



A New Zealand First Aid Manual
for New Zealanders

First Aid Manual: 2013

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Triple One Care First Aid Manual: Contents

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References:

- **NZ Resuscitation Council** (Emergency Care For First Responders): www.nzrc.org.nz
- **NZ Red Cross** (Essential Emergency Care For First Aiders): www.redcross.org.nz
- **NZ Mountain Safety Council** (NZ Outdoor First Aid): www.mountainsafety.org.nz
- **NZ National Poisons Centre**: www.poisons.co.nz
- **Department Of Conservation**: www.doc.govt.nz
- **Occupational Safety & Health Service**: www.osh.govt.nz

The primary focus of first aid training is to provide you with the skills and knowledge necessary, to minimise the effects of accidents or illnesses. First aiders provide a primary response to emergencies within the community and may sometimes be first and only person on the scene, resulting in the need to remain calm and be able to make the right decisions in a situation dominated by emotional stress and anxiety.

Definition of First Aid:

First Aid is the emergency care and treatment of a sick or injured person before more advanced medical assistance, in the form of the emergency medical services (EMS) arrives.

Responsibilities of a first aider:

- **Preserve** life and provide initial emergency care and treatment to sick or injured people
- **Protect** the unconscious
- **Prevent** a casualty's condition from becoming worse
- **Promote** the recovery of the casualty.

Philosophy of First Aid:

In the pre-hospital setting, the key contributors to survival and recovery from illness and injury are prompt and effective maintenance of the body's primary functions:

- Airway
- Breathing
- Circulation
- Bleeding control (life threatening)

Medical research data suggests that effective support of these basic functions provides the most significant contribution to positive outcomes for casualties in the pre-hospital setting.

First aiders may be exposed to biological substances such as blood-borne pathogens and communicable diseases, whilst dealing with a first aid incident.

These may result from dealing with:

- Trauma related injuries
- Resuscitation

There are many different blood-borne pathogens that can be transmitted from a penetrating injury or mucous exposure, in particular, Hepatitis B Virus, Hepatitis C Virus and Human Immune deficiency Virus (HIV). Other diseases not found in human blood may be carried in fluids such as Saliva (e.g. Hepatitis A and the organism that causes meningitis) or animal blood and fluid.

Universal Precautions:

First aiders should equip themselves with and use, personal protection equipment. This equipment is used to minimise infection from disease.

Exposure sources:

The following are common sources of exposure:

- All human body fluids and secretions, especially any fluid with visible blood
- Any other human material.

Exposure routes:

The following are typical means of exposure:

- Punctures or cuts from sharp objects contaminated with blood / fluid
- A spill of blood / fluid onto mucous membranes of the eyes, mouth and/or nose
- A spill of blood / fluid onto skin that may or may not be intact
- A laceration and contamination with blood/fluid from a bite.

The expression 'universal precautions' refers to the risk management strategy used to prevent the transmission of communicable disease, by reducing contact with blood and other body substances.



Disposable Gloves



CPR Face Shield



CPR Pocket Mask

Universal precautions include:

- Wearing appropriate protective equipment for the task
- Treating all persons as if infectious
- Washing following completion of task
- Appropriate disposal of disposable protective items and/or equipment
- Maintaining good hygiene practices before, during and after tasks involving contamination risk.

Note: Universal Precautions are the most effective approach to protecting emergency first aiders in a biological substance exposure situation. If these guidelines are followed, the risk of infection can be significantly minimised.

Immediate action at scene following exposure:

For an open wound

- Encourage the wound to bleed, thoroughly wash with water for 15 minutes and dress
- Do not attempt to use a caustic solution to clean the wound
- Seek medical advice as soon as possible.

For a splash to a mucous membrane

- Flush splashes to nose, mouth or eyes thoroughly with water for 15 minutes
- If the splash is in the mouth, spit out and thoroughly rinse out with water for 15 minutes
- If the splash is in the eyes, irrigate with the eyes open for 15 minutes
- Seek medical advice as soon as possible.

For a splash to the skin

- At the scene, wash thoroughly with soap and water
- Seek medical advice as soon as possible if the exposure is medium / high risk.

The Primary Survey

Casualty Assessment

The **primary assessment** is a systematic checklist designed to maximise safety and identify / treat immediate life-threatening problems.

The steps to be followed for an adult, child and Infant casualty are remembered by the letters

DRS ABCD:

- D - Danger**
- R - Response**
- S - Send for help**

- A - Airway**
- B - Breathing**
- C - CPR (Cardiopulmonary Resuscitation) + Control Major Bleeding**
- D - Defibrillation**

Note: CPR is continued until responsiveness or normal breathing returns.

Why do you need to know this?

It is very important that you understand the correct procedure to follow in order to offer effective primary care. At the same time, it is necessary to protect yourself from any harm. The Initial steps of resuscitation are:

D - Danger!

Before approaching any situation, you must assess the scene for any threat to:

- Yourself and anyone else assisting with the situation
- The casualty or casualties
- Bystanders near the scene.

By rushing into the situation without properly assessing what has occurred, you are compromising your safety. If you are injured while attempting to assist the casualty, you will be unable to help them. If the scene is not safe, remove the threat from the casualty (or the casualty from the threat). If this cannot be achieved, go to a safe place and wait for further assistance.

Safety Note:

Always remember to reassess the safety while treating the casualty. Bystanders should be warned about any dangers and kept at a safe distance to ensure they do not become casualties. Once the scene is considered safe, bystanders can be asked to assist if needed.

Remember to ELIMINATE, ISOLATE or MINIMISE hazards!

Moving a casualty?

A rescuer should only move a collapsed or injured victim.....

- To ensure the safety of both rescuer and the victim
- Where extreme weather conditions or difficult terrain indicate that movement of the victim is essential
- To make possible the care of airway, breathing, and circulation (e.g. turning the unconscious breathing victim onto the side or turning a collapsed victim onto the back to perform cardiopulmonary resuscitation effectively)
- To make possible the control of severe bleeding.

All unconscious persons who are breathing normally must remain on their side (injuries permitting). It is reasonable to roll a face-down unresponsive victim into the supine (back) position to assess airway and breathing and initiate resuscitation. Concern for protecting the neck should not hinder the evaluation process or life saving procedures

When ready to move the victim:

- Avoid bending or twisting the victim's neck and back: remember, spinal injury can be aggravated by rough handling
- Try to have three or more people to assist in the support of the head and neck, the chest, the pelvis and limbs
- A single rescuer may need to drag the victim (either an ankle drag or arm-shoulder drag is acceptable)
- Make prompt arrangements for transport by ambulance to hospital.

R – Response:

Overview:

Unconsciousness is a state of unresponsiveness, where the victim cannot be roused, is unaware of their surroundings and no purposeful response can be obtained.

When checking a person's response, you are assessing how well their brain is functioning. The brain requires a constant supply of oxygenated blood and glucose to function. Interruption of this supply will cause loss of consciousness within a few seconds and permanent brain damage in minutes. When the casualty's brain is not functioning normally, they may not be able to look after their own airway. Their protective reflexes of coughing, swallowing, or gagging may not be working very well.

Causes of unconsciousness:

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

- Blood oxygenation problems (heart attack)
- Blood circulation problems (trauma, blood loss)
- Metabolic problems (e.g. diabetes, overdose, alcohol)
- Central nervous system problems (e.g. head injury, stroke, tumour, epilepsy, spinal injury)

How to check for responsiveness:

Assess the collapsed victim's response to verbal and tactile stimuli ('talk and touch'), ensuring that this does not cause or aggravate any injury. Give 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.



Checking for a response

The **four levels of responsiveness** are:

A - Alert: The casualty is alert and responsive. You can have a logical conversation with them.

V - Voice: Even if drowsy, the casualty is able to reply when you talk to them.

P - Pain: The casualty is responsive to pain (e.g. nail-bed pressure).

U - Unresponsive: The casualty is unresponsive to all stimuli.

If the casualty is breathing normally but is unresponsive, place them (if possible) in a **stable side position (recovery position)**.

Note: When possible, always approach the casualty from the direction of the head (for safety).

S - Send for help: Activating the Emergency Medical Services (EMS)

'**Activating EMS**' means choosing an Emergency Medical Service response appropriate to the severity of the injury or illness and the situation encountered.

Summoning help may be by using ☎ **1-1-1**, or other means e.g. radio, beacon etc.

However, in addition to the 'normal' emergency services, secluded / remote locations may have local **networks** for emergency response. Researching the availability of these responders, is an important part of pre-planning for outdoor activities.

The level of help selected needs to be considered on an **individual basis**. It may for instance, be appropriate to contact a local general practitioner (GP), Nursing Services, Healthline, A&E Clinics, the NZ National Poisons Centre or utilize the skills of a group member that has medical experience.

If you are in doubt as to which level of help is required, activate the **Emergency Medical Services** (Ambulance) as a safeguard!

Useful Phone Numbers:

- **Emergency Medical Services:** ☎ **111**
- **Healthline:** ☎ **0800 611 116**
- **NZ National Poisons Centre:** ☎ **0800 764 766 (0800POISON)**

A - Airway:

Overview

When a victim is unconscious, all muscles are relaxed. If the victim is left lying on the 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 victim 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 victim anything by mouth, and should not attempt to induce vomiting.

Key point:

In an unconscious victim, care of the airway takes precedence over any injury, including the possibility of spinal injury. Airway management is high priority. It is important to check the airway before the breathing. If air cannot enter the lungs due to some sort of blockage, the casualty will not survive for long.

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

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

Airway obstruction:

If during resuscitation the airway becomes compromised, the victim should be promptly rolled onto their side to clear the airway. The victim should then be reassessed for responsiveness and normal breathing. Most airway problems are caused by the tongue and/or vomit. These can often be resolved by simple airway management.

Tongue:

The muscle tone of the upper airway is directly related to the level of responsiveness: when sleeping, for example, minor degrees of reduced muscle tone may lead to sufficient obstruction to cause snoring. When unresponsive, however, this obstruction can become complete and fatal.

Vomit:

Food remains in our stomach for hours, so most victims will have food in their stomachs, and it is possible for this food to regurgitate up from the stomach into the lungs. This is called aspiration. The acidity of the stomach contents and the particle size can block and damage the airway. Regurgitation is a passive process caused by a rise in stomach pressure overcoming the sphincter. It is usually caused by a full gut, obesity (weight on the stomach), or air.

How to check an Airway:

Ensuring an airway is clear and open -

- Open the mouth and look for foreign objects
- Finger sweep (**only** if an object **can be seen** and can be removed with a sweep of a gloved finger)
- Perform a 'Head-tilt, chin-lift'.

Head-tilt and chin-lift:

Adults and Children (A child is defined as one year to eight years of age).

One hand is placed on the forehead or the top of the head. The other hand is used to provide Chin Lift. The head is tilted backwards **without placing your hand under the neck**. It is important to avoid excessive force, especially where neck injury is suspected. Make sure that you are wearing barrier gloves.

Chin lift is commonly used in conjunction with Backward Head Tilt. The chin is held up by the rescuer's thumb and fingers in order to open the mouth and pull the tongue and soft tissues away from the back of the throat. One technique involves placing the thumb over the chin below the lip and supporting the tip of the jaw with the middle finger and the index finger lying along the jaw line. Care is required to prevent the ring finger from compressing the soft tissues of the neck. The jaw is held open slightly and pulled away from the chest.



Head tilt / Chin lift

Finger sweep:

The finger sweep is used to clear the mouth of fluid and debris in the unresponsive casualty. It should only be performed if you can see something to remove. It should always be performed with a gloved hand with the casualty positioned on their side in a stable side position. Insert your first finger into the high into the side of the casualty's mouth and perform a single sweeping motion to the opposite side, flicking out vomit, blood, and debris.

Infants: An infant is defined as younger than one year.

The upper airway in infants 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.

Therefore, in infants the head should be kept **neutral** and maximum head tilt should not be used. The lower jaw should be supported at the point of the chin with the mouth maintained 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 backwards very slightly with a gentle movement.



Neutral Alignment: Infant Airway Position

Breathing:

Normal breathing is essential to maintaining life. Victims who are gasping or breathing abnormally and are unresponsive require resuscitation

Causes of absent or ineffective breathing:

- 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

Signs of ineffective breathing may include:

- Little or unusual chest movement
- Weak or abnormal breath sounds (wheezing, etc)
- Occasional gasps
- Reduced responsiveness
- Anxiety
- Unusual skin colour (pallor)
- Rapid or slow breathing
- Unusual posture.

How to check for breathing:

The rescuer should -

- **LOOK** for movement of the upper abdomen or lower chest
- **LISTEN** for the escape of air from nose and mouth
- **FEEL** for breath on the side of your face / movement of the chest and upper abdomen.
- **This should take you no longer than 10 seconds.**



Checking for breathing

If the unconscious victim is unresponsive and not breathing normally after the airway has been opened and cleared, the rescuer must immediately commence chest compressions and then rescue breathing (CPR). Give 30 compressions and then two breaths allowing about one second for each inspiration.

Note: If unwilling or unable to perform ventilations, rescuers should continue **compression only CPR!**

Rescue breaths:

Kneel beside the victim's head. Maintain an open airway. Use resuscitation barrier device. Take a breath, open your mouth as widely as possible and place it over the victim's slightly open mouth. Whilst maintaining an open airway pinch the nostrils (or seal nostrils with rescuer's cheek) and blow to inflate the victim'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 to reduce this problem. For 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 collapse. Care should be taken not to over-inflate the chest

Look for rise of the victim's chest whilst inflating. If the chest does not rise, possible causes are:

- Obstruction in the airway (inadequate head tilt, chin lift, tongue or foreign body);
- 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. Following inflation of the lungs, lift your mouth from the victim's mouth, turn your head towards the victim's chest and listen and feel for air being exhaled from the mouth and nose.



Rescue breathing using universal precautions

Mouth to nose:

The mouth to nose method may be used where the rescuer chooses to, the victim's jaws are tightly clenched, or when resuscitating infants and small children. The technique for mouth to nose is the same as for mouth to mouth except for sealing the airway. Close the victim's mouth with the hand supporting the jaw and push the lips together with the thumb. Use a resuscitation barrier device.

Take a breath and place your widely opened mouth over the victim's nose (or mouth and nose in infants) and blow to inflate the victim's lungs. Lift your mouth from the victim's nose and look for the fall of the chest; 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 victim's mouth is not sealed adequately. If this problem persists, use mouth to mouth resuscitation. It may be found that blockage of the nose prevents adequate inflation. If this occurs, mouth to mouth resuscitation should be used

C – Cardiopulmonary Resuscitation (CPR)

Effective CPR - 30 compressions followed by 2 Breaths

CPR is a repetitive cycle of:

1. Airway opening.
2. Chest compressions
3. Rescue breathing

External chest compression is the most effective way of artificially circulating blood. Chest compressions are accompanied by rescue breathing which provides oxygen that the blood delivers around the body to its vital organs. This is the only way to keep the heart and brain oxygenated until a defibrillator arrives.

Recognition of the need for chest compressions:

First aiders should use unresponsiveness and absence of normal breathing to identify the need for resuscitation. Feeling for a pulse is unreliable and should not be performed to confirm the need for resuscitation.

When should CPR be performed?

CPR should be performed on casualties who are not breathing or unresponsive and breathing inadequately. Sometimes a casualty suffering a cardiac arrest may occasionally gasp, but this does not constitute breathing.

When not to perform CPR:

You should not perform CPR:

- When it is too dangerous to rescuers
- When there are obvious signs of death, for example rigor mortis
- When the casualty's injuries are clearly too severe for survival.

Complications:

Broken ribs are not uncommon during CPR. If this occurs, check your hand position and continue. You can reduce the chance of breaking ribs by placing your hands in the correct position and by avoiding excessive force during compressions. Broken ribs will decrease the effectiveness of chest compressions in generating blood flow, but this cannot always be avoided.

Reassessment:

After every two minutes of CPR, reassess for signs of life (coughing, breathing, or movement). This should take no longer than 10 seconds. If the casualty begins to show signs of life during CPR, reassess the breathing immediately. If the casualty is breathing, place them into the recovery position and monitor continuously.

When to stop CPR:

You must perform CPR uninterrupted until one or more of the following happens:

- The casualty recovers responsiveness and is able to breathe on their own
- You are placed at significant risk
- You cannot continue due to exhaustion
- Advanced help arrives and takes over the care of the casualty.

Compression only CPR:

If Rescuers are unwilling or unable to do rescue breathing they should do chest compressions only. If chest compressions only are given, they should be continuous at a rate of approximately 100 per minute.

Locating the site for chest compressions:

There is insufficient evidence for or against a specific hand position for chest compressions during CPR. For a victim receiving chest compressions, place your hands on the lower half of the sternum. Rescuers should place the heel of their hand in the centre of the chest with the other hand on top. 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:

Children and Adults

- Two hand technique is used for performing chest compressions in adults
- One hand technique is used to perform chest compressions on children under 8 years old

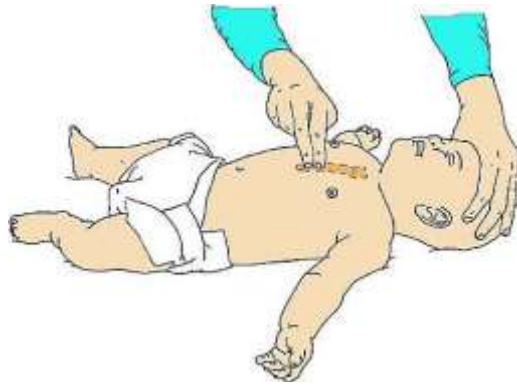


(Adult) 2 Handed CPR

Infants

In infants the two finger technique should be used by lay rescuers to minimise transfer time from compression to ventilation. Having obtained the compression point the rescuer places two fingers on this point and compresses the chest. Interruptions to chest compressions must be minimised.

Infants requiring chest compressions should be placed on their back on a firm surface (e.g. table or floor) to optimize 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.



(Infant) 2 Finger CPR

Depth of compression:

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

Rate of chest compressions:

Rescuers should perform chest compressions for all ages at a rate of approximately **100 compressions per minute** (almost two compressions per second). This does not imply that 100 compressions will be delivered each minute, since the number will be reduced by interruptions for breaths given by rescue breathing.

CPR quality:

When performing compressions, if feasible, change rescuers at least every two minutes, to prevent rescuer fatigue and deterioration in chest compression quality (particularly depth). Changing rescuers performing chest compressions should be done with minimal interruptions to the compressions.

Automated External Defibrillator (AED)

The Primary Survey

Defibrillation:

Attach an **Automated External Defibrillator** (AED) if it's available and follow the instructions given by AED.

There are several brands of AED's available in NZ. They are all effective, but there are differences in their design and operation. If you have regular access to an AED, it is important that you familiarise yourself with its operation.

The heart is a muscle that pumps blood around the body. This function is achieved through a mechanical contraction of the heart initiated by a coordinated electrical stimulation from within the heart. When the rhythmic electrical activation of the heart becomes abnormal, the heart muscle contraction can become less effective. Ventricular fibrillation (VF) is a catastrophic rhythm disturbance

where electrical activation becomes uncoordinated. As a result, small parts of the heart muscle contract rapidly and the heart stops effectively pumping blood to the brain, leading to a cardiac arrest.

Ventricular fibrillation is most commonly caused by a heart attack (a blocked artery within the heart), and is the leading cause of sudden death: people in VF lose responsiveness within 5-10 seconds, and without appropriate treatment this condition is fatal. CPR will keep some blood flowing to the brain, but it will not correct the ventricular fibrillation.

The only thing that will reliably stop VF and allow restoration of the normal coordinated electrical stimulation is a large electric shock. This procedure is called defibrillation. The chance that defibrillation will work is governed by time. For **every minute** of delay in receiving a defibrillating shock, a person's chance of surviving the event decreases by about **10%**.

An AED is a device that has been designed in a way that a person with little or no training can use it effectively and safely, to defibrillate a casualty within 60 seconds.



To operate an AED:

1. Turn the device on (there will be a clearly marked On/Off button).
2. Once the device is turned on, the device will start charging and provide audible prompts.
3. Follow all the instructions given by the AED.

Safety considerations:

Always keep in mind the following safety considerations:

- Do not touch patient when shocking, make sure everyone is clear
- Do not use the AED in flammable environments
- Do not use the AED on casualties who are lying in water
- Do not use the AED on casualties who are lying on metal surfaces.

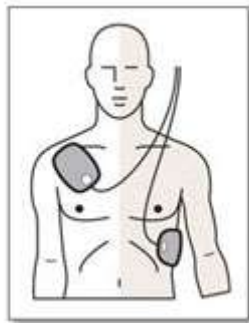
Indications for use:

The AED should be used on all unresponsive casualties who are inadequately breathing or not breathing.

Placement of pads:

Follow the manufacturer's directions for specific placement of pads on the casualty's body.

1. Using a razor (if provided), quickly remove excess hair to assist with adhesion of the pads.
2. Dry the chest of excessive moisture to assist with adhesion.



Pad placement on an adult

Using an AED on children:

There are specific child pads designed to reduce the size of the shock delivered to children aged 1 to 8, and they should always be used if available. If the AED does not have a paediatric mode or paediatric pads, then the standard adult AED and pads can be used. Ensure the pads do not touch each other on the child's chest. This may require the one pad to be placed on the centre of the chest and the other one on their back, slightly to one side. If child pads are not available, you can use adult pads placed in the front and back position.



Child Pad Placement

Safety Note: AEDs should not be used on infants less than one year old.

Positioning an unconscious, **breathing** victim:

With an unconscious victim, care of the airway takes precedence over any injury. If a casualty is to be left unattended or is vomiting – protection of the airway is more important than protecting a neutral spine. In this case, turn them over, use the finger sweep if necessary and put them in the stable side position. All unconscious victims must be handled gently and every effort made to avoid any twisting or forward movement of the head and spine.



Supporting the head/neck

A stable side position is the single most effective method of providing and maintaining a clear airway in the unresponsive, breathing casualty.

The stable side position:

- Allows the tongue to fall away from the back of the throat, enabling the casualty to maintain a clear airway
- Facilitates drainage and reduces the risk of inhaling foreign material
- Is suitable for any unresponsive, breathing casualty, who has to be left alone for any reason.

Many versions of the stable side position exist. When considering the specific position to be used, the following principles should be observed:

- The victim should be placed on their side with the head tilted, to allow free drainage of fluid
- The position should be stable
- Any pressure on the chest that impairs breathing should be avoided
- It should be possible to turn the victim onto the side and return to the back easily and safely, having particular regard to the possibility of cervical spine injury
- Good observation of and access to the airway should be possible
- The position itself should not give rise to any injury to the victim
- Rescuers should continuously assess for, and manage deterioration.

Procedure:

1. Kneel beside the casualty and check the casualty's pockets for anything that could injure them during the procedure.
2. Roll the casualty toward you, pulling from the casualty's hip and shoulder.
3. Once the casualty is on their side, tilt their head back to ensure an open airway.

4. Move the casualty's uppermost knee to a position approximately 90° from their torso.
5. Move the casualty's uppermost arm to a position approximately 90° from their torso.



Adult / Child Stable Side Position



Infant Stable Side Position

Once in a stable side position, you need to continually monitor breathing and make sure that the airway is still clear and open. If a casualty is to be left unattended or is vomiting – protection of the airway is more important than protecting a neutral spine. In this case, turn them over, use the finger sweep if necessary and put them in a stable side position.

Bag Valve Mask (BVM) Resuscitator

Ventilation

A **Bag Valve Mask Resuscitator** is a manually operated air/oxygen delivery device, suited to casualties who are breathing inadequately or not breathing. It has a reservoir bag attached that increases the delivery of oxygen (if fitted). Some organisations have a BVM Resuscitator as part of their first aid equipment.



Bag / Valve / Mask Device

Technique:

- Ensure that the BVM is assembled correctly.
- Make sure the casualty is positioned on their back.
- If the casualty is responsive, explain what you are doing and reassure them.
- Manually open the airway and maintain it open at all times.
- Assess breathing, look, listen and feel.
- Position yourself at head of the casualty, supporting their head with your thighs with the airway open
- Place the facemask over the mouth and nose.
- Press downward on the mask with your thumb positioned above where the bag meets the mask and your forefinger below. Make sure the air does not leak out around the facemask – 'C grip'.
- Position the remaining three fingers under the chin, so that you can lift the chin (chin-lift). Make sure the airway remains open.
- Slowly compress the bag while applying downward pressure on the mask, forming a tight seal over the casualty's face.
- Check that the casualty's chest rises and falls adequately.
- If there is no chest movement, recheck the airway and mask application, and ensure that the airway is open.
- Continue with ventilations and attach oxygen if available. Ventilations should be given at the rate of either 10-12 breaths per minute (one breath every 5-6 seconds) or 2 ventilations after 30 chest compressions.

Complications:

Care must be taken to ensure that the airway is opened and that air does not escape around the edge of the mask. If the chest fails to rise, recheck the equipment, reposition the airway using head-tilt / chin-lift and then consider the two person technique. Excessive pressure may cause stomach distension (ballooning) possibly causing the casualty to vomit. If vomiting occurs, roll the casualty onto their side and clear the airway.

Cardiac Arrest & The Chain Of Survival

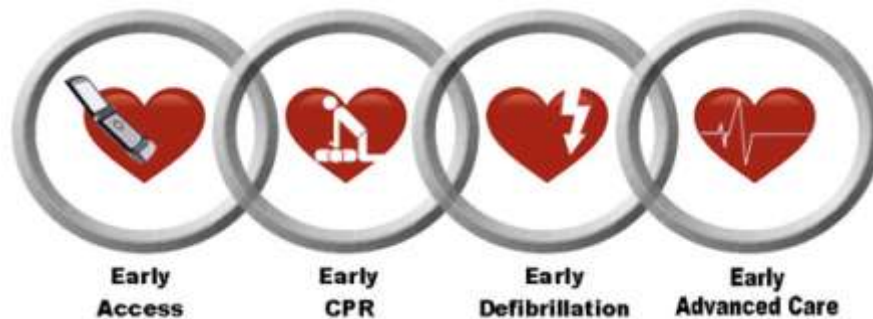
Interventions

Cardiac arrest occurs when the heart is no longer able to effectively pump blood around the body. If not treated, this will cause death within minutes. One of the consequences of cardiac arrest is the disruption of the electrical activation of the heart. When this happens, the heart muscle can rapidly contract in an uncoordinated fashion. This rhythm is called **ventricular fibrillation (VF)**. While a heart attack is the most common cause of cardiac arrest, it is not the only cause and the majority of people who suffer a heart attack do not have cardiac arrest.

Adult chain of survival:

The key steps to surviving a cardiac arrest in adults are described as the **adult chain of survival**. There are five links in this chain and each one needs to occur promptly to ensure survival.

1. **Early recognition** by a bystander that a problem exists.
2. **Early 111** call to activate the Emergency Medical Services (EMS).
3. **Early CPR** to maintain artificial ventilation and circulation until the EMS arrives.
4. **Early defibrillation** to deal with the heart's electrical problems.
5. **Early advanced medical care**.



The survival rate for cardiac arrest is **very low** in most countries, including New Zealand. It is time-critical, with the chances of survival decreasing by about **10%** for **every minute** you have to wait for a defibrillator.

Foreign Body Airway Obstruction (Choking)

Interventions

Overview

Airway obstruction may be **partial** or **complete** and may be present in the conscious or the unconscious victim. Some 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 leading to swelling of the airway.

The symptoms and signs of obstruction will depend on the cause and severity of the condition. Airway obstruction may be gradual or sudden in onset and may lead to complete obstruction within a few seconds. Consequently the victim should be observed continually.

In the conscious victim 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 (clutching the neck with the thumb and fingers).



Universal Choking Sign

Airway obstruction:

There are two types of airway obstruction:

Partial:

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

Complete:

- 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 victim until rescue breathing is attempted.

Signs and symptoms:

The indications that someone may be struggling with an obstruction are:

- Panic
- Grasping the throat
- Inability to speak
- Inability to breathe
- Colour of face (pallor)
- Inability to cough.

Treatment for choking adults and children

Effective Cough (Partial Airway Obstruction)

- A casualty 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 Victim

- If the casualty is conscious, call an ambulance
- 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.



Supporting the casualty / Delivering back blows

- If back blows are unsuccessful the rescuer should perform up to **five chest thrusts**. Check to see if each chest thrust has relieved the airway obstruction. The aim is to relieve the obstruction with each chest thrust rather than to give all 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. Children and adults may be treated in the sitting or standing position. If the obstruction is still not relieved, continue alternating five back blows with five chest thrusts.



Chest Thrusts

Unconscious Victim

The finger sweep can be used in the unconscious victim with an obstructed airway if solid material is visible in the airway. **Commence CPR immediately!**

Treatment for choking infants (less than 1 year):

The following procedure is for a choking infant:

- Check to see if the obstruction can be cleared using the finger sweep.
- Lay the infant in a lying face down position over your forearm, supporting the baby's face and body with your arm. The infant's body should be inclined downwards to utilise the effects of gravity.
- Deliver up to five blows between the infant's shoulder blades.
- If the obstruction is still present, turn the infant onto their back, again with the body inclined.
- Deliver up to five chest thrusts between the infant's nipples (breast bone) using two fingers.
- Repeat this process until the obstruction is cleared or the infant becomes unresponsive.
- Commence CPR if the infant becomes unresponsive.

The Secondary Survey

Casualty Assessment

The secondary assessment/survey is a systematic and thorough **head-to-toe check (down front and back)** of the injured or ill casualty. It is performed **after** the primary assessment to identify any significant injuries. In an injured casualty, this is achieved through a body sweep, in an attempt to identify any obvious injuries such as fractures or bleeding.

The secondary assessment is also useful to obtain information for more advanced medical assistance. Questioning techniques such as **SAMPLE** and **PQRST** and the recording of **vital signs** can provide further information that may assist in the treatment of the casualty.

The secondary assessment is also useful to obtain information for more advanced medical personal when they arrive. The assessment should not take any longer than 1–2 minutes. If the casualty is responsive, you need to talk to them and explain what you are doing. It should be undertaken only when the primary assessment has been completed and any issues resolved. **You need to record your findings and pass them on to ambulance crew during the handover.**

Secondary assessment procedure

The procedure for the **secondary assessment** is as follows:

- Always wear gloves. Systematically checking for blood / fluids on gloves as you progress through the secondary survey.
- Central nervous system: Talk to the casualty and assess their level of responsiveness.
- Starting at the casualties head: Look and feel for any deformity and tenderness. Check for fluid leaking from ears and nose
- Neck: Look and feel for any deformity and tenderness. Consider MOI, and any neck or spinal injury
- Chest: Look and feel for any deformity and tenderness. Look for equal rise and fall of the chest, and for any obvious bruising.
- Back: Look and feel for any deformity and tenderness.
- Abdomen and pelvis: Look and feel for any deformity and tenderness.
- Extremities (arms and legs): Look and feel for any deformities. Check for strength by asking the casualty to squeeze your hands or push your hands with their feet.
- Checking and recording of any vital signs

Information gathering:

As part of the secondary assessment in medical related incident, this will involve questioning and the recording of vital signs. Good questioning enables you to gather information that may be useful for EMS staff.

Note: This may be the last opportunity to obtain this information (if the casualty becomes unresponsive).

Managing a responsive casualty:

- Undertake the primary assessment
- Call for assistance (make sure ambulance is in route)
- Position the casualty in the most comfortable position for them, or stable side position if unresponsive and breathing normally
- Undertake the secondary assessment – **PQRST** and **SAMPLE** questioning.
- Encourage/ assist the casualty to administer **their** medicines (if required).
- Rest and reassure

Questioning:

Types of questioning:

There are two key questioning methods: **PQRST** and **SAMPLE**. It is good practice to write notes so that the information can be relayed to ambulance staff.

P Promotes or alleviates-does anything make the pain better or worse?

Q Quality-can you describe what the pain feels like e.g. dull, sharp, crushing or throbbing?

R Region/radiates-where is the pain? Does it go anywhere else?

S Severity-on a scale of 1-10, how would you rate the pain?

T Time-how long have you had the pain?

S Signs and symptoms

A Allergies-are you allergic to anything?

M Medications-are you on any medication, when and how long ago did you take it?

P Past history- do you have any medical conditions, has this happened before?

L Last meal-when did you last eat or drink?

E Events prior to incident. What happened, what were you doing?

Vital signs:

It is very important to have a clear understanding of the casualty's vital signs and to know what they mean, and what the possible consequence are to any change to these vital signs. First aiders should check and record:

- **Respirations** - how many times per minute the patient breathes, laboured or normal.
- **Pulse** - how many times the heart beats per minute, weak or strong, regular or irregular.
- **Temperature** -what is the temperature of the casualty?
- **Pupils** - the pupils can tell a lot about how the brain is functioning. Both pupils should be roughly equal in size and reactive to light.

When a light is directed into the pupil, a normal functioning pupil should instantly constrict, and dilate again once the light is removed. Consider medical reasons for abnormal constriction and dilation or unequal pupil size.

A **normal** pupil in a fit and healthy person ranges from **3.0mm to 6.5mm**

Any abnormal change in pupil size can occur as a result of:

- Medications
- Drugs
- Toxins (poisons)
- Head trauma
- Stroke

Vital signs – Ranges:

	Respirations	Pulse	Temperature	Blood pressure
Adult	12-20 rpm	60-80 bpm	37C	120/80 mmhg
Child	20-30 rpm	60-100 bpm	37C	100/65 mmhg
Infant	30-40 rpm	100-160 bpm	37C	95/65 mmhg

Extended care in the outdoors - WRAPT

W	Warmth	Insulate the casualty, remove wet clothing, protect from the elements
R	Rest	This, along with concern / empathy can help the casualty cope and have a positive effect on vital signs
A	Assess again	Monitoring, recording and evaluating vital signs will help you to tell if the condition of the casualty is getting worse
P	Positioning	Lying flat? Semi-sitting? Legs raised? Stable side position?
T	Treatment	You can begin this when you know what the illness / injury is. Arranging evacuation will have to be considered

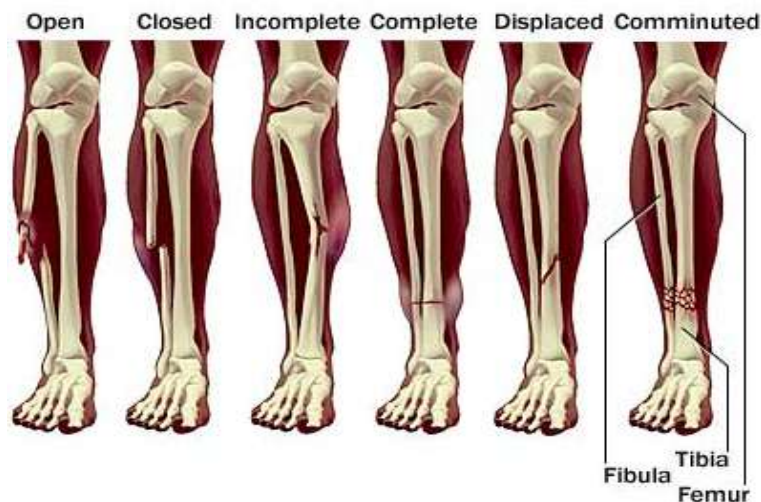
Always check to see if the casualty is carrying **medical ID** or wearing **medical alert** jewellery e.g. www.medicalert.co.nz

Overview:

Fractures in a pre-hospital environment rarely need splinting. The most important focus in fracture management is to effectively treat any associated external bleeding and to perform the primary survey. Significant blood loss can occur from fractures and bleeding can be internal.

Types of fractures:

Open fractures These are fractures that have punctured the skin. The bone end may have returned and not be visible, but this is still an open fracture.



Common Types Of Fracture

Closed fractures These are fractures where the surrounding skin remains intact.

Complicated fractures These are fractures that have caused damage to internal structures, such as a punctured lung, or a fracture that involves significant bleeding.

Signs and symptoms

A casualty experiencing a fracture may experience one or more of the following signs and symptoms:

- Pain at the injury site
- Bleeding (internal or external)
- Open wounds with or without exposed bone ends
- Deformity
- Shortening or rotation of the limb
- Inability to move or stand
- The casualty reports hearing the bone break

- Tenderness
- Swelling or irregularity
- Shock like signs and symptoms
- Crepitus (the sound of bones grinding)
- Discolouration
- Shortening of the limb

Management

The steps for the management of fractures are:

- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).
- Control any external bleeding using direct pressure and elevation if possible.
- For a closed fracture, ice packs may be used to assist with pain relief and swelling.
- Minimise any unnecessary movement unless for safety reasons
- If the injured limb needs to be immobilised, make use of whatever you have got at hand to do so e.g. pillows, magazines, or dressings to support the limb.
- Check the circulation below the fracture site.
- Carry out secondary assessment
- Rest and reassure

Soft Tissue Injury

Trauma Management

Overview

Ligaments and tendons are soft tissues that connect muscle and bones together. They can be damaged as a result of forceful joint movements and/or external pressure on the body. Sprains and strains can limit movement by causing pain and swelling in the area of injury. More serious underlying injuries can be present, for example fractures or tendon ruptures.

Treatment - RICED:

ACC has specific guidelines on how to deal with sprains and strains. This is simplified with the acronym **RICED**.

- R Rest:** Stop the activity
- I Ice:** For up to 20 min
- C Compression:** To reduce the swelling
- E Elevation**
- D Diagnose:** Soft tissue injuries may be referred to a doctor in order to identify any potential fracture/s

Signs and symptoms:

A casualty experiencing a soft tissue injury may display one or more of the following signs and symptoms:

- Pain in the area of injury
- Lack of, or limited movement
- Inability to bear weight
- Swelling
- Tenderness
- Bruising

Management:

The steps for the management of soft tissue injuries are:

- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).
- Remove constrictive clothing or jewellery.
- Apply the **RICED** technique.

Bleeding**Trauma Management****Overview**

Bleeding is one of the most rectifiable causes of death following trauma, therefore controlling external bleeding is a main priority when administering care in a pre-hospital environment.



There are three main types of blood vessel:

- Arteries
- Veins
- Capillaries

Types of bleeding:

Arterial bleeding will be profuse and rapid because it is under pressure. It will be spurting as the heart beats, which will make it difficult to control and difficult for clots to form. This bleeding will be bright red as arterial blood is comprised of highly oxygenated red blood cells. Arterial bleeding is a significant and life-threatening blood loss.

Venous bleeding is easier to control because the blood in the veins is under less pressure, which assists with clotting. Because it carries less oxygen, venous blood is a much darker red. Dangerous levels of blood loss can occur from venous bleeding.

Capillary bleeding is the most common and easiest to control, as capillaries are closest to the surface of the skin. Blood tends to ooze rather than flow or spurt as the pressure in the capillaries is very low.

Management:

- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route)
- Make sure there isn't a foreign body in the wound before applying direct pressure
- Apply direct pressure
- Elevation
- If unresponsive and breathing is adequate, place the casualty in the recovery position
- Carry out secondary survey
- Severe bleeding may lead to unconsciousness and may require life support (CPR)
- Rest and reassure

Direct pressure:

Direct pressure is the **main** treatment used to manage bleeding:

1. After checking for any foreign objects in the wound, apply firm pressure, directly onto and into wound, using large sterile trauma dressings.
2. If blood soaks through the initial dressing, apply further dressings as required.



Application of direct pressure

Elevation:

Elevate the affected area above the level of the heart, if possible.

Tourniquet:

Example Of A Improvised Tourniquet

An improvised tourniquet is only to be used as last resort. **Do not** remove once applied.

Overview:

Shock is a medical emergency in which the organs and tissues of the body are not receiving an adequate flow of blood. This deprives the organs and tissues of oxygen (carried in the blood) and allows the build-up of waste products. The most common cause of shock you may encounter is caused by severe blood loss (Hypovolaemic shock). Shock can easily lead to death if the cause is not treated urgently.

Five main types of shock:

- Cardiogenic shock (problems associated with the heart's functioning)
- Hypovolaemic shock (the total volume of blood available to circulate is low)
- Anaphylactic shock (caused by a severe allergic reaction)
- Septic shock (caused by overwhelming infection, usually by bacteria)
- Neurogenic shock (caused by damage to the nervous system from a spinal cord injury or neurological disorder).

Typical Causes of shock include:

Loss of circulating blood volume, which can result from:

- Severe bleeding
- Major or multiple fractures
- Major trauma
- Severe burns or scalds
- Severe diarrhoea and vomiting
- Severe sweating and dehydration (heat stroke).
- Heart disorders
- Anaphylactic reaction
- Severe brain/spinal cord injury

Signs and symptoms of shock:

There are several indicators that a casualty is going into shock:

- The body's non essential organs slow down
- Rapid weak pulse
- Pallor, cold, clammy, sweaty skin
- Nausea or vomiting
- Thirst
- Altered level of responsiveness

Shock management:

- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).
- Minimise any movement to casualty
- If bleeding is present attempt to manage by applying direct pressure and elevation.
- Where possible have the patient lying down with their legs and feet raised (shock position) or if unresponsive and breathing is adequate, place the casualty in the recovery position
- Keep the casualty warm but do not overheat
- Undertake a secondary assessment.
- Rest and reassure.

Concussion

This is a temporary loss or altered level of consciousness occurring after a head injury or impact to the skull area. Casualty's who subsequently show a decline in conscious level may be suffering from a more serious brain injury, requiring urgent medical attention.

Mild concussion may involve no loss of consciousness (feeling "dazed") or a very brief loss of consciousness (being "knocked out").

Severe concussion may involve prolonged loss of consciousness with a delayed return to normality.

Causes:

Concussion can be caused by any significant blunt force trauma or jolt to the head e.g. falls, car accidents, or being struck on the head with an object

The signs and symptoms of concussion are:

- Loss of consciousness after any trauma to the head
- Temporary confusion
- Confusion that lasts several minutes
- Nausea
- Inability to recall the incident
- Blurred vision

Management:

- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).
- If unresponsive and breathing is adequate, place the casualty in a stable side position
- When you move the casualty, immobilise the casualty by supporting the head and neck with both hands. This will minimise head, neck and spinal movement.
- Carry out a secondary assessment, taking into consideration any neck or spinal injury
- Rest and reassure

Head Injury is damage to living brain tissue caused by an external mechanical force. It is usually characterised by a period of unconsciousness lasting minutes, months or indefinitely. The resulting damage to the brain tissue impairs the individual's abilities both physically and mentally. Other causes of head injuries are chemical exposure and alcohol related damage.

There are some groups in the community who are more susceptible to head injury than others:

- Young male adults aged 17-25 make up 50% of known head injury victims, usually as the result of car accidents.
- Pre-schoolers are the next most vulnerable with falls from play equipment, windows and down stairs.
- The Elderly are also vulnerable to head injury mainly from falls in the home.

Causes:

About 170 New Zealanders are hospitalised with head injuries every week and many more are concussed or have mild head injuries. These can be caused by:

- Motor vehicle accidents
- Assaults through blunt force trauma
- Sporting accidents
- Accidents at home
- Industrial accident
- Exposure to solvents
- Exposure to drugs and alcohol

Signs and symptoms of head injuries are:

- Skull deformity
- Obvious signs of a head wound
- Bleeding or straw coloured fluid discharge from ears, nose or mouth.
- Slurred speech
- Bruising around the edges of the eyes (raccoon eyes) and behind the ears
- Unconsciousness, drowsiness or vagueness
- Loss of memory
- Agitation or irritability
- Lack of coordination
- Bleeding into the eyes
- Changes in size or shape of pupils
- Seizures.

Management:

- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).
- If unresponsive and breathing is adequate, place the casualty in a stable side position
- When you move the casualty, immobilise the casualty by supporting the head and neck with both hands. This will minimise head, neck and spinal movement.
- Control any external bleeding.
- If the casualty is bleeding from the ear, carefully position them with the bleeding ear down. However, if you find the casualty is bleeding from both ears, cover the ears with a sterile pad.
- Undertake a secondary assessment.
- Rest and reassure the casualty.

Overview:

Spinal injuries are caused by traumatic forces on the body. The spine is a set of vertebrae held together by a series of ligaments. The spinal cord passes through the centre of the vertebrae, and its nerves transmit the signals to and from the brain that control muscle movement such as breathing, and monitor sensation such as temperature. The majority of spinal injuries involve the ligaments in the spine; this will cause pain but will not generally cause serious disability. More serious spinal injuries occur when the vertebrae shift, causing damage to the spinal cord. This can result in paralysis and, in severe cases, can cause death.

Some common causes of spinal injuries include:

- Motor vehicle crashes
- Diving accidents
- Head injuries
- Falls when the casualty lands on their feet or head
- Assaults
- Industrial accidents

Signs and symptoms:

A casualty experiencing a spinal injury may display one or more of the following signs and symptoms:

- Pain in the injured area
- Numbness and tingling
- Loss of feeling or weakness in parts of the body
- Loss of feeling or sensation
- Priapism in males (unwanted, uncontrolled erection)
- Loss of bladder control.
- Altered level of consciousness
- Swelling or bruising over the injured area
- Evidence of a wound

Consider the Mechanism of Injury (MOI) if:

- There's evidence of a head injury with an ongoing change in the person's level of consciousness
- The person complains of severe pain in his or her neck or back
- The person won't move his or her neck
- An injury has exerted substantial force on the back or head
- The person complains of weakness, numbness or paralysis or lacks control of his or her limbs, bladder or bowels
- The neck or back is twisted or positioned oddly

Management:

If you suspect someone has a spinal injury:

- Keep the person still. Support head and neck to prevent movement. The goal of first aid for a suspected spinal injury is to keep the person in the same position as he or she was found
- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).

- If unresponsive and breathing is adequate, consider placing the casualty in the recovery position (see movement section below)
- Undertake a secondary assessment.
- Rest and reassure

Movement of a casualty with suspected spinal injuries:

If you absolutely must move the person because he or she is vomiting, choking on blood or in danger of further injury, you need at least one other person. With one of you at the head and another along the side of the injured person, work together to keep the person's head, neck and back aligned while rolling the person onto one side.

Sucking Chest Wound

Trauma Management

A 'sucking chest wound' occurs when the chest wall is punctured by a penetrating object.

Air is then sucked into the chest cavity (Pneumothorax), which may cause the lung to collapse. If air continues to enter the chest space faster than it can escape, then the rising pressure can force the collapsed lung to press on the heart and other lung

Treating a sucking chest wound requires two things:

- Keeping air from going in
- Letting extra air out.

It can be difficult to identify when a penetrating wound to the chest is sucking air or not, so it's best to assume any penetrating wound to the chest is a sucking chest wound.

Note: a sucking chest wound is a life threatening critical incident and requires immediate medical attention.



Sucking chest wound

Signs and symptoms:

- Obvious trauma to chest (gun shot or stabbing)
- Pink frothy blood oozing out
- Difficulty breathing
- Unequal chest (one side looks different to the other)
- Veins on the neck bulging (jugular vein distension)
- Blue lips, neck or fingers (cyanosis)
- No lung sounds on one side
- Severe shortness of breath

Management:

- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).
- If an object is present, leave the penetrating object in the chest, do not remove it. Removing the object can cause further damage to the chest or lung. Try and place roller bandages around knife or apply a donut style bandage.
- Cover the sucking chest wound with an airtight seal. This is the most important thing you can do to save the life of the injured person.
- Cover it with an occlusive dressing (one that doesn't allow air to pass through it). It can be a plastic bag, a glove, plastic wrap or aluminium foil folded several times, or any other material that won't allow air to pass
- Tape to hold it in place along 3 sides leaving the bottom open. By doing this, you allow air to escape during exhalation, but it won't let air in during inhalation
- Position patient in the recovery position with the injured side towards the ground so that the wound drains and does not build up.
- Carry out secondary assessment
- Do not give the victim anything to eat or drink, including water
- Keep casualty warm
- Rest and reassure



3 sided dressing

Burns to the following areas (and sizes) **must always be seen by a medical professional:**

- Head
- Eyes
- Feet
- Groin
- Neck
- Hands
- Joints
- Burns exceeding the size of the casualty's palm



Burns to children **under 5** and also the **elderly** must also be seen by a medical professional.

Recognition:

- Severe pain (if 'superficial')
- Redness
- Watery fluid seeping from area
- Signs / symptoms of shock
- Hot to the touch
- Peeling, blistering
- Swelling

Management (The 3 C's):

COOL:	Use tepid, flowing water for at least 20 minutes . Chemical burns up to an hour .
CLEAR:	Remove anything that may keep burning (that isn't sticking). Remove jewellery. Remove clothing that is contaminated by chemicals.
COVER:	Preferably with a non-adherent dressing . Cling-film is ideal (if available).

Management Of Medical Emergencies

What this section contains:

This section will equip you with the knowledge and skills to assist in providing First Aid care to casualties with specific medical conditions. The following medical conditions are frequently seen in a pre-hospital setting:

- Diabetes
- Heart attack
- Angina
- Stroke
- Seizure
- Asthma.
- Severe allergic reactions (anaphylaxis)

Why you need to know this:

These are the most common conditions that officers may encounter; therefore it is very important that you have a good knowledge of how to deal with them. One of the roles of the first aider is to prevent the **deterioration** of the casualty's condition as much as possible, while waiting for more advanced medical assistance.

Management Of Specific Medical Conditions

Medical Emergencies

Why you need to know this

These are the most common conditions you may encounter; therefore it is very important that you have a good knowledge of how to deal with them.

Diabetes

Medical Emergencies

Overview:

Diabetes is a disease which causes the body to insufficiently use glucose (sugar). Insulin is a hormone that the pancreas produces to move glucose around the body. In diabetes, the pancreas does not make enough, or cannot properly use insulin. This condition can lead to the body having too little (hypoglycaemia) or too much sugar (Hyperglycaemia) in the blood.

A diabetic casualty might have special blood sugar monitoring equipment. Some diabetic casualties can regulate their condition through diet alone, while others take regular medication or get insulin injections. In an emergency, it can be difficult or impossible for the first aider to diagnose whether a diabetic has too much or too little blood sugar.

Too little sugar is life threatening and casualties respond almost immediately when you give sugar or a sugary food (or drink) to a responsive casualty. Too much sugar tends to build up slowly, and does not normally present as an emergency. Giving sugar to a casualty with too much sugar does not alter their condition dramatically, whereas giving sugar to a casualty with low sugar levels can be a life-saving treatment.

Therefore, you should **give sugar** in all responsive diabetic casualty emergencies.

There are two types of diabetes:

- **Type 1** - This usually develops in childhood. Sufferers require daily insulin injections because their bodies produce little or no insulin.
- **Type 2** - This usually develops in adulthood and mainly affects people aged over 40 years. Sufferers typically still secrete some insulin, however this is insufficient. This type is controlled by diet, exercise and/or oral medication, although some severe sufferers may require insulin injections on a daily basis.

Both type 1 and type 2 diabetic patients can experience an imbalance in the concentrations of sugar and insulin in their blood, resulting in either:

- Hypoglycaemia - too little sugar in the blood
- Hyperglycaemia - too much sugar in the blood

Both conditions can cause altered states of consciousness and represent potentially serious medical emergencies if not acted upon immediately.

Signs, symptoms, indicators:

The following are indicators, signs and symptoms of a diabetic event:

- Aggressive demeanour (sometimes can be mistaken for drunkenness)
- Breath smells like acetone, or nail polish remover
- Unconsciousness (coma)
- Thirst
- History of diabetes, a Medic Alert bracelet
- Missing a meal
- Missing medication
- Confusion, inability to concentrate, or difficulty speaking
- Dizziness
- Racing heart or irregular heart rhythm
- Sweating or clamminess
- Muscle tremors

Management

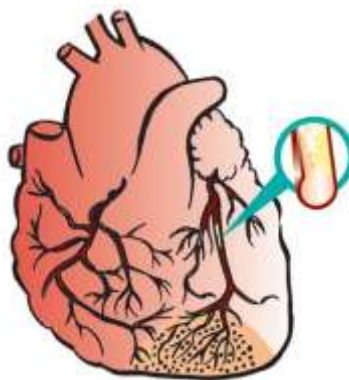
- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).
- If the casualty is **conscious**, give them fluid or food containing sugar, such as lollies, sugar enriched soft drinks, fruit juice or water containing several teaspoons of sugar.
- If the casualty is **unconscious**, do not give anything by mouth, follow DRS ABCD and place in recovery position if breathing
- Carry out a secondary assessment
- Rest and reassure.

Note:

Whilst the management plan is the same for both conditions, only hypoglycaemic casualties will respond to sugar.

Heart Attack**Medical Emergencies****Overview:**

The heart is a muscle that pumps blood around the body. It receives its blood through coronary arteries. From the age of about 20 years, these arteries start to become damaged through a process called **atherosclerosis**. Atherosclerosis causes fatty deposits or plaque to form on the walls of arteries.



After time, the surface of the fatty deposits or plaque begins to erode, and the blood starts to clot over the eroded surface. This clot can **completely block the artery**. Due to the blockage of the artery, a portion of the cardiac muscle stops getting oxygen from the blood. This part of the cardiac muscle will die, unless oxygen delivery is restored quickly. This condition is called 'myocardial infarction' or **heart attack**.

Heart attacks can occur suddenly, without warning or exertion. When a coronary artery is blocked, the area of muscle below the blockage can die within four to six hours. This can be prevented with appropriate medical intervention and drugs. As only advanced medical professionals can administer these drugs, the key to survival is calling an ambulance or seeking medical attention quickly. In New Zealand, heart attacks are the leading cause of sudden death.

Signs and symptoms:

A casualty experiencing a heart attack may display one or more of the following signs and symptoms:

- Sweating
- Pain or discomfort in the chest, arms, jaw, neck, or teeth; normally described as squeezing, tightness, or a crushing pain.
- Pallor or the skin
- Nausea
- Shortness of breath
- Sense of impending doom.

Management;

When a heart attack occurs, the steps for management are:

- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).
- If unresponsive and breathing is adequate, place the casualty in a stable side position
- Have the casualty **stop** all physical activity, and any unnecessary movement.
- Place them in a comfortable position if **conscious**, normally the sitting position as it is easier to breath
- If the casualty has **their** medication, assist them in following their cardiac plan
- Loosen any tight clothing
- If the person becomes unconscious, prepare for potential cardiac arrest follow DRS ABCD (CPR and AED).
- Carry out secondary assessment
- Rest and reassure

Medication:

If a casualty experiences chest pain, ascertain if they are carrying their prescribed medication e.g. **Nitro-lingual spray or aspirin**, suggest that the casualty take their medication, or assist them to self administer it.

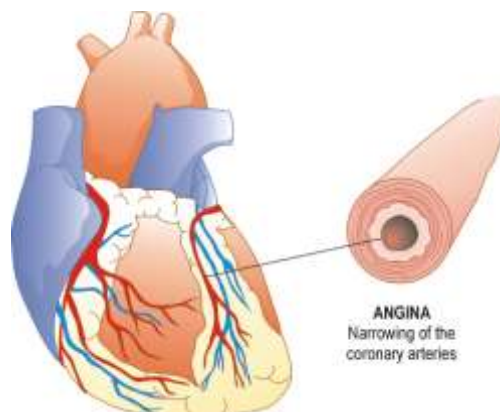
Angina

Medical Emergencies

Overview

People usually get angina because they have coronary artery disease. A coronary artery is a blood vessel taking blood to the heart. In coronary artery disease, clumps of fat build up on the lining inside the arteries. Over time, the arteries get narrow resulting in poor blood flow through the blood vessels of the heart muscle (**partial blockage of the artery**).

During exercise, physical activity or stress, the heart muscle does not get enough oxygen rich blood to meet the demands and effectively pump properly resulting in chest pain.



There are two main types of angina:

- **Stable**
- **Unstable**

Stable angina is chest pain or discomfort that typically occurs with some type of exercise, physical activity or stress. Angina symptoms should improve or go away completely when the person stops or slow down the exercise or activity. The pain of stable angina usually begins slowly and gets worse over the next few minutes before going away. Stable angina normally improves with the use of medication.

Unstable angina is the most dangerous. It does not follow a pattern and can happen without physical exertion. It does not go away with rest. It is a sign that the patient could have a heart attack soon. Unstable angina does not improve with the use of medication.

Normally people who suffer from angina are **aware** of their condition and carry medication to assist with alleviating symptoms.

Signs and Symptoms:

The patient may experience:

- Pressure or a squeezing pain in your chest, lasting more than 10 minutes
- Pain radiating in your shoulders, arms, neck, jaw or back
- Shortness of breath
- Increased pulse rate
- Increased breathing rate
- Nausea or vomiting
- Shock like symptoms (pale, cold and sweaty skin)
- Sudden collapse

Management:

- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).
- If unresponsive and breathing is adequate, place the casualty in a stable side position
- Have the casualty **stop** all physical activity, and any unnecessary movement
- Place them in a comfortable position if **conscious**, normally the sitting position as it is easier to breath
- If the casualty has **their** medication, assist them in following their cardiac action plan
- Loosen any tight clothing
- If the person becomes unconscious, prepare for potential cardiac arrest - follow DRS ABCD (CPR and AED).
- Carry out secondary assessment
- Rest and reassure

Medication:

If a casualty experiences chest pain, ascertain if they are carrying their prescribed medication (**Nitrolingual spray or tablets**), suggest that the casualty take their medication, or assist them to self administer it.



Nitrolingual Spray

Note

It is important to understand that angina can lead to a heart attack, and that the signs and symptoms are similar. All instances of angina should therefore be suspected as, and treated as per a heart attack.

Stroke

Medical Emergencies

Overview

A stroke is the loss of brain function that occurs due to a disruption in the blood vessels supplying blood to the brain. There are two ways in which this can occur:

1. A clot blocks an artery supplying blood to the brain (80% of strokes).
2. An artery in the brain ruptures.

Strokes are a common cause of sudden death in New Zealand and can lead to extensive damage to the brain that can result in paralysis. The key to surviving a stroke is urgent hospital treatment. Our focus in the pre-hospital setting is to get the casualty to hospital via ambulance as soon as possible. The airway and breathing should be managed and monitored at all times before the arrival of an ambulance.

Signs and symptoms:

The signs and symptoms for someone who has experienced some type of cerebral event are:

- Sudden weakness and/or numbness of the face, the arms, or the legs, especially on one side of the body
- Difficulty in understanding speech or speaking
- Loss of vision
- Confusion
- Loss of movement control or balance
- Severe headache
- Loss of bladder control
- Unresponsiveness

Apply the **F.A.S.T.** diagnostic tool:

- **F - Face** - does the face look uneven
- **A - Arm** - does one arm drift down when both at equal positions
- **S - Speech** - does their speech sound different
- **T - Time** - **Call for an ambulance immediately** if you suspect someone has had a stroke. Time is of importance in treating the casualty with advanced care and drugs.

Management of stroke casualties:

The steps for the management of a **responsive** stroke casualty are:

- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).
- Lay casualty down with their head raised.
- Loosen any tight clothing.
- Reassure the casualty.
- Gain the casualty's history through **SAMPLE** questioning.

The steps for the management of an **unresponsive** stroke casualty are:

- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).
- If unresponsive and breathing is adequate, place the casualty in a stable side position
- Loosen any tight clothing
- Undertake the secondary assessment
- Be prepared for the deterioration of the casualty's condition, follow DRS ABCD (CPR and AED)

Note:

Do not allow the use of any type of aspirin, as this may have detrimental effects on the casualty if they are bleeding in the brain as a consequence of a stroke.

Seizures

Medical Emergencies

Overview:

Seizures occur when parts of the brain are affected by sudden, uncontrolled activity. They are usually short-lasting and can appear in different ways. The most common is when the entire body of the casualty has uncontrolled jerking movements in the head, the arms, and the legs. Most people who suffer from seizures take medication on a daily basis to control the condition.

Seizures are normally brief (less than 10 minutes) and will result in little injury to the casualty. A seizure that is prolonged or recurring is a serious medical emergency and, if untreated, can result in death.

A seizure may occur:

- In a person with epilepsy
- As a result of almost any condition affecting the brain, such as head injury, stroke, meningitis, brain tumour.
- In association with some poisons and drugs
- During withdrawal from alcohol or other drugs of dependence
- In young children, normally as a result of a high temperature. This is called a febrile convulsion.

Signs and symptoms:

A casualty experiencing a seizure may display one or more of the following signs and symptoms:

- Aura, which is an unusual sensation preceding a seizure
- The casualty may go quiet and stare
- Loss of bladder control
- Jerking movements of the head, arms, and legs
- Unusual breathing sounds

- Clenched jaw
- The skin may be warm to the touch in infants and children
- Unconsciousness
- The casualty may be wearing a Medic Alert bracelet

Management:

The steps for the management of seizures are:

- Seek medical attention (make sure EMS are en route).
- Protect the casualty from injury, for example, move furniture away.
- Use SAMPLE questioning to obtain the casualty's history from family and/or bystanders.
- When the **seizure stops**, carry out primary survey DRS ABCD.
- If unresponsive and breathing is adequate, place the casualty in a stable side position
- Carry out secondary assessment and deal with any injuries
- Protect the dignity of the casualty by shielding from onlookers
- Reassure them as they may be confused once the seizure stops.

Febrile convulsions

High body temperatures in infants and children (usually greater than 38°C) can cause seizures, which is usually caused by infections. The body raises its temperature to assist with creating a fever, combating infection, but this can result in seizure if their temperature becomes too high. Seizures in infants and children should be treated the same as adults.

Management of febrile convulsions caused by fever:

- Seek medical attention
- Lower the casualty's temperature by removing the child's/infants clothing
- Reduce temperature with a cool, wet flannel (beware of over cooling)
- Cool by fanning where possible

Cardiac arrest:

Seizures are occasionally seen at the start of a cardiac arrest. It is important to undertake a proper primary assessment and, if breathing is absent, begin CPR immediately.

Note

- Protect the casualty from injury by moving furniture or sharp objects that may inflict harm and put thin padding under their head e.g. a folded jacket
- Do not restrain the casualty or try to stop the seizure. Allow the seizure to run its course.
- Do not put your fingers or any other objects in the casualty's mouth

Overview:

Asthma is a disease that affects the lower airways. Asthma is a disease that can be fatal if severe episodes occur, but the majority of these deaths are preventable if managed correctly.

Asthma attack can be broken into **three** categories of severity.

- Mild asthma
- Severe asthma
- Life threatening asthma attack (status asthmaticus)

The key to survival is identifying that an asthmatic casualty needs attention and getting medical **help** as soon as possible.

Common 'triggers' of asthma attack:

- Upper respiratory tract infection
- Dust mites faeces
- Pollen & moulds
- Changes in air temperature
- Exercise
- Stress
- Animal dander (skin flakes / feathers)
- Certain foods and preservatives.

Signs and symptoms:

A casualty experiencing an asthma attack may display one or more of the following signs and symptoms:

- Shortness of breath
- Cyanosis (blue tinge to the skin)
- Wheezing or other noises during breathing
- Difficulty in speaking
- Difficulty breathing
- Sitting upright, using their arms to brace their body
- Anxiety and distress.

Management:

The steps for the management of asthma casualties are:

- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).
- Position the casualty sitting upright (leaning forward / supported).
- If the casualty has **their** medication, assist them in following their asthma plan.
- Reassure casualty
- Carry out secondary assessment.
- If casualty becomes unresponsive and stops breathing adequately follow DRS ABCD and commence CPR.

Medication:

The majority of asthmatic casualties carry medication to prevent and relieve symptoms. They usually follow an **action plan** when an asthmatic event occurs, which outlines the frequency and the amount of each drug used.



Ventolin Inhaler

Hyperventilation

Medical Emergencies

Overview

Hyperventilation is rapid or deep breathing that can occur with anxiety or panic. It is also called 'over breathing', and may lead to breathlessness. Excessive breathing leads to **low** levels of carbon dioxide in the blood. This causes many of the symptoms experienced during hyperventilation.

Signs and symptoms:

- Light-headedness
- Shortness of breath
- Numbness and tingling in the arms
- Muscle tremors
- Rapid breathing
- Anxious demeanour
- Rapid pulse

Common Causes:

- Panic attack
- Stress and anxiety
- Anxiety as a result of O/C spray
- Stimulant use (alcohol)
- Drug overdose

Management:

It is important to note that any casualty suffering from hyperventilation must **increase their carbon dioxide** levels in their bloodstream; you need to assist them to take in **less** oxygen by:

- Sit the casualty down and instruct them to breathe less deeply, more slowly, try and relax and concentrate on their breathing. If possible, get reassurance from a friend or family member to help relax their breathing.

- Tell the casualty to breathe through their nose, this increases the amount of air which is exhaled and immediately re-inhaled and is therefore relatively rich in carbon dioxide.
- Tell the casualty to slow their breathing down to 1 breath every 5 seconds, or slow enough that symptoms gradually go away.
- Try and have casualty mirror your breathing.

Note

If hyperventilation continues for longer than 30 minutes, **call for medical assistance immediately**

Severe Allergic Reaction (Anaphylaxis)

Medical Emergencies

Overview:

Anaphylaxis is a severe allergic caused by an 'antigen' to which the individual has previously been exposed to. The immune system misidentifies the allergen as dangerous and may produce a severe histamine release, **causing a sharp drop in blood pressure**, hives and breathing difficulties. The reaction may be fatal if emergency treatment, including epinephrine (adrenaline) injections, is not given immediately.

Typical causes are:

- Peanuts
- Dairy products
- Wheat
- Soybean
- Fish and shellfish
- Bee stings
- Animal fur
- Some medications (penicillin)
- Latex rubber

Signs and symptoms:

- Itching or tingling in or around the mouth and throat
- Swelling of the lips, face, eyes and throat area
- Shortness of breath
- Wheezing
- Tightening of the chest
- Hives or redness
- Abnormal pain or vomiting
- Loss of consciousness and collapse

Management

- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).
- If unresponsive and breathing is adequate, place the casualty in a stable side position
- Assist patient to self administer prescribed medication that the patient may have.
- If breathing is inadequate (less than 6 breaths p/m), assist breathing with the bag mask or rescue breathing

- Be prepared for the deterioration of the casualty's condition (CPR and AED if the casualty is non-breathing).

Medication:

People with a diagnosed allergy (that may result in anaphylaxis), should have an emergency action plan developed by their doctor. These people often carry prescribed medication with them e.g. Epipen or Anapen. The 'pens' automatically inject adrenalin, which is critical in the management of life threatening anaphylaxis. Suggest that the casualty take their medication, or assist them to self administer it.

Environmental Conditions (Heat & Cold)

Medical Emergencies

Overview:

The control of the body's temperature is very complex and involves a number of processes. Body temperature is regulated by the brain in response to factors such as disease and external temperature. Our normal temperature is about **37°C**. When the temperature of the body increases (**hyperthermia = heat illness**) or decreases (**hypothermia = cold emergency**), the functions of the body can stop or be impaired. This can cause life threatening emergencies that require immediate action and medical attention.

Heat illness:

Heat illness is caused by prolonged exposure to a hot environment. It is caused by heat and dehydration.

Signs and symptoms of mild heat illness:

The initial symptoms are mild but the casualty can deteriorate and their condition can become life threatening if untreated. A casualty experiencing mild heat illness may display one or more of the following signs and symptoms:

- Nausea
- Headache or dizziness
- Sweating
- General feeling of being unwell.

Management:

The steps for the management of mild heat illness are:

- Stop the activity causing the heat build-up.
- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).
- Move the casualty to a cooler place.
- Remove as much of their clothing as possible.
- Where possible, have the patient lying down with their legs and feet raised (shock position) or if **unresponsive** and breathing is adequate, place the casualty in the recovery position
- If **conscious** give small sips of water if casualty can drink.
- Cool the casualty's body with water, and try to create a current of air to increase the cooling effect
- Carry out secondary assessment
- Rest and reassure.

Signs and symptoms of severe heat illness:

- Rapid pulse
- Shallow breathing
- Hot skin, often without any sweating
- Loss of coordination
- Unusual behaviour
- Collapse
- Seizures

Note: Recovery should be rapid with cooling and re-hydration. If the casualty is not recovering within **10 minutes**, or they continue to deteriorate or become unresponsive, you should summon EMS immediately.

Management:

The steps for the management of severe heat illness are:

- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).
- Move the casualty to a cooler place.
- Where possible have the patient lying down with their legs and feet raised (shock position) or if **unresponsive** and breathing is adequate, place the casualty in a stable side position
- Remove as much clothing as possible.
- Aggressively cool the casualty with water, and try to create a current of air to increase the cooling effect.
- Be prepared for cardiac arrest (in severe cases), follow DRS ABCD (CPR and AED).

Cold Emergencies:

Overview

Hypothermia occurs when your body temperature drops below **35°C**, causing the circulatory, respiratory, and nervous systems to slow down. Hypothermia is a cold emergency that requires immediate treatment, and if untreated it can cause cardiac arrest. Hypothermia often happens gradually, but it can happen within minutes if, for example, someone falls into cold water or other environmental emergencies. Elderly people are especially susceptible. Hypothermia may develop over hours and in some cases days, and is not uncommon to find an elderly person that has collapsed on the floor to be suffering hypothermia.

Signs and symptoms;

A casualty experiencing hypothermia may display one or more of the following signs and symptoms:

- Shivering
- Altered level of responsiveness
- Confusion
- Cold skin
- Shallow breathing
- Weak pulse
- Cardiac arrest in severe circumstances.

Risk factors include:

- Exposure to cold
- Immersion in cold water
- severe trauma
- Dehydration
- Not moving for long periods of time
- Age-related physical problems
- Certain medical problems, such as heart failure, pulmonary infection
- Drugs and alcohol
- Mental impairment that causes someone to be unaware of cold

Management:

The steps for the management of hypothermia are:

- Carry out primary assessment, DRS ABCD
- Seek medical attention (make sure EMS are en route).
- If possible, remove the casualty from the cold environment.
- Remove any wet clothing.
- Attempt to warm the casualty with blankets and clothing.
- If unresponsive and breathing is adequate, place the casualty a stable side position
- Be prepared for cardiac arrest in severe cases; follow DRS ABCD (CPR and AED).
-

Emergency Childbirth

Medical Emergencies

Overview:

Child birth is a natural process and **complications are uncommon**.

Signs and symptoms of an imminent child birth:

- Obvious signs of late stages of pregnancy
- Waters break
- Sudden increase in energy

Management;

The following procedure must be followed:

- Call for assistance (make sure EMS are en route)
- Try and move the pregnant woman out of public view
- Encourage the woman to lie on her back
- Lay a clean towel or plastic sheet under the mothers buttocks
- Ensure good hygiene-wash hands, use gloves from PPK kit (**mother must be asked if she is allergic to latex**)
- If the membrane around the baby is intact, rupture this with your fingertip to allow the amniotic fluid to leak out
- Check to see if umbilical cord is around the infant's neck, slip over head if possible
- Leave umbilical cord attached to baby
- Support the head (this normally appears first) face down
- the natural contractions will assist to deliver the baby

After the delivery:

- Baby should start to cry, encourage a response, carry out primary assessment if required
- Ensure the baby stays warm, wrap in towel, sheets, blanket or anything else available to keep baby warm
- Encourage the woman to start breast feeding
- The placenta may take up to an hour to deliver, place in clean container and give to attending EMS personnel or take to hospital if required
- Rest and reassure

Poisoning**Medical Emergencies****Overview**

Poisoning may be accidental or deliberate. **All precautions** must be taken for your own safety as you may be unaware of any inherent risks created by the casualty. These risks involve rescuing the casualty and any subsequent resuscitation attempts.

In many situations, it will be important to identify the drugs or toxic substances used in the poisoning and determine the amount ingested. It will be helpful to ascertain what pills have been ingested and any empty bottles given to the attending ambulance officers.

Caution must be observed when any resuscitation attempt is required. If in doubt **do not** commence resuscitation. as you can be poisoned from what casualty has ingested or inhaled.

The golden rule your safety is paramount, if in doubt move back to a safe point and request assistance from NZ Fire Service.

Some common poisons include:

- Household cleaners
- Pesticides
- Weed killer
- Thinner based solvents
- Motor vehicle fumes (carbon monoxide poisoning)
- Pool chemicals
- Prescribed medicines

Poisons can enter the body by:

- Inhalation
- Absorption
- Ingestion
- Injection
- Instilled (into the eye)



Management:

- Beware of Danger!
- Consider **no** action due to nature of poisoning. **Stay back** at safe arrival point
- Call for assistance (make sure EMS and NZ Fire Service have been notified)
- Carry out primary assessment, DRS ABCD (consider compression only CPR if risk of cross contamination)
- If unresponsive and breathing is adequate, place the casualty in a stable side position
- Try to find out what has been taken, how much and when.
- Contact NZ Poisons Centre for advice (0800POISON)
- Keep any containers of chemicals or medication found to show to the ambulance paramedics
- Carry out secondary assessment
- **Do not** induce vomiting, unless instructed to do so from NZ Poisons Centre.
- Water or milk should only be given to casualties that have swallowed corrosive substances (always follow instructions from NZ Poisons Centre).
- Rest and reassure

When any form of poisoning occurs, you can obtain advice about how to manage the situation and treat the casualty by calling the **NZ Poison Centre**. The main role of the National Poisons Centre is to provide advice to members of the public and health care professionals about acute poisoning situations. **NZ Poison Centre ☎ 0800 POISON (0800 764 766) Available 24/7**

Specific Poisons:

CYANIDE:

Cyanide may be present in the bush as it is used to eradicate pests. It comes in paste form or in pellets (Ferratox). Some organised groups carry the antidote (**Amyl Nitrite**), which is contained in ampoules.

Recognition:

- Headache
- Confused, erratic behaviour
- Convulsions
- Heart & Breathing failure
- Breath: Smells of bitter almonds

Management:

- There is a high risk of the rescuers being poisoned by Cyanide, through absorption or inhalation.
- Wear gloves.
- Avoids vapours from the poison source, or the breath of the casualty.
- Move to a well ventilated area.
- If the casualty is breathing, administer Amyl Nitrite by cracking the ampoule (whilst protecting your hand) and getting the casualty to inhale the vapour.
- CPR required? Do not administer rescue breathes - Use compression only CPR.
- Evacuate the casualty as a priority.

Ongaonga (Tree Nettle):

Contact with this plant can cause -

- Intense, burning pain
- Redness & swelling (affected area)
- Loss of coordination
- Anaphylactic (severe allergy) shock
- Difficulty in breathing
- Difficulty in seeing
- Convulsions & paralysis

Management:

- Crushed up Dock Leafs may relieve the pain
- Lay the casualty down with legs raised if showing signs of shock
- Use sticky tape to remove visible stinging hairs
- The use of a Ventolin inhaler may help
- Signs of Anaphylaxis? Adrenaline (Epipen) may be used
- Antihistamines can help

If anaphylactic shock is suspected, arrange **urgent evacuation** as the casualty may need more adrenaline!

1080 Pellets (Sodium Fluoroacetate):

1080 is a substance found naturally in many plants throughout the world. Plants have developed it as a natural defence against browsing mammals. It is synthetically manufactured for use in pest control operations and is highly toxic to mammals (in particular).

Recognition (in humans):

Early Symptoms: Nausea, vomiting, tingling and numbness in face and hands, stomach pains, apprehension and anxiety.

Later Symptoms: Muscular twitching, blurred vision, confusion.

Severe Symptoms: Coma, convulsions.

Management:

Ingestion:

- Seek immediate medical assistance in all cases where poisoning is suspected
- NZ National Poisons Centre recommends against inducing vomiting in most cases, but in particular, never use any chemical means of inducing vomiting.
- In areas remote from medical assistance, there may be benefit in inducing vomiting by placing a finger down the throat.

Eye Contact:

- Wash eyes with copious amounts of water.

Skin Contact:

- Wash exposed area twice with soap and water.

Contaminated Clothing:

- Remove contaminated clothing and wash before re-use.
- Clothing and must be decontaminated by washing in hot soapy water.

Do NOT induce vomiting or give anything by mouth if the casualty is unconscious or convulsing!

Carbon Monoxide (CO):

CO is has no smell or taste. It doesn't irritate your nose, mouth or skin and is invisible. It has caused **serious illness and deaths**, which are mostly preventable. It is the largest cause of death related to camping equipment in NZ. CO is a very flammable gas in high concentrations, so as well as being a health hazard, it's also a fire hazard!

Recognition:

- Headaches and dizziness.
- Bright pink skin.
- Erratic, confused behaviour.
- Convulsions.
- Circulatory & respiratory failure.

Management:

- Without placing yourself in danger, **ventilate** the area to remove the CO and/or remove the casualty from the area.
- Conscious casualty - place in **semi-sitting position** and **rest** (to make breathing easier).

- Unconscious casualty - Carry out **primary survey** and **monitor them in a recovery position**.
- Mild poisoning - the casualty may recover spontaneously over time, but they should be seen by EMS as a precaution.
- Severe poisoning - The casualty **must be evacuated**. If available, 100% should be given.