stonefish envenomation. (LOE IV, CLASS A)

### RATIONALE

While the mechanism is not understood, the local application of heat decreases pain in the majority of cases.

The Pressure Immobilisation Technique is not used for fish stings because the venom remains localised at the wound.

## Pressure Immobilisation Technique

(In line with ANZCOR Guideline 9.4.8)

### INTRODUCTION

The pressure immobilisation technique (PIT) was introduced for the treatment of Australian snake bites and is suitable for other elapid snake bites. It is also recommended for envenomation by several other animals. The PIT retards the flow of lymph by which venoms gain access to the circulation.

It has also been shown that there may be the inactivation of certain venoms and venom components when the injected venom remains trapped in the tissues by the pressure bandage.

## USE OF THE PRESSURE IMMOBILISATION TECHNIQUE

The pressure immobilisation technique (PIT) **is** recommended for application to bites and stings by the following creatures:

- All Australian venomous snakes, including sea snakes
- Funnel Web spider
- Blue-ringed octopus
- Cone shell

The pressure immobilisation technique is **NOT** recommended for the first aid management of:

- Other spider bites including red back;
- Jellyfish stings;
- Fish stings including stone fish bites
- Stings by scorpions, centipedes or beetles.

## MANAGEMENT

If resuscitation is needed it takes precedence over the PIT, however, the resuscitation team should apply PIT as soon as possible to minimise further venom flow potentially.

If on a limb, apply a broad pressure bandage over the bite site as soon as possible. Elasticised bandages (10-15cm wide) are preferred over crepe bandages, if neither are available, clothing or other material should be used. The bandage should be firm and tight; you should be unable to slide a finger between the bandage and the skin easily.

To further restrict lymphatic flow and to assist in immobilisation of the limb, apply a further pressure bandage, commencing at the fingers or toes of the bitten limb and extending upward covering as much of the limb as possible. The bandage should be applied over existing clothing if possible. The purpose of this bandage is to restrict lymphatic flow further and assist immobilisation. (Alternatively, a single bandage may be used to achieve both pressure on the bite site and immobilisation of the limb. In this method, the bandage is initially applied to the fingers or toes and extended up the limb as far as possible including the bite site).

Splint the limb including joints on either side of the bite, to restrict limb movement. The splinting material can be incorporated under the layers of the bandage. For the upper limb, use a sling.

1. **Apply pressure bandage over bite area**

2. **Bandage from digits up the limb**

3. **Splint the bandaged limb**

Keep the casualty and the limb completely at rest. Bring transport to the casualty if possible. Transport the casualty to medical care, preferably by ambulance. If alone, the casualty should apply the pressure immobilisation bandage as completely as possible over the bite site and affected limb. They should keep immobile until assistance arrives. I

If they are unable to obtain urgent help to come to them, then apply local pressure if possible, immobilisation is contraindicated, and they should move themselves to seek urgent help.

If the bite is not on the limb, firm direct pressure on the bite site may be useful. Do not restrict breathing or chest movement and do not apply firm pressure to the neck or head. [

**Note:**

- DO NOT cut or excise the bitten area, or attempt to suck venom from the bite site.
- DO NOT wash the bitten area.
- DO NOT apply an arterial tourniquet. (Arterial tourniquets that cut off circulation to the limb, are potentially dangerous and are not recommended for any type of bite or sting in Australia)

## Poisoning

(In line with ANZCOR Guideline 9.5)

### INTRODUCTION

A *poison* is a substance (other than an infectious substance) that is harmful to human health if ingested, inhaled, injected, or absorbed through the skin. Substances that are benign or therapeutic at low levels (for example, pharmaceuticals and herbal remedies) may be poisonous at higher concentrations. *Toxins* are poisons that are produced by living organisms. *Venoms* are toxins that are injected by an organism.


### RECOGNITION

- Poisons can cause harm by a wide range of mechanisms and can cause a wide range of symptoms including unconsciousness, nausea, vomiting, burning pain in the mouth or throat, headache, blurred vision, seizures, difficulty breathing, respiratory arrest, and cardiac arrest.
- Recognition of poisoning may be obvious from the circumstances of the incident, but this is not always true. A person may complain of physical symptoms without realising; these are due to a poison. Alternatively, they may exhibit abnormal behaviour, which may be misinterpreted as alcoholic confusion or psychiatric disturbance.
- Most pharmaceuticals are poisonous in overdose. Some are relatively safe unless many times the recommended dose is taken, but many are lethal if less than a single pack is taken simultaneously.
- Poisons may have a rapid effect, but their effects may also be delayed. Speed of effect is determined by the nature of the poison, its concentration, and the time of exposure.
- It is important to seek medical assessment or advice after significant exposure to a poison, even if symptoms are initially mild or absent.

### MANAGEMENT

The principles of managing a casualty who has been poisoned are:

- *Prevention of poisoning of the rescuer.*
- *Decontamination* of the casualty.
- *Resuscitation and supportive care*, using the Australian Resuscitation Council and New Zealand Resuscitation Council Basic Life Support Flowchart
- *Specific management of particular poisons: antidotes, techniques to remove the p*oison from the body, and the treatment of complications of the poison.
- If the casualty is unconscious or is not breathing normally, commence resuscitation if necessary, following the Australian Resuscitation Council and New Zealand Resuscitation Council Basic Life Support Flowchart
- Ensure that an ambulance has been called **000**

#### 1. Prevention of poisoning of the rescuer

- During the first aid and subsequent treatment, the suspected poison should be identified and safely handled to minimise further exposure. The casualty may pose a danger if the poisonous substance can be transferred to the rescuer (for example, by contact with contaminated clothing).
- If the poisoning occurs in an industrial, farm or laboratory setting suspect particularly dangerous agents and take precautions to avoid accidental injury.
- If more than one person simultaneously appears affected by a poison, there is a high possibility of dangerous environmental contamination.
- The rescuer may need to wear personal protective equipment (PPE) during decontamination and resuscitation. The need for PPE will be guided by knowledge of the likely poison. If the equipment is not available to safely decontaminate and treat a casualty, rescue may not be possible.

#### 2. Decontamination

- Separate the casualty from the poisonous substance. How this is done will depend on the type of the poison. Examples are listed below.
- If the poison is:

| | |
|---|---|
| **SWALLOWED** | • Give the person who has swallowed the poison a sip of water to wash out their mouth.<br>• **Do NOT try to make them vomit**. Do NOT use Ipecac Syrup. |
| **INHALED** | • Immediately get the person to fresh air, without placing yourself at risk.<br>• Avoid breathing fumes. Special breathing apparatus may be required, for<br>• Example, with cyanide or agricultural chemicals poisoning.<br>• If it is safe to do so, open doors and windows wide. |
| Enters the **EYE** | • Flood the eye with saline or cold water from a running tap or a cup/jug.<br>• Continue to flush for 15 minutes, holding the eyelids open. |
| Contacts the **SKIN** | • Remove contaminated clothing, taking care to avoid contact with the poison.<br>• Flood skin with running cold water.<br>• Wash gently with soap and water and rinse well. |

**3. Resuscitation and supportive care**

- If the casualty is unconscious or is not breathing normally, commence resuscitation if necessary, following the Australian Resuscitation Council and New Zealand Resuscitation Council Basic Life Support Flowchart
- Before commencing resuscitation, quickly wipe obvious contamination from around the mouth.
- Ensure that an ambulance has been called
- A self-inflating bag-valve-mask apparatus is the safest way to provide ventilation for the BLS rescuer. If this equipment is not available, mouth-to-mask or mouth-to-mouth ventilation may be considered depending on the chemical ingested. Mouth-to-mouth ventilation should be avoided if cyanide or organophosphate poisoning is suspected.
- Inhaled poisons are unlikely to pose a risk during mouth to mouth ventilation unless the casualty is contaminated with the liquid phase of the inhaled poison.

**4. Specific Management of particular poisons**

- If possible, ascertain what poison or pharmaceutical has been taken, how much, and when. Then obtain medical advice promptly. The source of medical advice will depend on the situation. Options include:
  - Australian Poisons Information Centre on **13 11 26** anywhere in Australia 24 hours a day, 7 days a week.
  - New Zealand poisons centre **0800 764 766** (0800 POISON)
  - Occupational health facilities
- Some poisons have specific antidotes, but (with some exceptions, such as cyanide) these are rarely used outside the hospital. However, accurately identifying these poisons will help treatment so if there are packets or bottles they should go with the casualty to the hospital. Poisons with antidotes include:
  - Cyanide
  - Organophosphates
  - Iron
  - Paracetamol
  - AntifreezeMethanol
  - some Antidepressants
  - Digoxin
  - Warfarin

**5. If unable to get advice, or while waiting for help to arrive:**

- Monitor the casualty, especially the Airway, Breathing and Circulation, and manage according to the Australian Resuscitation Council and New Zealand Resuscitation Council Basic Life Support Flowchart.

**SUBSTANCES COMMONLY CAUSING POISONING**

- Paracetamol is the most common pharmaceutical overdose leading to hospital admission and is also responsible for the most calls to Australian Poisons Information Centres. Paracetamol is involved in a large proportion of accidental

poisoning in children. Without treatment, even small amounts of paracetamol are sufficient to cause an adult significant liver damage and even death and effects may be delayed. Any poisoning over recommended doses requires immediate medical attention. The treatment for paracetamol poisoning is most effective if administered as early as possible.

- Organic substances such as glues, hair spray, aerosol paints, lighter fluid, dry cleaning fluid, nail polish remover and petrol may be deliberately inhaled to produce an altered sensation. Poisonous effects include:
  - Hyperactivity, followed by drowsiness and unconsciousness
  - Irregular heartbeat, followed by cardiac arrest
  - Difficulty breathing

These dangers are increased by exercise, inhaling poison from bags, or inhalation in a confined space.

- In Australia, household chemicals are the third most common cause of poisoning in children after pharmaceuticals and venoms. Household chemicals may include caustic substances (e.g. dishwasher detergent) which have a risk of significant damage to the oesophagus and lung.

  Do not induce vomiting to prevent further damage to the oesophagus and possible lung damage due to aspiration.
- Fungi (mushrooms; toadstools) grow widely throughout Australia. Some are edible, but some are poisonous, causing hallucinations, vomiting, and diarrhoea. Ingestion of even one *Amanita phalloides* mushroom can cause liver failure and death. Cooking does not neutralise the toxin. Most reported cases of mushroom poisoning are in children less than five eating mushrooms growing in their home gardens. The risk can be reduced by regularly checking for and removing garden mushrooms.
- Cyanide is not a common cause of poisoning but may occur from inhalation of fumes during house or industrial fires or occupational exposure. As early treatment with an antidote can be lifesaving, workplaces with a risk of cyanide exposure should be adequately prepared. Depending on the risk, preparation should include:
  - frequent inspection of work practices,
  - plans for containment and decontamination of spills,
  - access to a resuscitation device capable of delivering high oxygen concentrations with the ability to assist ventilation if necessary, and
  - a cyanide antidote.

  The contents of a workplace Cyanide Emergency Kit should be determined by a qualified occupational health assessor, taking into account the nature of the threat, first aider training, and the proximity of external assistance. Several cyanide antidotes are commercially available.

  Unlike other strategies, intravenous hydroxocobalamin (vitamin has few adverse effects. There is more evidence for the efficacy of hydroxocobalamin (three fair quality studies[9-12] and three poor quality studies[13-15]) than for the alternatives.

  Adult casualties with suspected severe cyanide poisoning (including those in cardiac arrest) should receive immediate intravenous hydroxocobalamin, 5mg over 15 minutes with repeat dosing up to 15mg. Even if only BLS rescuers are likely to be immediately available, keeping hydroxocobalamin for use by pre-hospital ALS or hospital personnel may still be useful.

### SDS/MSDS

Safety data sheets (previously known as material safety data sheets) provide details on chemicals and toxic substances. The information will include the makeup of the substance, how it should be stored, what dangers might be associated with it, whether it is poisonous or not, and what treatment should occur if the substance is toxic and casualties have been exposed to it.

### How do I get SDS/MSDS?

Most chemicals and substances include the heavy SDS starter on the packaging, for example, on a can of WD-40 the details from the SDS have been printed on the care. These details are the same as if you sourced a WD-40 safety data sheet from the provider.

You can also undertake an Internet search for the SDS, or you can contact the Poisons Information Centre for your state or territory. The number for the Queensland poisons information centre is supplied in the front of this document EMERGENCY CONTACT NUMBERS

**PREVENTION**

- Many poisons are substances that also have a useful purpose. Poisoning is particularly common in children and vulnerable adults. Ensuring poisons are only accessible by people who need and know how to use them reduces

their risk of harm.
- Survey your home or workplace and identify all poisonous substances.
- Remove poisons or medicines that are unwanted. Dispose of chemicals safely using their accompanying directions. Pharmaceuticals can be returned to a pharmacy for safe disposal, which is safer and more environmentally friendly than disposal in domestic waste or flushing down a toilet. The Poisons Information Centre can also advise on methods of safe disposal.
- Store poisonous substances in their original containers in locked or child-resistant cupboards or containers out of reach of children. Do not store medicines in the refrigerator unless advised to do so by a pharmacist.
- Use non-poisonous alternatives to cleaning products, insecticides, etc. when possible.
- Keep the number of poisonous substances stored in a home to a minimum.
- When possible, choose substances available in child-resistant packaging. However, do not rely on child-resistant packaging to prevent a child's access to poison.
- Read medicine labels and use according to the directions. Ensure the right:
  - medication
  - person
  - dose
  - route of administration
  - time and frequency of administration
- Wear the recommended personal protective equipment when using toxic or caustic chemicals, for example, spraying, painting, or oven cleaning.
- Do not eat or drink near poisons.

### Sharps Injuries

If skin is punctured by a sharp medical tool like a scalpel or needle on a syringe, it is called a 'needlestick' or 'sharps injury'.
Needlesticks don't just happen in hospitals – stepping on a needle in a park is the same thing.

Sharps can include:
- Syringes
- Needles
- Scalpels
- Razor blades
- Broken glass

Or any other sharp implement with the potential to cause a penetrating injury.

Sharps can be contaminated with many various types of microorganisms, and while the risk from blood borne viruses such as HIV and Hepatitis B and C is generally well known, there are various others. All sharps should be treated as contaminated.

A person with an open wound is at greater risk from infectious agents.

If a person sustains a sharps injury:
1. Administer first aid for any bleeding or embedded object.
2. Wash the wound/skin sites thoroughly with soap and water
   a. Use an alcohol based hand rub or antiseptic if water is unavailable
3. Apply a dressing as necessary and apply pressure through the dressing if the wound is still bleeding. **Do not squeeze or rub the injury site.**
4. If blood or blood products make contact with eyes, rinse the eyes gently but thoroughly (remove contact lenses), for at least 30 seconds, with water or normal saline.
5. If blood or body fluids are sprayed into the mouth, spit out and then rinse the mouth with water several times.
6. If any clothing is contaminated, remove and wash skin if necessary.
7. If possible, identify the offending sharp.
8. Seek emergency help.

### After First Aid

**TIDYING UP**

There are 2 types of waste material that may be produced when dealing with a casualty.

**Routine Waste**

Wrappers etc. from dressings.

Uncontaminated waste can be placed in a normal waste bin.

**Clinical Waste**
Items contaminated by blood etc.


Waste stained by blood or other body fluids must be placed in a yellow biohazard bag. Sharps to be placed into a yellow biohazard container.

**Sharps**
Sharps include things such as used needles and should be disposed of in appropriate sharps containers. If you do not have a sharps container, ask the ambulance to assist with this.

**Oxygen**
(In line with ANZCOR Guideline 10.4)

**Applies to adult, child, and infant casualties.**

Relates to assistance by:
- Bystanders
- First aiders
- First aid providers

**Recommendations**
The Australian and New Zealand Resuscitation Councils of Resuscitation (ANZCOR) make the following recommendations:

1. Basic Life Support measures should never be delayed while waiting for oxygen or other equipment.
2. The administration of oxygen and use of oxygen delivery devices should only be undertaken by those who are trained
3. When trained, but occasional operators use bag-valve-mask oxygen resuscitation, a minimum of two trained rescuers are required to provide ventilation for a non-breathing casualty.
4. The short-term administration of supplemental oxygen to a breathing casualty will not cause harm in most circumstances.

Casualties who require supplemental oxygen in a first aid setting should be further evaluated by a healthcare professional

**The respiratory system**
The anatomical features of the respiratory system involve those structures of the body that conduct air from outside the body to the lungs and those elements that control and facilitate the process

**The Central Nervous System (CNS)**
The brain and the spinal cord make up the CNS.
The CNS is located at the brain stem, just above the spinal cord

**The Upper Airway**
The upper airway consists of those spaces and structures that assist and guide the movement of air from the nose and mouth to the trachea (windpipe).

**Nasal cavity**
The nasal cavity, also known as the nasopharynx, is the space behind the nose and extends over the roof of the mouth. It is into this cavity that air is initially drawn when a breath is taken, and dry air is warmed and moistened before its journey to the lungs.

**Oropharynx**
The oropharynx is the cavity that extends from the nasal cavity to the hyoid bone above the opening to the ‘windpipe’. This cavity contains the tonsils.

**Laryngopharynx**
The Laryngopharynx is the space immediately above the complex structure located at the top of the airway proper – the larynx. The Laryngopharynx includes the glottis, the opening between the larynx and the vocal cords.

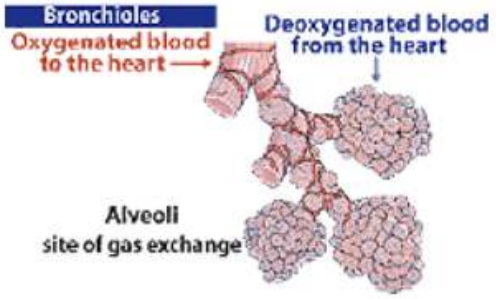
**Larynx**
The larynx, also known as the 'Adam's apple', is the cartilaginous structure located above the entrance to the lower airway and close to the oesophagus, the entry to the stomach.

**Lower Airway**

**Trachea**
The trachea or 'windpipe', is a thin-walled tube approximately the same diameter as a garden hose. The trachea extends to the bronchial tree where the airway branches to the lungs.

**Bronchi and bronchioles**
Trachea branches into the left and right main bronchi, which successively branch into smaller bronchi, much like the structure of the branches of a tree. These smaller bronchi are located within the lobes of the lungs.

**Lungs**
The two lungs develop at the end of the bronchi and are contained within a cavity in the chest. The lungs are porous elastic organs that appear similar to a sponge




**Lobes**
Each lung is composed of compartments called lobes; the right lung with three lobes, the left, two.

**Alveoli**
In the extremities of the lobes, groups of respiratory bronchioles terminate in clusters of structures called alveoli. The alveoli are small sacs composed of elastic tissue, covered by a thin membrane. It is through this membrane that gas exchange takes place

**Associated muscles**
Diaphragm. The diaphragm is a long, flat, smooth muscle attached to the lower six ribs, the sternum and the spine. When relaxed, it is convex in shape, forming a 'dome' beneath the lungs. When the CNS stimulates the need for inhalation, the diaphragm flattens, enlarging the chest cavity and allowing expansion of the lungs.

**Intercostal muscles**
The intercostal muscles are the small smooth muscles between the ribs. When contracted, these muscles expand the chest cavity in an outward direction, providing an enlargement of the chest cavity.

**Respiration**
The physiology (or function) of respiration involves all those anatomical features discussed previously.

Respiration can be considered to start with the process of inhalation, or 'breathing in'.
At the start of each breath, our CNS is stimulated to direct the muscular diaphragm below the lungs to contract. As it contracts, or 'flattens', the chest cavity is enlarged. Because at this point, the lungs are deflated, the pressure in them is low. As the air outside our body is at atmospheric pressure (14.7 psi, or 100 kPa), it spontaneously moves into the lungs through the oropharynx to 'even up the pressure'.

The air that has been inhaled moves through the upper and lower airways to the membranes of the lungs, into the alveoli.

At this point, the oxygen content of the air is selectively moved through the walls of the alveoli.

Respiration occurs regularly, depending on the body's demands. An adult awake and at rest will generally have a respiratory rate of 14-18 breaths per minute. When the body is under stress, either physical or emotional, the rate rises

accordingly and could be as high as 30 per minute. When deeply asleep, with the body completely at rest, the body's respiratory rate is somewhat slower, eg 10-12 per minute.