ABC of CPR is divided into four main colour coded sections:

1. Essential First Aid
2. Low Voltage Rescue (LVR)
3. Advanced Resuscitation
4. General First Aid

Each subsection shows you step-by-step how to recognise and deal with an emergency situation.

In conjunction with an approved first aid course, this book will assist you learn the skills to perform CPR, LVR and Advanced Resuscitation.

For training purposes, this book supports the Australian Health Training Package competency units:
- HLTAID001: Provide CPR
- HLTAID007: Provide Advanced Resuscitation Techniques
- UETTDRRF06B: Perform rescue from a live LV panel

This book incorporates the latest Resuscitation Guidelines and is written for Australian conditions. This book contains international emergency numbers and is a useful resource no matter where you are in the world.

### Emergency Numbers

<table>
<thead>
<tr>
<th>Country</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>000</td>
</tr>
<tr>
<td></td>
<td>112</td>
</tr>
<tr>
<td></td>
<td>13 11 26</td>
</tr>
</tbody>
</table>

Dial ‘112’ or ‘911’ from a mobile phone with GSM coverage anywhere in the world and your call will be automatically translated to that country’s emergency number.

### Local Emergency Numbers

<table>
<thead>
<tr>
<th>Phone</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOCTOR</td>
<td></td>
</tr>
<tr>
<td>DENTIST</td>
<td></td>
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<tr>
<td>HOSPITAL</td>
<td></td>
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<tr>
<td>PHARMACY</td>
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<tr>
<td>POLICE</td>
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<td>ELECTRICAL</td>
<td></td>
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<tr>
<td>GAS</td>
<td></td>
</tr>
<tr>
<td>WATER</td>
<td></td>
</tr>
<tr>
<td>VEHICLE BREAKDOWN</td>
<td></td>
</tr>
</tbody>
</table>

Includes:
- Oxygen
- Defib
- LVR

Dr Audrey Sisman
The information in this book contains, at the time of printing, the most current resuscitation guidelines. This book is designed to be an information resource and is not a substitute for training. The author accepts no responsibility for any injury or damage that may occur as a result of using this book in first aid management.

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**World Map of International Emergency Numbers**

- **Dial 112 or 911 from a mobile phone with GSM coverage anywhere in the world and your call will be automatically translated to that country’s emergency number.**

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This book has been written based on current guidelines and requirements as defined by:
- Australian Resuscitation Council
- New Zealand Resuscitation Council
- European Resuscitation Council
- National Heart Foundation of Australia
- WorkCover QLD
- Australian Standards AS/NZS 4836:2001
(Safe Working on Low Voltage Electrical Installations)

For more information about this manual, and for the latest updates visit:

www.abcpublications.com.au
Congratulations on taking positive steps towards learning first aid which is an essential life skill we should all learn in order to help others and possibly save a life.

The ABC of CPR is written by a medical practitioner with experience in emergency medicine, hospital medicine, general practice and natural therapies.

The book contains clear, simple first aid advice which will assist you in handling most emergency situations.

Keep this book with your first aid kit in the workplace, at home, in your car or when travelling overseas.

How to use this book:

The ABC of CPR is divided into four main colour coded sections:

- **Essential First Aid**
- **Low Voltage Rescue**
- **Advanced Resuscitation**
- **General First Aid**

Each subsection shows you step-by-step how to recognise and deal with an emergency situation.

Emergencies are recognised by **SIGNS & SYMPTOMS** which are contained in a red box.

Displayed in a green box is the **FIRST AID** management of an emergency situation.

_means dial your country’s emergency number._

A fold out **World Map** of international emergency numbers at the back of the book identifies emergency numbers across the world.

Also at the back, there is a **First Aid Report Form** which can be torn out and used in a first aid incident, and an **Emergency Numbers** page for writing local, national and international emergency numbers.
Unconsciousness is a state of unresponsiveness, where the casualty is unaware of their surroundings and no purposeful response can be obtained.

**NO RESPONSE** ➔ **NO Breathing or Abnormal Breathing** ➔ **Follow Basic Life Support Chart** ➔ **Breathing Normally** ➔ **Recovery Position, Call 999, monitor**

Combinations of different causes may be present in an unconscious casualty eg head injury and diabetes.

Causes of an unresponsive (unconscious), breathing state:
- A - Alcohol
- E - Epilepsy
- I - Insulin (Diabetes)
- O - Overdose
- U - Uraemia (renal failure)
- T - Trauma (head/ spinal injury)
- I - Infections (meningitis)
- P - Pretending
- S - Stroke

NB. The sense of hearing is usually the last sense to go, so be careful what you say near an unconscious casualty.

All unconscious casualties must be handled gently and every effort made to avoid any twisting or forward movement of the head and spine.

(An unconscious, breathing woman in advanced pregnancy should be placed on her left side).

The recovery position:
- Maintains a clear airway - allows the tongue to fall forward.
- Facilitates drainage and lessens the risk of inhaling foreign material (eg saliva, vomit)
- Permits good observation and access to the airway.
- Avoids pressure on the chest which facilitates breathing.
- Provides a stable position and minimises injury to casualty.

**Step 1**
- Raise the casualty’s furthest arm above the head.
- Place the casualty’s nearest arm across the body.
- Bend-up the casualty’s nearest leg.
- With one hand on the shoulder and the other on the knee, roll casualty away from you.

**Step 2**
- Stabilise the casualty by flexing the bent knee to 90° when resting on the ground.
- Tuck the casualty’s hand under their armpit.
- Ensure the casualty’s head is resting on their outstretched arm.

Airway management takes priority over spinal injury.

**Step 3**
- Carefully tilt the head slightly backwards and downwards. This facilitates drainage of saliva and/or stomach contents and reduces the risk of inhalation which may cause pneumonia.
Basic Life Support & AED

Dangers?

Response?

Response?

NO RESPONSE

Send for help. Call 911

Open Airway

NO Breathing or abnormal breathing

Breathing Normally

Send or go for AED

Compressions
Start CPR

30 x Compressions

CPR 30:2

2 x Rescue Breaths

Defibrillation
use AED

Obtain history, monitor, send for help

Recovery position & monitor

In an EMERGENCY CALL or
HAZARDS!
- Biohazards – blood, body fluids
- Chemicals – spills, fumes, fuel
- Electricity – power-lines
- On coming traffic
- Fire, explosion
- Unstable structures
- Slippery surfaces
- Broken glass
- Sharp metal edges
- Needle stick
- Aggressive behaviour

CPR

Dangers • Survey Scene  
• Remove or Minimise Hazards

Protect yourself - use antiseptics and barrier protection: gloves, mask, goggles.

Response • Talk and touch

SPEAK LOUDLY – Don’t shout
“Hello, can you hear me”? “Are you all right?” “Open your eyes”. “Squeeze my hands”.

SQUEEZE SHOULDERS firmly – Don’t shake
NB. Approach a collapsed casualty with caution, they could be anxious, irrational or aggressive, so be ready to step back if necessary.

Drowning. The risk of regurgitation and inhalation is high following drowning. Place drowning victims in the recovery position before assessing the airway and breathing.

Send for help. Call 📞

Airway
• Check - for foreign material which could be obstructing the airway.
• Open - use chin lift and backward head tilt to open airway.

Chin lift  
Head tilt

To clear foreign material

- Use pistol grip to achieve chin lift. Watch that your knuckle doesn’t compress neck and obstruct airway and breathing.
- If foreign material is present, roll casualty into recovery position and clear using postural drainage and finger sweep method.

Spinal injury and infants(<1yr): Keep head in a neutral position (i.e. minimise backward head tilt)

Breathing
• Look - for rise and fall of lower chest/ upper abdomen
• Listen - for breath sounds
• Feel - for movement of chest and escape of air from mouth

Take 10 seconds to check for breathing

Abnormal or NO Breathing?
• If casualty is unresponsive and not breathing normally after the airway has been cleared and opened, the rescuer must immediately commence chest compressions then rescue breathing (CPR).
• If unwilling or unable to perform rescue breathing, continue with compression only CPR.

NB. In the first few minutes of a casualty’s cardiac arrest, sounds of gurgling, sighing or coughing may be present, but this is ineffective breathing and CPR should be commenced.
Compressions

30 Chest Compressions : 2 Rescue Breaths = CPR

30 Compressions
- Depth = 1/3 of chest wall (~ 5 cms)
- Rate = 100 per min (almost 2 compressions per sec)

- Place heel of one hand in centre of casualty's chest (which is the lower half of the sternum)
- Place other hand on top, arms straight and press down on sternum at least 5 cm in adults
- Allow complete recoil of chest after each compression
- Keep compressions rhythmical at a rate of 100 per min
- Use 1 or 2 hands in children (Infants 2 fingers)

2 Rescue Breaths
- 2 breaths over 2 secs

- Take a breath.
- Close casualty’s nostrils (pinch with fingers).
- Mouth to mouth (good seal).
- Blow to inflate lungs.

- Inflate until chest starts to rise.
- Over-inflation forces air into the stomach causing regurgitation.
- Infants – perform mouth to mouth/nose RB and inflate with puff of air from cheeks.
- Use resuscitation mask or barrier protection if possible
- If unwilling or unable to give RB, do chest compressions only.

Stop CPR when:
- Casually responds or begins breathing normally
- Exhaustion – you can’t continue.
- Health professional arrives and takes over.
- Health professional directs that CPR be ceased

Defibrillation

An AED (Automated External Defibrillator) delivers electric shock to reverse abnormal heart rhythms. Not all heart rhythms are reversible

- When there are 2 rescuers, continue CPR while one rescuer organises and attaches AED pads:
- Switch on AED & follow voice prompts of the AED.
- Place pads on bare, dry chest - remove clothing, jewellery, medication patch, wipe chest dry, remove chest hair with razor or scissors.
- No contact. DO NOT touch casualty during analysis or shock delivery.
- No conduction. DO NOT have casualty in contact with conductive material eg metal floor, puddles of water.
- No explosion. DO NOT use in explosive environment.

Chain of survival: is the key to improving the survival rate from cardiac arrest. Time is the essence. The 4 steps required are: 1) Call 2) Begin CPR immediately 3) Early Defibrillation 4) Advanced cardiac life support by paramedics

NB. No harm to rescuers has occurred while using an AED in the wet
6 | Low Voltage Rescue

**Electrical Supply Industry (ESI)**
The Electrical Supply Industry is highly regulated. Low voltage (LV) rescue falls under one set of rules, with specific laws, regulations, codes of practice and other requirements. Each jurisdiction (State) has its own laws. The laws that control electricity supply are similar in all States but have some important differences.

**Workplace Health & Safety (WHS)**
WHS regulation risk control requirements, do not usually justify the practice of working on an energised (live) low voltage installation. It is up to the employer, and the owner of the building, to ensure that this is only done where necessary and only if the risk of harm would be greater if that part of the installation’s circuits or apparatus were to be de-energised.

**Safe Approach Distances (SADs)**
Safe Approach Distances are listed for different types of electrical installation. Electrical supply industry workers and electricians must be aware of the Safe Approach Distances that are applicable to their workplaces.

**Isolators & Circuit Breakers**
An *isolator* is an *off-load* device. A *circuit breaker* is an *on-load* device. Circuit breakers are used to switch devices on/off. Isolators are used to electrically isolate equipment to make them safe to work on and sometimes earth the isolated circuit to provide additional safety. Isolators are more common in industrial applications but domestic electric ovens are often fitted with an isolation switch.

**Electric Shock Management**
Make sure it is safe before approaching! In addition to treating for obvious injuries such as burns, cuts, fractures and blast injuries it is possible there are internal injuries and heart arrhythmias therefore ALL electric shock casualties must be referred for medical assessment.

**FIRST AID**
- Check for dangers
- If no response follow basic life support (Pg 3)
- Remove to a safe, ventilated area ASAP
- Check and treat for other injuries - burns are common.
- Refer for medical assessment Call 📞

**After an Electrical Incident**
The site must be secured, and entry controlled until the appropriate authorities have inspected the site and released it. An incident report must be completed.
Safety Observer Requirements

The safety observer:
- Must be instructed in, and understand their responsibilities
- Role is to warn of danger and perform rescue and resuscitation as required
- Has the authority to stop the work before the risks become too high
- Must not carry out any other work
- Must be able to communicate effectively with the worker (may require specialist equipment)
- Must not observe more than one task at a time

Risk Assessment
Before starting work on a live LV panel, hazards must be identified and a risk assessment must be completed and control measures identified and written down in a Safe Work Method Statement (SWMS)
When working in high risk places such as • confined spaces • near trenches • at heights • from an elevated work platform (eg cherry picker), there will be additional laws and regulations that must be observed.
Rescue operations must adhere to all the relevant laws.
Risk controls must include:
- preparation to perform rescue procedures from a live LV panel
- Safety Observer who has been instructed in responsibilities provision of LV
- Rescue kit that has been inspected • Clear entry and exit pathway

Do not wear metallic personal items such as watches and watchbands. Metal personal items could contact or fall into exposed live parts. Objects of this kind can result in electric shocks or arcing. In addition burns sustained near these items can be worse because the objects retain heat and provide contact points for current to flow. Examples include: neck chains, rings, bracelets, earrings, body piercings, metal spectacle frames.

WHS law requires employees to use or wear Personal Protective Equipment (PPE) that is supplied by an employer.

Most common electrical risks and causes of injury
- Electric shock causing injury or death. The electric shock may be received by direct contact, tracking through or across a medium or by arcing
- Arcing, explosion or fire causing burns. The injuries are often suffered because arcing or explosion or both occur when high fault currents are present
- Toxic gasses causing illness or death. Burning and arcing associated with electrical equipment causes a range of gases and contaminants to be present. Compounds ranging from ozone to cyanide and sulphuric acids can be present as well as the risks such as low oxygen content in the air.
NB. The above electrical risks may be present individually or combined
What is Electric Shock?
An electric shock can occur upon contact of a person with any source of voltage high enough to cause sufficient current through the muscles or hair.

- Electrocution is death caused by electric shock.
- Severity of injury depends on the voltage, the current, and the resistance of the body.
- Wet or damaged skin offers 100 times less resistance than dry intact skin allowing higher currents to flow.
- Currents across the heart are dangerous.

Always test a circuit to make sure it is de-energized before working on it.

Power drills use 30 times more power than needed to kill someone!

What can Electric Shock do to me?
LOW VOLTAGE = under 1000V AC or 1500V DC.
LOW VOLTAGE DOES NOT MEAN LOW HAZARD!

Effects of Electrical Current on the Body
This table shows what usually happens for a range of currents lasting for 1 second at typical household voltages. 100 milliamps can be lethal across critical parts of the body (eg heart/brain). Arc Flash can produce intense heat, light and pressure waves equivalent to several sticks of gelignite. This can result in radiation burns, broken bones, internal organ damage and bleeding.

<table>
<thead>
<tr>
<th>Current</th>
<th>Reaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 milliamp</td>
<td>Just a faint tingle</td>
</tr>
<tr>
<td>5 milliamps</td>
<td>Slight shock felt. Disturbing, but not painful. Most people can “let go.”</td>
</tr>
<tr>
<td>6-25 milliamps (women) 9-30 milliamps (men)</td>
<td>Painful shock. Muscular control is lost. This is the range where “freezing currents” start. It may not be possible to “let go.”</td>
</tr>
<tr>
<td>50-150 milliamps</td>
<td>Extremely painful shock, respiratory arrest (breathing stops), severe muscle contractions. Flexor muscles may cause holding on; extensor muscles may cause intense pushing away. Death is possible.</td>
</tr>
<tr>
<td>1,000-4,300 milliamps (1-4.3 amps)</td>
<td>Ventricular fibrillation (heart pumping action not rhythmic) occurs. Muscles contract; nerve damage occurs. Death is likely.</td>
</tr>
<tr>
<td>10,000 milliamps (10 amps)</td>
<td>Cardiac arrest and severe burns occur. Death is probable.</td>
</tr>
<tr>
<td>15,000 milliamps (15 amps)</td>
<td>Lowest over-current at which a typical fuse or circuit breaker opens a circuit!</td>
</tr>
</tbody>
</table>

What type of injuries follow Electrical Accidents?
- Cardiac Arrest
- Respiratory arrest
- Burns/ Tissue damage
- Poisoning
- Other injuries as a consequence of electric shock eg falling from a ladder

Electrical Burns cause Massive Tissue Damage:
This worker fell and grabbed a power line to catch himself. The resulting electric shock mummified his first two fingers, which had to be removed.
The acute angle of the wrist was caused by burning of the tendons, which contracted, drawing the hand with them.
What is Arc Flash?
Arc Flash is a short circuit that flashes from one exposed live conductor to another, or to the ground.

The Arc Flash produces intense:
- Heat (> 5000 degrees causing severe burns)
- Light (The same light radiation as welders)
- Pressure wave (blast) equivalent to several sticks of dynamite and can break bones and cause internal organ damage.
- Arc Flash can result from inserting a tool in the wrong place or dropping a tool into a circuit breaker or service area.
- 80% of all injuries and fatalities caused by electrical incidents are caused by Arc Flash…… not electric shock!

What is Flash Burn?
Flash Burn also known as Arc Flash, Arc Eye or Welder’s Flash, is a burn sustained from an electric arc either by the extreme heat it produces or through UV radiation.

- Minor Flash burn to the eyes becomes painful and ‘gritty’ about 2-3 hrs after the event.
- This is common when welding without protective eye wear.

**FIRST AID - It usually resolves within 72hrs without medical intervention but sometimes local anaesthetic eye drops are required for pain management.**

This man was near a power box when an electrical explosion occurred. He did not touch the box, but electricity arced through the air and entered his body. The current was drawn to his armpits because perspiration is very conductive.

This is severe flash burn caused by an Arc Flash. The explosion caused airway burns and embedded molten copper into the casualty’s eyes, resulting in permanent blindness.

**FIRST AID**
- Move to safety • Call 📞 • Apply burns dressing
- For airway burns - see below

What is Airway Burn?
Smoke, steam, superheated air or toxic fumes from Arc Flash explosions can cause severe damage to the airways resulting in swelling and possible airway obstruction.

- Look for evidence of inhalation injury around nose or face (see photo above)
- Coughing or hoarseness may indicate exposure

What Is a Busbar?
Busbars are usually copper or aluminium strips or pipe. They are usually un-insulated.
To protect people from shock, busbars are often inside secure cabinets, or in secure compounds only accessible to authorised personnel. Busbars carry dangerous fault currents which can cause extensive damage from arc flash and explosion.
What is an Electrical Burn?

High resistance of the skin transforms electrical energy into heat energy, producing burns. Electrical burns are often associated with an entry and exit point and are usually more severe than they appear due to massive internal tissue damage.

Entry Wound:
Dark dot in the centre of wound is a burn at the entry point.
This man was lucky - the current narrowly missed his spinal cord.

Exit Wound:
Current flows through the body from the entrance point, until finally exiting where the body has least resistance to ground.
This foot suffered massive internal injuries, which weren’t readily visible, and had to be amputated a few days later.

What are the consequences of an Electrical Burn?

Same hand a few days later, when massive subcutaneous tissue damage caused severe swelling (swelling usually peaks 24-72 hours after electrical shock).
To prevent damage to the nerves and blood vessels, the pressure was relieved by cutting open the skin on the arm.

How do I handle Electrical Fires?

To extinguish an electrical fire you can use a fire blanket or two types of fire extinguisher - carbon dioxide or dry chemical. (Do not use a fire extinguisher on a burning casualty: use a fire blanket)

To use a fire blanket on a burning casualty:
- Pull the tabs to release the blanket from its container.
- Shake it open, hold an edge and cover your hands.
- STOP, DROP, COVER, ROLL
- Wrap blanket around to smother flames.
- Start at the head - work down to the feet.
- BEWARE – of your clothes igniting.
What Poisonous Gases are released in electrical fires?

**Carbon Monoxide**
- Product of incomplete combustion.
- Colourless, odourless, tasteless gas
- Forms an explosive mixture

**Hydrogen Chloride**
- Product of burning PVC
- Pungent, acrid gas which forms hydrochloric acid when in contact with water

**Hydrogen Cyanide**
- Product of burning some plastics (not PVC), wool and polyurethane
- May notice an ‘almond’ smell

**SIGNS & SYMPTOMS**
- Collapse • Drowsiness
- Confusion • Pink lips and skin • Headache • Dizziness
- Burning sensation in airways • Stinging eyes • Coughing • Breathing difficulties
- Light headed • Dizzy
- Breathing difficulties
- Collapse • Flushed • Blue extremities • Convulsions

**FIRST AID**
- Move to ventilated area • Get Help - Call 📞
- Oxygen Therapy is vital • Prepare to give CPR

**Note**: Other toxic gases may also be released

What is a Low Voltage Rescue Kit?
It’s a kit which contains 6 essential tools to assist in a Low Voltage Emergency Rescue. Your life could depend on a complete kit!
- Insulated gloves
- Insulated crook
- Non-conductive torch
- Fire blanket
- Burns dressing
- Isolation Tag

Before starting, position the kit near the entrance and adjacent to the work area.

How do I perform Low Voltage Rescue?

1. **YELL** for Response!
2. Check for DANGER. Follow workplace procedures
3. Put on Gloves
4. Break Connection
   - OR
   - Crook
5. Move to Safety
6. DRSABCD

Check LVR kit before starting a job and certify and date stamp 6 monthly. Check dates are valid, also check:
- Gloves for holes by inflating with air
- Crook for cracks
- Torch working and spare batteries
Oxygen Equipment - Storage & Handling

- Medical oxygen is compressed gas which is stored in a white coloured, metal cylinder.
- Oxygen cylinders should be stored in a cool, ventilated place and secured either standing or lying flat • Empty cylinders should be stored in a clearly marked place separate from full ones • DO NOT drag, drop or roll cylinders • Oil or grease (combustible materials) must not come in contact with oxygen equipment • No smoking or sources of ignition when using oxygen.

'C' sized cylinder is 490 litres. A full 'C' sized cylinder lasts only 30 mins @ 15lpm flow rate.

Fitting the Regulator:

- Check hands are clean and free of grease/ oil
- Ensure area is ventilated and there is no ignition sources
- Remove plastic seal from cylinder neck
- Purge outlet valve by quickly opening and closing cylinder (cracking) - see above
- Check regulator is dust and grease free and that ‘O’ ring is seated and not damaged
- Place regulator over cylinder neck ensuring index pins and index holes are in place
- Secure regulator in place by tightening ‘T’ piece - not too tight
- Set flow meter to low - this reduces pressure in regulator when cylinder is opened
- OPEN cylinder by turning cylinder key anticlockwise
- Turn flow meter OFF and listen for leaks
- Check pressure gauge - 16,000kpa (2300 psi) indicates cylinder full
- CLOSE cylinder and adjust for leaks if necessary
- If not using immediately, depressurize system - close valve, open flow meter
- Leave regulator attached and store ready for use with all valves off

'O' ring (Bodok seal) - if damaged or not seated properly, may cause leaks - keep spares

Cylinder neck

Pressure Gauge
(replace cylinder when it is less than 1/4 full)

Flow meter

‘T’ piece

Cylinder key - turn anticlockwise to OPEN (on), clockwise to CLOSE (off)

Outlet valve - face outlet valve away from people before opening - high pressure gas can injure.

Place hand under plastic tags when opening (cracking) cylinder. 'Cracking' purges dust from outlet valve before fitting regulator.

Plastic seal denotes full cylinder

Heat tag - if distorted do not use

‘Cracking’ Cylinder

Regulator

Safety Pin Index coupling system for ‘C’ sized cylinder - the index pins on the cylinder correspond to the index pins on the regulator

Oxygen nipple (attach tubing)
Oxygen Equipment - Care & Maintenance

- Never use oil or fat-based soaps on any oxygen equipment - grease/oil can become highly explosive in the presence of oxygen under high pressure
- Never seal oxygen cylinder outlet valve with adhesive tape - glue is petroleum based
- Never allow cylinder to run empty as moisture and contaminants may enter
- If cylinder is emptied, turn off valve immediately
- Use reputable gas suppliers for refills
- **Disposable items should be thrown away after use and replaced with new ones.**
- Masks and other parts should be checked for wear, cleaned and disinfected and dried before packing.
- Follow specific cleaning instructions provided with equipment - check which chemicals are effective and compatible with particular pieces of equipment.
- Any missing items should be noted and replaced
- Tubing should be coiled to prevent from kinking
- Soft masks have a tendency to distort if squashed during storage - pack carefully
- Check contents of cylinder and functioning of equipment regularly - eg after each use and/or at start of each shift
- Oxygen units should be inspected and serviced by an appropriate trained technician as specified by manufacturer.

**When to use Oxygen**

Oxygen can be given in high or low concentration in all conditions associated with hypoxia (see below). Hypoxia is a lack of oxygen in the body’s tissues which can be caused by many conditions - generalized (eg. asthma) or local (eg. crushed limb).

**Oxygen administration will benefit the following conditions:**

- Respiratory distress/Asthma
- Heart attack/Angina
- Anaphylaxis
- Bleeding & shock
- Drowning & diving emergencies
- Head & spinal injury
- Crush injury & fractures
- Burns
- Smoke/fume inhalation,
- Drug overdose
- Poisoning
- Unconsciousness (Pg 2)
- Resuscitation (Pg 15)

**NB. In casualties with COPD (chronic obstructive pulmonary disease) supplemental oxygen may trigger toxic levels of carbon dioxide to accumulate. COPD casualties must be closely monitored while receiving supplemental oxygen.**

**RESPIRATORY DISTRESS SIGNS & SYMPTOMS**

**Mild:**
- Dry cough
- Noisy breathing
- Wheeze – during exhalation
- Breathless but speaks in sentences

**Moderate:**
- Wheeze - during exhalation and inhalation
- Rapid breathing
- Breathless - speaks in phrases
- Anxious
- Pale and sweaty
- Rapid pulse

**Severe:**
- Can’t speak (too breathless)
- Wheeze inaudible (no air movement)
- Cyanosis (blue lips)
- Flared nostrils
- Intercostal recession
- Use of accessory muscles
- Exhaustion
- Distressed
- Confusion or aggressive behaviour
- Altered state of consciousness
- Collapse - Respiratory arrest
Oxygen Therapy

Oxygen administration to a breathing casualty - conscious or unconscious

A conscious casualty with breathing difficulty (e.g., asthma or heart attack) usually finds it easier to breathe while sitting or semi-reclined. However, a casualty with shock or decompression illness from scuba diving, is positioned horizontally. Administer oxygen (O2) to an unconscious, breathing casualty in the recovery position.

Conscious Casualty:
- Reassure
- Position casualty appropriately
- Explain what you are doing
- Explain that oxygen will help
- Turn on oxygen supply
- Select appropriate oxygen delivery device and follow steps:

Oxygen Delivery Devices:

1) Standard Therapy Mask - Low to Medium % O2
- Connect oxygen tubing to mask and oxygen outlet
- Open flow meter and check oxygen is flowing
- Set flow rate to 8 lpm - adjust as necessary
- Position mask over mouth and nose with narrow end upwards and metal band over bridge of nose
- Pass elastic strap over casualty’s head & adjust strap
- Squeeze metal band over nose - this prevents oxygen blowing into casualty’s eyes
- Ask casualty to breathe normally and observe

2) Non-Rebreathing Mask
High % O2
- Similar to standard therapy mask but has a reservoir bag
- Set flow rate to 15 lpm
- Ensure reservoir bag is inflated before fitting mask
- Fit as standard mask above

3) Nasal Cannula - Low % O2
- Connect oxygen tubing to prongs and oxygen outlet valve
- Open and set flow meter at 1-4 lpm - higher rates dry the nostrils
- Insert tips of prongs into nostrils
- Hook tubing around casualty’s ears and tighten
- Ask casualty to breath normally

If oxygen is in short supply and emergency services a long way off, use a lower flow rate. This does not apply to scuba divers suffering from decompression sickness.

4) Demand Valve - 100% O2
- Attach mask to demand valve and test if working
- Position mask over mouth and nose
- Press firmly to get a good seal
- Ask casualty to breath deeply and listen for a click as valve is triggered
- Sick, distressed casualties have difficulty triggering the valve - use a constant flow device instead which offers little resistance.

<table>
<thead>
<tr>
<th>Oxygen Delivery Device</th>
<th>Flow Rate</th>
<th>% O2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Therapy Mask</td>
<td>8</td>
<td>50%</td>
</tr>
<tr>
<td>Non-Rebreathing Mask</td>
<td>15</td>
<td>95%</td>
</tr>
<tr>
<td>Nasal Cannula</td>
<td>4</td>
<td>30%</td>
</tr>
<tr>
<td>Demand Valve</td>
<td>-</td>
<td>100%</td>
</tr>
</tbody>
</table>
Oxygen Resuscitation

Oxygen administration to an unconscious non-breathing casualty

Rescue breaths can be supplemented with oxygen (O2) during CPR (oxygen resuscitation). For inexperienced rescuers, mouth to mask rescue breathing is the preferred method. It delivers 50-70% oxygen and ventilations are performed more effectively than bag-valve-mask or manual triggering devices. With all oxygen resuscitation devices, inflate until the chest begins to rise. Over inflation will cause stomach distension and regurgitation.

<table>
<thead>
<tr>
<th>Oxygen Delivery Device</th>
<th>Flow Rate</th>
<th>% O2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resuscitation Mask (no O2)</td>
<td>exp air</td>
<td>16%</td>
</tr>
<tr>
<td>Resuscitation Mask (with O2)</td>
<td>15</td>
<td>70%</td>
</tr>
<tr>
<td>Bag Valve Mask (no O2)</td>
<td>room air</td>
<td>21%</td>
</tr>
<tr>
<td>Bag Valve Mask (O2, no reservoir)</td>
<td>15</td>
<td>45%</td>
</tr>
<tr>
<td>Bag Valve Mask (O2 plus reservoir)</td>
<td>15</td>
<td>100%</td>
</tr>
<tr>
<td>Manually triggered Resuscitator</td>
<td>–</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Resuscitation Mask:**
- If resuscitation mask is without an oxygen nipple, place oxygen tubing under the cuff of the mask.
- Set flow rate: 8-15lpm
- Press mask firmly to face forming a good seal while maintaining head tilt.
- Inflate by blowing through valve until chest begins to rise

**Bag-Valve-Mask (BVM):** Where difficulty with BVM resuscitation is experienced, two trained operators may be required - the first to manage the airway, the second to operate the bag.
- Assemble the unit and squeeze the resuscitation bag to check the function of the valves.
- Ensure oxygen tubing is attached to BVM and outlet valve on oxygen cylinder.
- Turn on O2 supply • Set flow rate: 8-15l/min

**When equipment is ready:**
- Position mask over mouth & nose, ensuring a good seal.
- Take a position behind the casualty’s head and open airway using head tilt and jaw thrust while holding mask to casualty’s face.
- Deliver oxygenated rescue breaths by squeezing bag until chest begins to rise
- Monitor casualty • Monitor oxygen supply.
Oropharyngeal Airways (OPs)

- Oropharyngeal airways (Guedel airways) may be necessary to maintain an open airway when using mouth to mask or bag-valve-mask ventilation
- An OP airway DOES NOT remove the need for head tilt or the recovery position: It DOES NOT prevent suffocation by fluids or the closing of the glottis. But it does facilitate CPR by holding the tongue forward in casualties with a thick tongue.
- OP airways must only be used on unconscious casualties who do not have a gag reflex

The main risks of its use are:

- If the casualty has a gag reflex, they may vomit
- When it’s too large, it can close the glottis and thus close the airway
- Improper sizing can cause trauma to the throat and bleeding in the airway

Sizing an OP Airway:

- OP airways come in different sizes.
- To select the appropriate size, place OP airway on casualty’s outside cheek and measure from:
  1) Centre of lips to angle of jaw or 2) Corner of mouth to bottom tip of ear lobe (see diagram)
- The correct size keeps the tongue forward and maintains an open airway.

Inserting an OP Airway:

- Ensure casualty is unresponsive.
- Clear airway using postural drainage, finger sweep and/ or suction
- Position casualty on their back.
- Select correct size OP airway (above)
- If lubrication is necessary, use water, casualty’s saliva or KY jelly.
- Open casualty’s mouth using finger and thumb scissor motion
- Apply head tilt and/or jaw thrust (Pgs 4,18)
- Insert OP airway by following steps 1, 2, 3:

  1. Point tip of OP airway toward the roof of casualty’s mouth. Slide the airway towards back of throat
  2. When tip reaches back of throat, rotate airway 180 degrees
  3. Advance the airway until the flange rests on the casualty’s lips and the bite block is between teeth.

NB. If casualty starts to regain consciousness, cough, gag or vomit, remove OP airway immediately.

Removing an OP Airway:

- Pull out following curvature of the tongue - no rotation necessary. Dispose of in biohazard bag as it is a single use item.
- Ensure lower lip is not pinched between teeth and OP airway
- Check breathing - look, listen, feel.
- Maintain head tilt and jaw support.
**Suction**

- Suction helps maintain a clear airway by aspirating saliva, blood, mucus and vomit.
- Suction does not remove the need for postural drainage and finger sweep to remove solid matter or viscous mucus.
- Fluids and solids must be removed before and during resuscitation to maintain a clear airway.

**Suction Equipment:**

Suction units are powered by oxygen, air, battery, hand, foot or electricity.

**Suction Method:**

- Position casualty on side if possible, or leave on back and turn casualty’s head to the side.
- Open casualty’s mouth and wipe away any large debris with gloved fingers.
- Measure the suction catheter from corner of casualty’s mouth to earlobe. This gives the correct depth to insert the end of the suction tip (no further than back teeth).
- Turn on the suction device and place suction tip in lower inside cheek.
- If using a Yankauer suction catheter, generate suction by occluding air vent with finger
- Sweep catheter across lower cheek and aspirate for a maximum of 5 secs.
- Withdraw catheter slowly from casualty’s mouth while still aspirating
- Flush line with water (place catheter tip in bowl of water and suck up)
- Ensure suction bottle does not fill beyond 2/3 full. Empty if necessary.
- Turn off immediately after use

**Failure of Suction Equipment:**

Test suction by placing a finger over the end of tubing (without catheter attached) and turn on - there should be enough suction to hold your finger in place.

**If suction is not working check:**

- Suction unit is turned on
- Lid of collection bottle is tight
- The seal inside collection bottle is in place and good condition
- No cracks in collection bottle or not more that 2/3 full
- Suction tubing is not blocked or kinked
- In oxygen powered units check that oxygen supply is not exhausted

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**Note:**

- Inserting a suction catheter into the throat beyond the back teeth may cause gagging & vomiting
- Suction must be timed so it does not interfere with the casualty’s spontaneous breathing or ventilations
**Normal Heart Function**
- Electrical impulses generated within the heart from a natural pacemaker, coordinate contraction and pumping of the heart.
- These electrical impulses can be recorded by an ECG (Electrocardiograph).
- A normal functioning heart shows sinus rhythm on an ECG.
- AEDs (Automated External Defibrillators) have an inbuilt ECG monitor which analyses the heart rhythm and determines if shock is required.

**Abnormal Heart Rhythms**
- During cardiac arrest, ECGs will detect abnormal electrical activity (heart rhythms).
- The following 3 heart rhythms are associated with cardiac arrest:

  **Ventricular Fibrillation (VF):**
  - VF is the most common rhythm in cardiac arrest
  - The heart quivers but doesn’t pump
  - VF lasts a few minutes before all electrical activity ceases (asystole)
  - VF is a shockable rhythm - asystole is not (see below)

  **Ventricular Tachycardia (VT):**
  - The heart beats too fast to pump effectively (pulseless VT)
  - VT may progress to VF then asystole
  - VT is a shockable rhythm

  **Asystole (flat line):**
  - Asystole is a non-shockable heart rhythm
  - All electrical activity has ceased and survival is unlikely

*Raab Reve: Airway management takes priority over spinal injury.*

**Jaw Thrust**
The jaw thrust method is used to open the airway with minimal neck movement on casualties with suspected spinal injury. The simplest way of ensuring an open airway in an unconscious casualty is to use the head tilt chin lift technique (Pg 4).

**Jaw Thrust Method:**
- Kneel at top of casualty’s head
- Rest your elbows on the surface where casualty is lying
- Place one hand on each side of casualty’s
- lower jaw, below the ears (angle of jaw)
- Use your index and middle fingers to push
- the jaw forward away from chest
- Use your thumbs to retract lower lip to keep
- casualty’s mouth open if necessary
- Slight head tilt may be necessary maintain airway patency

**AEDs only shock two rhythms - VF and VT (not asystole)**
Defibrillation & AEDs

Defibrillation consists of delivering a therapeutic dose of electrical energy to the heart with a device called a defibrillator. A defibrillator depolarises the heart muscle, terminates the abnormal rhythm, and allows normal sinus rhythm to be re-established by the heart’s natural pacemaker (P9 18). The delay to defibrillate is the most important factor in determining survival from cardiac arrest. For every minute without defibrillation, survival declines by about 10% ie 50% survival after 5 mins delay.

Automated External Defibrillators (AEDs), are simple-to-use units designed to analyse the heart rhythm and inform the user if a shock is advised. The AED will not “charge” unless a “shockable” rhythm is detected. It is impossible to accidently deliver a shock to a casualty who has a normal heart rhythm.

Preparation of Casualty:
1) Expose chest - cut clothing
2) Remove any medication patch or jewellery
3) Wipe chest dry, remove chest hair with razor

AED Set-Up and Operation:
1) Turn it ON
2) Follow voice prompts, which will advise to
3) Attach AED Pads - peel backing off

AED Voice Prompts:
- If voice prompt advises ‘check electrodes’ you should check:
  1) Pads are sticking properly to chest (wipe chest dry/ remove chest hair).
  2) Pad connection cable is plugged in and pads are positioned correctly.
- If voice prompt advises ‘deliver shock now’ ensure nobody is touching the casualty when the shock is delivered. SHOUT ‘stand clear’, then press shock button.
- If voice prompt says ‘no shock advised’, check responsiveness/ breathing and perform CPR.
- No contact. DO NOT touch casualty during analysis or shock delivery.
- No conduction. DO NOT have casualty in contact with conductive material
- No explosion. DO NOT use in explosive environment.

Children and AEDs:
- For children 8 years and over use adult pads.
- For children between 1 and 8 years, paediatric pads and an AED with a paediatric capability should be used.
- Pads should be placed in the same way as an adult.
- If an AED does not have a paediatric mode or paediatric pads then use adult pads. Ensure the pads do not touch each other. If necessary place one pad on the centre of the chest and the other pad on the back of chest between shoulder blades.
- **DO NOT use AED on infants (under 1 yr).** Normal heart rate for an infant is much faster than an adult which makes it difficult for AED to detect a shockable rhythm.

Note:
- AEDs should only be used on unresponsive, non-breathing casualties.
- An AED can and should be used on pregnant casualties.
- In large-breasted individuals, place the left electrode pad lateral to or underneath the left breast.
- If the casualty has a pacemaker, place AED pads 8cms from the pacemaker unit.
- An AED analyses the heart rhythm every 2 mins and continues for up to 5 hrs or 150 shocks depending on make, model and battery life of AED. AED batteries and pads have expiry dates.
- AED packs should include: razor, scissors, hand towel, spare pads, gloves and face shield.
- AEDs automatically conduct internal self tests. First aid officers should check the AED visual indicators daily to confirm that the unit is ready and functioning properly - follow manufacturer guidelines.
### Cardiac Arrest
- In cardiac arrest the heart stops beating and pumping properly resulting in cessation of normal blood circulation (no pulse) • Arrested blood circulation prevents delivery of oxygen to the body • Lack of oxygen to the brain causes unconsciousness and absence of breathing (respiratory arrest) • This is a medical emergency which if treated early is potentially reversible • Treatment involves CPR to provide circulatory support, followed by defibrillation if a shockable rhythm is present • If a shockable rhythm is not present after CPR and other interventions, survival is unlikely.

### Causes of Cardiac Arrest:
- Heart attack (blocked coronary artery) - 70% of all cardiac arrests
- Massive blood Loss • Drug overdose • Drowning • Pulmonary embolus (clot in lung)
- Electric shock • Anaphylaxis • Airway obstruction (choking, severe asthma)

### Chain of Survival
Defibrillation is NOT a stand-alone treatment for cardiac arrest. All links in the ‘Chain of Survival’ must be in place to increase survival. Time is the essence. The 4 steps in the chain of survival are: 1) Early Access 2) Early CPR 3) Early defibrillation 4) Early advanced life support

### Advanced Resuscitation Techniques

#### Single Operator:
- If there is one rescuer and an AED is immediately available, set up AED (Pg 15) before commencing CPR (Pg 4,5)
- While waiting for the AED to analyse the heart rhythm, set up oxygen equipment (Pg 8,11) and position yourself above the casualty’s head.
- If you have a mobile phone, call 🔗 and place on loud speaker.
- Follow AED voice prompts (Pg 15).
- Perform chest compressions and oxygen resuscitation from above casualty’s head.
- Continue until: 1) Casualty responds or begins breathing normally 2) Rescuer becomes exhausted 3) Health professional arrives and takes over 4) Health professional directs that CPR be ceased
Advanced Resuscitation Techniques

Two Operators:
• If two rescuers are available, one rescuer commences CPR while the other:
  1) Calls ☎️
  2) Retrieves the AED
  3) Retrieves oxygen equipment.
• Minimise interruption to CPR (Pg 4,5) while the second person sets up and attaches AED pads to casualty’s chest
• While AED analyses the heart rhythm (takes 10-20 secs), CPR is stopped and oxygen resuscitation equipment is set up (Pg 8,11)
• One rescuer takes up position above the casualty’s head and is responsible for managing the airway and forming a good seal with the resuscitation mask.
• The second rescuer is positioned at the side of the casualty and performs chest compressions, rescue breaths (squeezes the bag) and operates the AED.
• Follow AED voice prompts (Pg 15).
• Rescuers swap roles after 5 cycles of CPR (2 mins) to avoid fatigue.
• Continue until:
  1) Casualty responds or begins breathing normally
  2) Rescuers become exhausted
  3) Health professional arrives and takes over
  4) Health professional directs that CPR be ceased

If casualty regains consciousness:
• Roll casualty into recovery position
• Administer oxygen via standard face mask
• Turn off AED
• Keep AED pads attached to chest in case casualty relapses into cardiac arrest
• Monitor and reassure casualty

Note:
• Rescuers must communicate with each other to keep the resuscitation process flowing.
• It is vitally important that CPR is not interrupted while the AED and oxygen is set up.
• Rescuers should use the 10-20 sec window while AED analyses heart rhythm to swap roles and re-organise.
Principles of First Aid

What is First Aid? It’s the immediate care of an injured or suddenly sick casualty until more advanced care arrives.

The aims of first aid are to:
- Preserve life – This includes the life of rescuer, bystander and casualty.
- Protect from further harm – Ensure the scene is safe and avoid harmful intervention.
- Prevent condition worsening – Provide appropriate treatment.
- Promote recovery – Act quickly, provide comfort and reassurance, get help, call 📞.

Helping at an emergency may involve:
- Phoning for help • Comforting casualty or family • Keeping order at an emergency scene
- Administering first aid

There are many ways you can help, but first you must decide to act.

Reasons why people do not help:
- Fear of doing something wrong • Fear of disease transmission • Uncertainty about the casualty • Nature of injury or illness (blood, vomit, burnt skin can be unpleasant) • Presence of bystanders (embarrassed to come forward or take responsibility)

You may need to compose yourself before acting. Do not panic – a calm and controlled first aider gives everyone confidence. If you follow basic first aid procedures, you should deliver appropriate care, even if you don’t know what the underlying problem is. Remember, at an emergency scene, your help is needed.

Getting Help:
Call 📞 for ambulance, fire or police. If 📞 from a mobile phone fails, call ‘112’.
If you ask for ‘ambulance’ a call taker will ask you the following: • What is the exact location of the incident? • What is the phone number from which you are calling? • Caller’s name • What has happened? • How many casualties? • Condition of the casualty(s)
Stay calm and respond clearly. The call taker will provide you with first aid instructions and dispatch the ambulance and paramedics. DO NOT hang-up until you are told to do so or the operator hangs up first. If a bystander is making the 📞 call, ensure they confirm with you that the call has been made and that the location is exact.

Legal Issues

No ‘Good Samaritan’ or volunteer in Australia has ever been successfully sued for the consequences of rendering assistance to a person in need. A ‘Good Samaritan’ is a person acting in ‘good faith’ without the expectation of financial or other reward. Duty of care:
In a workplace there is an automatic duty of care to provide help to staff and customers, which means you are required to provide help to your best ability at your work place. In the community, you are usually under no legal obligation to provide first aid. Consent: Where possible, always gain consent from the casualty before providing first aid. If the casualty refuses help, you must respect that decision. When the casualty is a child, if feasible seek permission from the parent/guardian. If the parent/guardian is not present immediate first aid should be given. Confidentiality: Personal information about the health of a casualty is confidential. This information includes details of medical conditions and treatment provided. First Aiders should only disclose personal information when handing-over to medical assistance eg paramedics. Comply with regulations: First aiders must comply with State and Territory regulations. Check with OHS legislation and other industry registration authorities in your State. Compliance Codes for first aid provide guidelines on how to comply. Currency requirements for first aid skills & knowledge varies between jurisdictions. A first aid certificate is a statement that the candidate was assessed as competent on a given date. The accepted industry standard is that certificates are valid evidence of competency for 3 years for first aid and 1 year for CPR. Some industries require employees to renew certificates more frequently.
Communication
The role of the first aider depends on gaining and honouring the trust of casualties. Maintaining trust requires attentiveness to body language, quality of listening and finding culturally appropriate ways of communicating that are courteous and clear. It may sometimes be necessary to communicate through verbal and non-verbal communication and you may need to identify issues that may cause conflict or misunderstanding. The first aider also needs to maintain respect for privacy and dignity and pay careful attention to client consent and confidentiality.

Reports
While waiting for help and if time permits, make a brief written report to accompany the casualty to hospital. This will reduce time spent at the scene for ambulance crew and further assist medical and nursing staff with initial patient management. A report can be written on a spare piece of paper and should include the following:

- **Date, time, location of incident**
- **Casualty details** - Name, DOB, Address.
- **Contact person for casualty** - Family member, friend.
- **What happened** - Brief description of injury or illness.
- **First aid action taken** – What you did to help the casualty.
- **Other health problems** – Diabetes, epilepsy, asthma, heart problems, operations.
- **Medications/ allergies** – Current tablets, medicines.
- **When casualty last ate or drank** – Tea, coffee, water, food.
- **Observations of Vital Signs** - Conscious state, pulse, breathing, skin state, pupils.
- **First aider’s name/ phone number** in case medical staff need any further information.

Record Keeping
In the workplace, it is important to be aware of the correct documentation and record keeping used in first aid situations.

Every organisation has its own procedures and documentation so familiarize yourself with the correct process.

All documentation must be legible and accurate and must contain a description of the illness or injury and any treatment given. Thorough and accurate medical records are essential in any court case or workers compensation issue.

In addition:
- Write in pen (not pencil) • Never use correction fluid – cross out and initial any changes
- Sign and date the form • Keep contents strictly confidential

Self-help/ Evaluation
Each person reacts differently to traumatic events and in some instances strong emotions may affect well being and work performance. Symptoms may appear immediately or sometimes months later after an event and may develop into chronic illness.

There is no right or wrong way to feel after an event but what a person experiences is valid for that person. It is useful to identify and work through these reactions/feelings as early as possible. Speaking to an understanding friend, counselor or medical professional may be beneficial in assisting you to cope with the situation.

In addition, seeking feedback from medical personnel about your first aid performance may assist with self-improvement and prepare you better for any future events.

**Some Reactions/ Symptoms**
- Crying for no apparent reason • Difficulty making decisions
- Difficulty sleeping • Disbelief • Irritability • Disorientation • Apathy • Sadness • Depression
- Excessive drinking or drug use • Extreme hunger or lack of appetite • Fear/anxiety about the future • Feeling powerless • Flashbacks • Headaches • Stomach problems • Heart palpitations • Muscle aches • Stiff neck
Safe Work Practices and Manual Handling
When moving a casualty (e.g., into recovery position, or out of danger) it’s important the first aider protects him/herself from injury e.g., using correct manual handling techniques: bending the knees and using leg muscles to protect against back injury. Knowing your own skills and limitations and asking for help when required will help prevent injury. Always adhere to safe work practices to reduce potential risks. In the workplace (including when providing first aid) there is a legal obligation to use supplied Personal Protection Equipment (PPE).

Needle Stick Injury
The risk of catching a serious infection (Hepatitis B, C and HIV) from needle stick injury is very low.
Reduce the risk of needle stick injury:
• Never bend or snap used needles
• Never re-cap a needle
• Place used needles into a sharps approved container
• Hepatitis B vaccination for workers who regularly come in contact with blood/ body fluids

NB. Disposable gloves will not protect against needle stick injury.

Hygiene Minimise the risk of cross infection to yourself, bystanders and casualty by taking standard precautions to control infection:
Prior to treatment:
• Wash hands with soap and water, or rinse with antiseptic.
• Cover cuts on your hands with a waterproof dressing before putting on gloves.
• Wear disposable gloves.
• Do not touch any unclean object when wearing gloves.
• Use a plastic apron and eye protection.
• Cover any adjacent areas likely to produce infection.
During treatment:
• Use a face shield/ mask, if available when performing resuscitation.
• DO NOT cough, sneeze or breath over a wound.
• Avoid contact with body fluids.
• DO NOT treat more than one casualty without washing hands and changing gloves.
After treatment:
• Clean up the casualty, yourself and immediate vicinity.
• Safely dispose of used dressings, bandages and disposable gloves
• Wash hands thoroughly with soap and water, even if gloves were used.
• Restock first aid kit.

First Aid Kits
• Locate first aid kits in workplaces, vehicles and in the home in a clean, dry, dust-free location.
• Make sure first aid kits are accessible and signage clearly indicates their location.
• Check kits regularly for completeness and valid dates.
• Contents will vary depending on the number of employees, and the industry you work in. High risk industries may need extra modules.
• List first aid officers in workplace kits.
• Under State and Territory legislation first aid kits are required in all workplaces.

FIRST AID
• Squeeze blood out of injury site.
• Wipe with alcohol swab.
• Wash hands.
• Place syringe in plastic drink bottle or sharps container.
• Take syringe with you to hospital for analysis.

Contents for workplace first aid kit
from Worksafe Vic Compliance code
Basic first aid notes 1
Book for recording first aid provided 1
Disposable gloves 2
Individually wrapped sterile adhesive strips 10
Large sterile wound dressings 1
Medium sterile wound dressings 1
Non-allergenic tape 1
Plastic bags for disposal 2
Resuscitation mask or shield 1
Rubber thread or crepe bandage 2
Safety pins 5
Scissors 1
Small sterile wound dressings 1
Sterile coverings for serious wounds 1
Sterile eye pads (packet) 2
Sterile saline solution 15 ml 2
Triangular bandages 2
Tweezers 1
Also contact details for First Aid Officers & emergency services
Casualty Assessment

When dealing with a person who is ill or injured, you need a clear Plan of Action:

1. Start with a Primary Survey (DRSABCD), (Pg 3) which enables identification and management of life-threatening conditions.
2. If there are no life-threatening conditions which require immediate first aid (severe bleeding, no response) then proceed to Secondary Survey.

Secondary Survey: is a systematic check of the casualty involving Questions • Examination • Clue Finding to help identify any problems that may have been missed.

- If the casualty is unconscious, the secondary survey is conducted in the recovery position. You may need to look for external clues and ask bystanders some questions.
- If the casualty is conscious start with questions followed by examination. Remember to introduce yourself, ask for consent to help and ask their name.

Questions
- What happened?
- Hurt - Do you hurt anywhere? (any pain or numbness?)
- Allergies - are you allergic to anything?
- Move your arms and legs?
- Medical conditions? (eg diabetes, heart condition, epilepsy)
- Medications - do you take any?
- Eat or drink last? - when/what
- Document the answers (Bystanders may be helpful)

Examination

Vital Signs: are indicators of body function and provide a guide to the casualty’s condition and response to treatment.

- Conscious State: There are 3 broad levels –
  - Conscious  • Altered consciousness • Unconscious
  - Altered consciousness = uncooperative, aggressive, confused, drowsy.
- Pulse: The carotid pulse in the neck is the best pulse to check. Feel for rate, rhythm, force, irregularities.
  - Normal pulse rates: Adults: 60-80 /min
  - Children: 80-100/min
  - (Check pulse/ breathing for 15 secs then x by 4 to get rate/min. Use a watch)
- Breathing: Look, listen and/or feel for breathing rate, depth and other noises eg wheezing, noisy breathing.
  - Normal breathing rates: Adults 16-20 breaths/min
  - Children: 25-40 breaths/min

External Clues

Medical Alert: casualties with medical conditions such as diabetes, epilepsy or severe allergy usually have a bracelet, pendant or card to alert people of their condition.

Medications: People on regular medication usually carry it with them.

Carotid pulse

NB. The pulse is not checked during CPR
Advanced Casualty Assessment

Blood Pressure:
- Blood pressure (BP) is defined as the force exerted by circulating blood on the walls of blood vessels.
- BP is usually taken at the brachial artery with a sphygmomanometer and stethoscope.
- Two pressure readings are recorded - systolic (heart contracts) and diastolic (heart relaxes).
- The pressure difference between systolic and diastolic is normally 40-50 mmHg.
- A normal adult BP is 120/70 but varies with age.
- Blood pressure and pulse are very closely related and to make an accurate assessment of the circulatory state both must be compared at regular intervals.

Measuring Blood Pressure:
- Explain to casualty what you are doing (If conscious. Also it is a good idea to explain things to an unconscious casualty, this can often be reassuring.)
- Casualty can be sitting or lying with their arm at heart level (recovery position if unconscious)
- Use the left arm unless injury or position of casualty prevents this.
- Wrap cuff around bare upper arm (remove thick clothing) and secure velcro strip
- Place stethoscope ear pieces in your ears and stethoscope bell in the crease of casualty’s arm (over brachial artery)
- Close valve on bulb of sphygmomanometer by rotating clockwise between finger and thumb
- Inflate cuff by squeezing bulb until radial pulse is lost
- Slowly deflate cuff by rotating valve anti-clockwise whilst listening with stethoscope and looking at pressure gauge.
- When the cuff pressure falls to the point where blood flows through the brachial artery again, you will hear a ‘hub-dub’ sound. Look at the pressure gauge and read the number at this point. This is the systolic pressure.
- When the cuff de-pressurises to the point that blood flows freely in the artery, the sound is no longer heard in the stethoscope. Look at the pressure gauge and read the number at this point. This is the diastolic pressure.
- Record the systolic and diastolic pressures (eg 120/70) and note the arm used for taking the measurement.

Low Blood Pressure (Hypotension): Is defined as a systolic pressure below 90 mmHg.
Causes:
- Reduced cardiac output due to a weakened heart (eg heart attack)
- Reduced blood volume due to dehydration or massive blood loss
- Excessive dilation of blood vessels (eg anaphylaxis, spinal cord injury)

NB. A rising pulse rate and a dropping BP following trauma is suggestive of internal bleeding

High Blood Pressure (Hypertension):
Is defined as a repeatedly elevated blood pressure exceeding 140 over 90 mmHg ie a systolic pressure above 140 with a diastolic pressure above 90. Lifestyle is often the cause of chronic high blood pressure eg smoking, obesity, lack of exercise and diet.

NB. High blood pressure and a rapid pulse is associated with acute pain (adrenaline surge)
(Complete this form as best as you can and give copy to paramedic and keep record in accordance with WHS procedures)

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<td>Family Contact Name:</td>
<td>Phone</td>
<td>Notified</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Work department:</td>
<td>Supervisor name:</td>
<td>Notified</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Management:</td>
<td>Notified</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work safe:</td>
<td>Notified</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What Happened (a brief description):

First Aid Action Taken:

<table>
<thead>
<tr>
<th>Ambulance called:</th>
<th>yes</th>
<th>Time:</th>
<th>Referred to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Known health issues</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Epilepsy</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asthma</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anaphylaxis</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Known Allergies:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Medications:</td>
</tr>
<tr>
<td>Known Allergies:</td>
</tr>
<tr>
<td>Last ate or drank:</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>

EMERGENCY 000  
First Aid/ Incident Report Form  
Poison information 13 11 26  

Turn over
**Casualty Examination:** mark location of injuries on diagram and briefly describe injury eg cut, bruise, pain, swelling, burn.

**Verbal Secondary Survey**

**W-H-A-M-M-M-E-D**

- What happened
- Hurt - where does it hurt
- Allergy
- Medications
- Medical conditions - alerts
- Move your arms and legs
- Eat or drink last
- Document the answers

**Observations of Vital Signs:**

<table>
<thead>
<tr>
<th>Time</th>
<th></th>
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<tbody>
<tr>
<td><strong>Conscious State</strong></td>
<td></td>
</tr>
<tr>
<td>Fully Conscious</td>
<td></td>
</tr>
<tr>
<td>Drowsy</td>
<td></td>
</tr>
<tr>
<td>Unconscious</td>
<td></td>
</tr>
<tr>
<td><strong>Pulse</strong></td>
<td>rate:</td>
</tr>
<tr>
<td><strong>Breathing</strong></td>
<td>rate:</td>
</tr>
<tr>
<td><strong>Skin State</strong></td>
<td>Colour:</td>
</tr>
<tr>
<td></td>
<td>Temp:</td>
</tr>
<tr>
<td></td>
<td>Dry/Clammy:</td>
</tr>
<tr>
<td><strong>Pupils</strong></td>
<td>R</td>
</tr>
</tbody>
</table>

**First Aider’s Details:**
(In case the hospital needs to contact you for more information regarding the incident).

Name: (Print) __________________________________________

Phone: ______________________  Signature: ______________________