Advanced Resuscitation
For Nurses
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Welcome to the Wellington Free Ambulance 
Resuscitation Refresher Course

This booklet has been designed with primary health nurses in mind.

During the course of your refresher you will be given many opportunities to practise the skills associated with this booklet. Additionally, there are many areas in your workbook where we encourage you to write your own notes.

Remember that you can take the booklet home with you. Any notes you make will be a great resource to refresh your memory as you read over the booklet later.

Have fun and enjoy your course!

Wellington Free Ambulance

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OBJECTIVES

Cornerstone

Indicator 23

- “The practice identifies and responds appropriately to all patients with clinically urgent health needs”
- “Practice nurses participating in Continuing Professional Development must be certified to a minimum of Level 4”
- “Practice CPR training records should show that ALL team members required to administer CPR are trained to the correct level (NZRC Core 1-7)”


Level 4 (“NZRC”) 

<table>
<thead>
<tr>
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<th>ADULT COLLAPSE</th>
<th>CHILD / INFANT COLLAPSE</th>
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<td>Suction</td>
<td>Danger</td>
<td>Danger</td>
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<td>Bag-Mask</td>
<td>Responsiveness</td>
<td>Responsiveness</td>
</tr>
<tr>
<td>Oxygen</td>
<td>Send for Help</td>
<td>Send for Help</td>
</tr>
<tr>
<td>OPA</td>
<td>Open Airway</td>
<td>Open Airway</td>
</tr>
<tr>
<td>LMA</td>
<td>Assess Breathing</td>
<td>Assess Breathing</td>
</tr>
<tr>
<td></td>
<td>Compressions</td>
<td>Compressions</td>
</tr>
<tr>
<td></td>
<td>Compression/Ventilation Ratio</td>
<td>Compression Ventilation Ratio</td>
</tr>
<tr>
<td></td>
<td>Maintains Airway</td>
<td>Maintains Airway</td>
</tr>
<tr>
<td></td>
<td>Correct Sequence</td>
<td>Correct Sequence</td>
</tr>
</tbody>
</table>

Ministry of Health (Immunisation Handbook 2014)

“All Vaccinators must be able to distinguish anaphylaxis from fainting, anxiety, breath-holding spells and seizures” (p. 67).

The primary survey is the first step in patient assessment. The purpose is to detect potentially life-threatening conditions or injuries that are immediately treatable.

The mnemonic for the primary survey is “DRS ABCD” (“Doctors ABCD”).

---

**Basic Life Support**

**D**
Dangers?

**R**
Responsive?

**S**
Send for help

**A**
Open Airway

**B**
Normal Breathing?

**C**
Start CPR
   30 compressions : 2 breaths

**D**
Attach Defibrillator (AED)
   as soon as available, follow prompts

Continue CPR until responsiveness or normal breathing return

---

Figure 11.
DANGER

It is not uncommon for a rescuer to be hurt or even die while attempting to provide help. *Don’t rush into a scene.* Instead, take a moment to think and decide whether you need to make it safe before proceeding. It is important that you do not place yourself or others at greater risk than the patient.

- If it’s not safe, make it safe
- If you can’t make it safe, stay at a safe distance
- Never move a patient if moving them could cause them further injury *unless they are in immediate danger*
Your level of consciousness reflects how normally your brain is functioning. Anything that disrupts the normal working of the brain will result in an altered level of consciousness.

- Call out loudly to the patient and give an instruction
- Tap them on the clavicle or, if necessary, you can use a pen and press it firmly into their nail bed

This will give you an initial level of consciousness (LOC) for the patient on a scale called “AVPU”.

![AVPU scale]

Remember to check Blood Sugar Levels in patients with an altered LOC
SEND FOR HELP

For any serious illness or injury, rapid transport to hospital and advanced care will be required.

Dialling 111 is one of the most important tasks in a medical emergency. It is especially important in cardiac arrest.

It is preferable that you get another person to make the call for you, allowing you to stay with the patient. Sometimes, however, this is not the case and you must make a decision to either remain with the patient and administer care or leave them unattended while you go for help.

Situations where you must immediately go for help:

- Where it is impossible to approach the casualty because of the dangers to yourself
- In adult cardiac arrest where a defibrillator is needed. In childhood collapse with no signs of breathing and for adult immersion victims, you would stay and perform CPR for 2 minutes before going to the phone.

Did you know...?

People who are deaf, hearing or speech impaired can register with police to join the 111 txt service.

Go to http://www.police.govt.nz/111-txt and follow the steps in “How to Register”.

Figure 2.
Speaking to the call taker:

The very first piece of information the call taker will ask you is the location of your emergency. Whilst this can be frustrating for you, it enables us to send you an ambulance even if the call drops or your cell phone goes flat.

If we don’t know where you are, we can’t send any help.

The call taker will then begin a sequence of questions that helps us dispatch the best resources for your emergency. This will not delay the dispatch of the ambulance if you require one. Our ambulances are dispatched by someone other than the call taker you are speaking too – a dispatcher. All this happens simultaneously while you are on the phone.

Staying on the line:

Sometimes the call taker will keep you on the line or ask you more detailed questions. This more detailed information is transmitted to the responding ambulance crew as they head toward your emergency.

Giving precise information:

Try to be specific when speaking to the call taker. For example, if you are phoning for an ambulance from your practice, rather than telling the call taker “it’s chest pain,” state the suspected diagnosis rather than a symptom. “Actively infarcting” or even “cardiac chest pain” narrows down the different possibilities.

Clinical Support Desk:

Wellington Free Ambulance has a Clinical Support Desk in the Communications Centre. It is operated by an Intensive Care Paramedic 24 hours a day (with cover from other districts).

The Clinical Support Desk is available by phoning 0800 262266 and can offer clinical support and advice.

If you have phoned for an ambulance from your practice, you may receive a call back from the Clinical Support Desk.

The Clinical Support Desk will ask you more specific questions to ensure we provide the best possible care for your patient. Some things the Clinical Support Desk will want to know:

- Specific diagnosis
- Time of onset
- A set of vital signs
AIRWAY

Open the mouth using the cross-finger technique and look into the airway for any fluids, food or foreign objects.

Roll the patient onto their side if fluid is present.

If you can clearly see into the mouth, use a hooked finger to scoop out solid material, sweeping from top to bottom.

Unless broken or loose, leave dentures in place as they provide more “structure” to the face and will assist you in being able to provide a good mask-to-face seal, thus delivering adequate tidal volume.

Open the airway using the head-tilt chin-lift technique.
BREATHING

Place your ear over the patient’s mouth and nose – listen and feel for breath.

Look at the patient’s chest.

Look, listen, feel for 10 seconds.

If a patient is unresponsive and not breathing, then you should immediately begin CPR.
CPR

As patients are unresponsive and not breathing, they will probably have insufficient output.

Don’t waste time looking for a pulse you know will not be there.

<table>
<thead>
<tr>
<th></th>
<th>Adult</th>
<th>Child</th>
<th>Infant</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE</td>
<td>&gt;8 yrs.</td>
<td>1 – 8 yrs.</td>
<td>&lt; 1 yr.</td>
</tr>
<tr>
<td>INITIAL BREATH</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>RATIO</td>
<td>30:2</td>
<td>15:2</td>
<td>15:2</td>
</tr>
<tr>
<td>RATE</td>
<td>100-120</td>
<td>100-120</td>
<td>100-120</td>
</tr>
<tr>
<td>DEPTH</td>
<td>1/3 of chest</td>
<td>1/3 of chest</td>
<td>1/3 of chest</td>
</tr>
</tbody>
</table>
DEFIBRILLATOR

The Automatic External Defibrillator (AED) is only opened and attached to a patient under the following circumstances. The patient must be

- Unconscious
- Not breathing normally

Children who have a cardiac arrest often fall into a rhythm which is not shockable. If this is the case you need to continue CPR and follow the voice prompts.

You may use an AED on children. Paediatric pads are preferable. If there are no paediatric pads, you may use the adult pads. Pad placement for children is anterior/posterior.

Finally, current research on CPR training tells us that most lay rescuers and even some professional rescuers find it very difficult to find a pulse under emergency conditions. This is why we start CPR on anyone who is unconscious and non-breathing. If you have the ability to check for a pulse, then do so, but remember that the AED is to be attached to any patients who are non-breathing.
Safety Considerations

AEDs are very safe, but most rescuers worry about either inappropriately shocking a patient who is not in cardiac arrest or accidentally shocking another person.

- Inappropriate Shocks – the AED uses a complex set of computer algorithms and needs to be 99% certain that the patient is in cardiac arrest – that is, in VF or VT – before a shock is delivered.

- Occasionally, movement or electrical interference when analysing the cardiac rhythm can confuse an AED. It is very important to ensure that no one touches the patient while the AED is analysing the cardiac rhythm and it is also important that cell phones and other electronic devices are not used within 2 metres of the AED.

Accidental Shocks – the risk of electrical shock to rescuers is very low, provided there is someone in overall command of the AED and the resuscitation situation. This person, who may not necessarily be the most senior or qualified person present, is responsible for ensuring that everyone is clear of the patient before defibrillating. This involves performing a visual check of bystanders and then self, and then issuing the warning: “EVERYONE CLEAR” before pressing the SHOCK button and defibrillating. Advanced rescuers using oxygen therapy to help resuscitate the patient should ensure that it is turned away from the patient’s chest whilst defibrillation is taking place.

Avoid defibrillating a patient with wet clothing.

Avoid defibrillating a patient who is lying in a puddle of liquid or is in contact with any other conductive surface e.g. metal.
<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
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<td>Analysing Interrupted</td>
<td>Patient Motion</td>
<td>Check the patient for movement and ensure that no one is moving the patient whilst the AED is analysing</td>
</tr>
<tr>
<td></td>
<td>Electrical Interference</td>
<td>Cellular phones and other electronic devices should not be used within 2 metres of the AED – they must be turned off</td>
</tr>
<tr>
<td></td>
<td>Patient Transportation</td>
<td>AED use should only occur when the patient is on a stationary, flat, non-conducting surface</td>
</tr>
<tr>
<td>No Shock Delivered</td>
<td>Poor Pad Contact</td>
<td>Press pads firmly onto bare chest; ensure there is no air bubbles trapped under the pads. You may need to towel off excess moisture and shave chest hair. Also some AEDs will only hold the charge for a certain period of time after analysis – if you have taken too long, you will need to reanalyse the rhythm by restarting the AED</td>
</tr>
<tr>
<td></td>
<td>Pads Connector</td>
<td>Push connector firmly into socket</td>
</tr>
<tr>
<td></td>
<td>Pads or Cable Damaged</td>
<td>Replace pads. Pads are single use and are only useful for a certain number of shocks – it is important to ensure that your AED has two sets of pads so that there is a back-up pair</td>
</tr>
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CREW RESOURCE MANAGEMENT & SCENE LAYOUT

Human error is involved in 60-80% of general accidents. Crew resource management (CRM) is a system based around communication and teamwork. It was created by the aviation industry and has since been adopted by the medical profession due to the similarities between industries. Between 2008 and 2009, nearly 40% of all sentinel events in NZ healthcare centred around clinical management.

A large component of clinical management is effective clinical communication.

Method for dealing with authority gradients

Graded assertiveness is a pattern of communication where junior staff convey safety concerns to more senior staff members. It focuses on what is wrong, rather than who is wrong and is a technique that is used where there is an authority gradient between the sender and receiver.

Graded assertiveness techniques lead to an avoidance of loss of face, improved team confidence, reduced ambiguity, and avoidance of poor communication resulting from individual personalities or assigned positions within the team.

Graded assertiveness framework (PACE)

Probe “Do you know that....”
Alert “Can we reassess the situation?”
Challenge “Please stop what you are doing for a second while...”
Emergency “STOP what you are doing...”
Airway gear
Placed to the right of the Airway

Dr.

Airway MANAGER

Suction
Placed to the left of the Airway

SCENE CO-ORDINATOR

Nurse

Drug Kit
Controlled by the Scene Co-ordinator

Monitor
This is placed so that all the team can see the screen. It is accessible to the Scene Co-ordinator

CPR TEAM

CPR

RUNNER

Minutes

2

WELLINGTON FREE AMBULANCE
<table>
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<th>Communication Principle/Method</th>
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<td>Ground rules for communication that focus on mutual respect and shared responsibility</td>
</tr>
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<td>SBAR</td>
<td>Situation–Background–Assessment–Recommendation: a structured framework for reporting patient information for hand-off in care responsibility (holistic approach with bottom line recommendations)</td>
</tr>
<tr>
<td>Graded Assertiveness</td>
<td>Method for increasing levels of assertiveness in the normal course of work to optimize patient care especially relevant for an individual facing an authority gradient (e.g., nurse addressing a physician)</td>
</tr>
<tr>
<td>Two Attempt Rule</td>
<td>Method for escalating assertiveness prior to ascending chain of command</td>
</tr>
<tr>
<td>Feel the Pinch</td>
<td>Intuitive sense that something is wrong</td>
</tr>
<tr>
<td>Call Out</td>
<td>“Speaking up” to team members when completing a task, making an important observation, or when something appears to be wrong</td>
</tr>
<tr>
<td>Step Back</td>
<td>Method for stopping a process or procedure to reflect on the course of events, reassess prior assumptions, and question the efficacy of the action plan (e.g., “Stop what you are doing and listen to my concern.”)</td>
</tr>
<tr>
<td>Repeat Back</td>
<td>Method of repeating a verbal order or information to confirm mutual understanding (e.g., nurse repeating an order by a physician in the OR, ER, or Med-Surg unit)</td>
</tr>
<tr>
<td>Read Back</td>
<td>Method of transcribing a verbal order or information and reading it back to confirm mutual understanding (e.g., nurse reading back telephone order from a physician)</td>
</tr>
<tr>
<td>Dynamic Skepticism</td>
<td>Attitude of questioning the validity of previous assumptions by constantly evaluating incoming data—accept only what you see and know</td>
</tr>
<tr>
<td>Situational Awareness</td>
<td>Understanding of current status with impact on activity goals in a dynamic and changing environment</td>
</tr>
<tr>
<td>Work Load Distribution</td>
<td>Balanced distribution of work among all team members to achieve an optimal outcome</td>
</tr>
<tr>
<td>Fatigue Management</td>
<td>Acknowledging the effect of fatigue on human performance by developing strategies for fatigue management to optimize the safety of patients and staff</td>
</tr>
</tbody>
</table>

* OR, operating room; ER, emergency room.
Mouth-to-mouth resuscitation is not used in the resuscitation of patients in the pre-hospital arena. A specially designed ventilation unit, called a bag valve mask (BVM), is used to deliver close to 100% oxygen to the patient when used with supplementary oxygen (and the reservoir bag). The BVM consists of a self-inflating bag, a valve and a reservoir. While the reservoir is a separate add-on to the bag, it is always used in conjunction with it. The rescuer simply squeezes the bag to empty the contents of oxygen into the patient’s lungs.

Incorrect airway management will inflate the stomach, producing regurgitation or prevent adequate air entry.
To use the bag valve mask:

Prepare your equipment. Select correct mask size and connect oxygen to BVM. Set oxygen flow rate to 10-15 litres per minute.

Position yourself at the head of the patient with their head between your thighs. Be aggressive with head positioning – ensure it is tilted back as far as it will go.

Place the mask upon the patient’s face, ensuring the mask is well sealed. You may need to inflate or deflate the “cushion” that moulds to the face.

Place your hands around the mask in a C-grip fashion, using the middle, little and ring fingers to grasp the lower jaw.

With the mask well sealed on the face and the head tilted right back, gently squeeze the bag with your other hand to force the air from the bag into the patient’s lungs.

During resuscitation, monitor the amount of oxygen left in the bottle and reservoir bag. The flow rate to the BVM may need to be adjusted to ensure that the reservoir bag is never fully deflated. Check for leaks.
OXYGEN

Safety

Keep cylinders away from naked flames, including cigarettes, as oxygen supports combustion.

Prevent oil and grease from coming into contact with the cylinder, especially the outlet valve.

Don’t bang cylinders together.

If the cylinder is not restrained, ensure it is lying on its side.

If the cylinder is leaking:

Check that the regulator is tightly connected to the cylinder. Try removing the regulator and turning the Bodok Seal over and reattaching the regulator.

If the cylinder still leaks, try a new Bodok Seal or a new cylinder (occasionally a cylinder is at fault).

Bodok Seal:

The Bodok Seal is made of rubber and metal and is designed to prevent oxygen leaks between the cylinder and the regulator.

Who checks your O₂?

Can you change the cylinder?

Turn the cylinder off and drain the regulator.

Check the seal is intact and tear off the tab on the new cylinder.

‘Crack’ the cylinder to clear dust.

Line up the pin holes on the cylinder with the regulator and adjust the regulator so it is fitted tightly onto the cylinder.

Turn on using the key and ensure oxygen is flowing by setting the flow meter.
SUCTION

If there is a lot of liquid obstruction such as vomit or blood obstructing an airway, it should be cleared using a suction unit. This mechanical device is like a small vacuum cleaner that generates powerful suction and is used to clear airways of liquid.

Manual suction units work the same way, but they are not as powerful.

There is a hard plastic handle at the end of the suction tubing called a Yankauer (pronounced “yanker”) handle which can be inserted into the mouth and suck liquid from the back of the throat.

Alternatively, you may use a soft catheter for suctioning the airway. This is particularly useful for patients who have an LMA or ET tube in situ.
How to suction an airway:

Patients with an altered level of consciousness should be placed on their side unless there is a good reason not to.

Clear the airway manually if the patient is unresponsive.

If there is significant vomiting, remove any airway adjuncts that may be present.

Position assembled suction device conveniently.

Using a Yankauer handle:

While sitting at the patient’s head, open the patient’s mouth using the cross-finger technique.

Turn the suction unit to maximum suction power (infants are the exception).

Under direct vision if possible, insert the suction handle into one side of the patient’s mouth and suction that side, then suction the middle of the mouth, then suction the other side of the mouth. If there is an airway adjunct in place, suction around it.

Take no longer than 10 seconds to suction the patient and be sure not to suction beyond the oral cavity or beyond the level that can be seen on visual inspection.

Never lose sight of the tip!
The OPA is used only when a patient has lost their cough, gag, or swallow reflex. These normal reflexes which protect an airway are absent when we are deeply unconscious.

In general the OPA is used to help prevent the tongue from occluding the back of the airway (oropharynx). Correct measurement and insertion is critical. Too short an OPA will push the tongue down onto the oropharynx, effectively occluding the airway. Conversely, too large an OPA can cause laryngeal spasm, a condition where the vocal cords spasm closed, sealing the airway. Either way, air entry is limited, if not denied. Excessive stimulation of the oropharynx can also cause bradycardia so should be avoided where possible.

While this may sound intimidating, the reality of inserting an OPA is quite straightforward.
Measuring and inserting the OPA:

Measure the OPA from the corner of the mouth to the earlobe.

Open the mouth using the ‘scissor’ or ‘cross finger’ technique and head-tilt chin-lift method.

Insert the OPA approximately 50% into the mouth with the tip of the lumen curving toward the nose (to prevent the tongue being pushed back towards the airway).

Rotate the OPA 180 degrees and advance fully.

Ensure the flange of the OPA sits flush with the lips.

Infants should have the OPA advanced without any rotation.
SUPRAGLOTTIC AIRWAY DEVICE

A laryngeal mask airway (LMA) is a device that creates a patent airway with a low pressure seal around the larynx.

Indications

The LMA is indicated for use:

- To achieve airway control in an unconscious patient with absent airway reflexes
- As an alternative to the face mask for achieving and maintaining airway control and ventilatory support
- As an alternative airway control device when intubation is precluded or tracheal intubation attempts have failed

The LMA does not protect the airway from the effects of regurgitation and aspiration. Its use in the emergency situation must balance the risk of regurgitation and aspiration against the benefits of establishing an airway.
**Equipment required:**

- LMA
- Syringe 60ml
- Lubricant – KY gel
- Suction unit
- Bag mask (including filter, mask and Cobb’s connector)
- Tape
- Bite block
- Towel

**Insertion Technique:**

Select the correct size LMA

<table>
<thead>
<tr>
<th>Size</th>
<th>Type</th>
<th>Weight Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size 3</td>
<td>Small adult</td>
<td>30–50kg</td>
</tr>
<tr>
<td>Size 4</td>
<td>Normal adult</td>
<td>50–70kg</td>
</tr>
<tr>
<td>Size 5</td>
<td>Large adult</td>
<td>&gt;70kg</td>
</tr>
</tbody>
</table>

**Performance Test: Visual Inspection**

- Only use if the airway tube is transparent.
- Only use if the LMA has no damage such as cuts, tears and scratches.
- Flex the tube not beyond 180° – if the tube kinks, do not use.
- Only use if the aperture on mask is clear and no aperture bars (if present) are broken.

**Performance Test: Inflation and Deflation**

Attach syringe into the valve port and deflate the cuff so that the walls are tightly flattened against each other. Ensure the cuff remains deflated.

Inflate the cuff with 50% more air than the recommended inflation volume. Ensure the symmetry of the cuff is even and that the cuff does not deflate.
Pre-insertion preparation

Deflate the cuff tightly so that it forms a smooth “spoon shape” without any wrinkles. Do this by pressing the LMA, aperture side down, on a flat surface while sucking out the air (Fig. 1 & 2). Lube the back and posterior tip of the cuff with lubricant.

Insertion:

Position the head in the “sniff” position with neck flexed and head extended.

Hold the LMA like a pencil.

Maintaining head extension and neck flexion, insert the LMA with the tip running against the hard palate.
To facilitate insertion, press the middle finger down into the jaw.

Use the index finger to push the LMA in, following the contours of the hard and soft palate.

Using the finger to maintain pressure on the tube, advance the LMA until definite resistance is felt at the base of the hypopharynx.

Using your non-dominant hand, maintain tube pressure while removing your index finger.
Inflate the cuff with just enough air to obtain a seal. Often only half the recommended inflation volume will be needed.

Insert a bite block alongside the LMA. The bite block should be about 3cm thick and can be made from 3-4 gauze dressings tightly rolled and taped together. Use tape to secure the LMA and bite block in situ.

Recommended maximum inflation volumes

<table>
<thead>
<tr>
<th>Size of LMA</th>
<th>Maximum Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size 3</td>
<td>Maximum of 20 mls ((3 - 1) \times 10 = 20\text{mls})</td>
</tr>
<tr>
<td>Size 4</td>
<td>Maximum of 30 mls ((4 - 1) \times 10 = 30\text{mls})</td>
</tr>
<tr>
<td>Size 5</td>
<td>Maximum of 40 mls ((5 - 1) \times 10 = 40\text{mls})</td>
</tr>
</tbody>
</table>
Confirming correct placement of the LMA:

- Slight outward movement of the tube upon LMA inflation
- Presence of smooth oval swelling in the neck around the thyroid and cricoid area
- No cuff visible in the oral cavity
- Auscultate the epigastrum to confirm no air entry
- Auscultate the anterior thorax and axilla to confirm good equal air entry
- Observe equal rise and fall of the chest
- If available, use End Tidal CO₂ (should be between 35-45mmHg)

Correct LMA placement
**Precautions:**

Use with caution on any patient who is at particular risk of regurgitation and aspiration, including, but not limited to:

- The morbidly obese
- Women pregnant past 14 weeks
- Patients with multiple injuries
- Patients with abdominal or thoracic injury
- Patients with conditions with delayed gastric emptying

Also:

- Patients with severe oropharyngeal trauma
- Patients with CORD or high inflation pressure requirements

**Adverse Effects:**

Adverse effects can include but are not limited to:

- Sore throat
  
  Minor neurovascular events e.g. transient tongue numbness, tongue cyanosis, vocal cord paralysis or hypoglossal nerve injury.

These events usually occur secondary to improper insertion or hyperinflation of the cuff.
Complications and Problem Solving

Aspiration and regurgitation

While the incidence of aspiration and regurgitation is low (2 in 10,000), there is an increased likelihood of it occurring in the emergency situation.

Constant monitoring of the airway is vital to avoid complications from aspiration.

Should aspiration occur, turn the patient on the side, remove the LMA and suction.

Inducing cough gag reflex

Stop inserting the LMA and remove it.

Dislodgement of the LMA

Reinsert if LMA has become dislodged.

Secure the LMA with tape.

Recheck after movement of patient.

Inflation of stomach with air

Usually caused by excessive inflation or incorrect positioning of LMA.

Correct by modifying inflation pressures when doing IPPV.

Remove and reinsert the LMA and be aware of an increased risk of aspiration and regurgitation.
**Improper placement**

Usually caused by not negotiating the back of the tongue or following the palate during insertion

Can also be caused by the cuff failing to remain flat and beginning to curl over or fold on itself as the LMA is advanced

If having difficulty, remove and reinsert LMA

**Ongoing Maintenance**

Constantly monitor the airway at all times for aspiration and regurgitation

Recheck placement every time the patient is moved

**Cardiac Arrest**

If you have placed an LMA during cardiac arrest, consider performing continuous chest compressions and ventilating at 8-10 breaths per minute for an adult (12-14 breaths per minute for a child). However, if continuous compressions prevent adequate ventilation via LMA, continue CPR at a ratio of 30:2.
The i-gel is a second generation supraglottic airway device made from a medical thermoplastic elastomer and is designed to create a non-inflatable, anatomical seal of the pharyngeal, laryngeal and perilaryngeal structures whilst avoiding compression trauma.

Figure 15

Indications

The i-gel is indicated for use;

- during resuscitation of the unconscious patient

Equipment required:

- i-gel
- Water based lubricant
- Towel

INSERTION TECHNIQUE

Select the correct size i-gel
Performance Test

- Inspect packaging and ensure it is not damaged prior to opening
- Inspect the device carefully, check the airway is patent and confirm there are no foreign bodies or a bolus of lubricant obstructing the distal opening of the airway or gastric channel
- Discard the device if the airway tube or the body of the device looks abnormal or deformed

Pre-insertion preparation

- Always wear gloves
- Open the i-gel package and take out the protective cradle containing the device
- Remove the i-gel from the cradle and place a small bolus of water based lubricant onto the middle of the smooth surface of the cradle
- Grasp the i-gel and lubricate the back, sides and front of the cuff with a thin layer of lubricant

Insertion Technique

- Grasp the lubricated i-gel firmly along the integral bite block. Position the device so that the i-gel cuff outlet is facing towards the chin of the patient
- The patient should be in the ‘sniffing position’ with head extended and neck flexed. The chin should be gently pressed down before proceeding to insert the i-gel
- Introduce the leading soft tip into the mouth of the patient in a direction towards the hard palate
- Glide the device downwards and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt
- The incisors should be resting on the integral bite block
- Tape the i-gel down from ‘maxilla to maxilla’
Using the i-gel® supraglottic airway

Preparations for use

1. Open the i-gel packaging and place the i-gel in the device.
2. Retrieve the i-gel mask and secure it to the device.
3. Insert the i-gel into the patient's mouth.
4. Advance the i-gel into the patient's throat.
5. Secure the i-gel mask to the patient's face.

Insertion technique

1. Place the i-gel in the patient's mouth.
2. Advance the i-gel into the patient's throat.
3. Secure the i-gel mask to the patient's face.

Important notes to the recommended insertion technique

- Ensure the i-gel is inserted correctly to prevent aspiration.
- Monitor the patient's airway to ensure proper function.

Figure 14.
Choking is defined as a blocked airway. Anything that blocks an airway causes choking. It can be the tongue or vomit in an unconscious person lying flat on their back. Normally it refers to an airway that has been blocked by a solid obstruction.

Normal swallowing

The epiglottis acts as a flap to seal the entrance to the lungs (trachea) and direct food to the stomach via the food pipe.

Choking

A choking person cannot gasp because food lodged in the trachea blocks the passage of air. The red arrow shows where the food should have gone to prevent choking.
Management

The aim of choking management is to dislodge the obstruction by delivering back blows and/or chest thrusts which push the obstruction out using pressure from the air trapped in the lungs. Abdominal thrusts (“Heimlich Manoeuvre”) are no longer used.

Choking can be either partial or complete, depending on whether the airway is partially or completely blocked. With partial choking, the patient can still make noise and will try to get rid of the obstruction using their cough, gag and swallow reflex. Encourage them to continue coughing to try to dislodge the obstruction.

A patient with a complete airway obstruction will remain silent. Step in and help them immediately.
**Adults and Children**

Ask the patient, “Are you choking?”

If the patient can make a noise, encourage them to cough.

If the patient is silent or unable to dislodge the obstruction, bend them forward and give them **5 firm back blows** between the shoulders.

If this does not dislodge the airway obstruction, give **5 chest thrusts**.

Repeat the cycle of back blows and chest thrusts until they expel the obstruction or become unconscious.

If the patient becomes unconscious, place them on the ground and immediately start CPR.
Infants

Give 5 firm **back blows** between the infant’s shoulders while supporting the infant on your arm, with their head down.

Turn the infant over and give 5 **chest thrusts** while supporting the infant on your arm, with its head down.

Check airway; scoop any visible obstruction out with a hooked little finger.

Repeat back blows and chest thrusts until obstruction is removed or infant becomes unconscious.

Begin CPR immediately if the infant becomes unconscious.
Foreign Body Airway Obstruction (Choking)

Assess

Ineffective Cough
Severe airway obstruction

Unresponsive
Send for help
Start CPR

Responsive
Send for help
Give up to 5 back blows
If not effective
Give up to 5 chest thrusts

Effective Cough
Mild airway obstruction

Encourage Coughing
Continue to check casualty until recovery or deterioration
Send for help

Figure 12.
A TRUE MEDICAL EMERGENCY

Anaphylaxis is the body’s extreme reaction to foreign invaders. The body is so sensitised to a trigger that the whole body reacts rather than just the site of exposure.

Signs and Symptoms

Difficulty breathing
Wheezing
Chest tightness
Swelling of eyelids, lips and tongue
Difficulty in swallowing “a lump in the throat”
Hoarseness to the voice
Rash or itchy skin with hives
Rapid pulse
Flushing of the skin
Vomiting and diarrhoea
Management

Call an ambulance without delay.

Monitor ABCs – the airway is at risk.

Begin CPR immediately if the patient stops breathing.

If the patient is conscious, encourage the patient to suck on an ice cube or ice block (to help reduce swelling in the mouth).

Place an ice pack around the patient’s throat if swelling is present.

If a bee sting is present, remove the sting carefully by scraping it out. Apply a cold compress over the site and let the limb dangle down if possible.

Encourage the patient to take their own medication if available and if they haven’t already done so (usually an adrenaline injection known as an ‘Epi Pen’).

Loosen any constrictive clothing (ties, belts, bras etc.).

Treat for Anaphylactic Shock.

Consider the following if you have the authority to do so:

Adrenaline

High flow O₂ therapy

IV line

Consider a bronchodilator if patient has a wheeze
Adult Anaphylaxis

Symptoms and signs of anaphylaxis

- Call for help
- Remove trigger / causative agent
- Assess ABC
- Lie patient flat

NO

Cardiac arrest

YES

Refer to Advanced Life Support for Adults algorithm

Shock (hypotension)
OR
Upper airway obstruction (stridor, tongue / laryngeal swelling)
OR
Lower airway obstruction (wheeze)

ADRENALINE 0.5mg IM
(0.5mL of 1:1,000)
(Can use 0.3mg via adrenaline autoinjector - Preferred injection site: upper outer thigh)

REPEAT IN 5 MINS IF NO IMPROVEMENT

IN ADDITION:
0.9% saline 1000mL IV
rapid infusion for shock
(High flow oxygen - Attach monitoring)

RESOLUTION

NO RESOLUTION

CONSIDER THIRD DOSE OF IM ADRENALINE (0.5mL of 1:1,000)

Persistent shock
• Further 0.9% saline 1000mL IV
• Inotropic support

Persistent upper airway obstruction
• Nebulised adrenaline

Persistent lower airway obstruction
• Nebulised salbutamol

Observe
Monitoring and ABC reassessment
Consider oral antihistamine and oral prednisone

Figure 13
ANAPHYLAXIS MANAGEMENT GUIDELINES

Objective
To recognise and manage anaphylaxis within a primary health environment. Anaphylaxis is a rare and potentially life-threatening hypersensitivity reaction.

These guidelines are aimed at immunisation vaccinators and follow the Immunisation guidelines; however, they are appropriate for any incidents of anaphylaxis.

Prevention
- All health professionals should be familiar with signs of anaphylaxis and the medications and procedures required to reverse this process.
- Ask all patients about previous allergy to medication or components of vaccines prior to administration.
- Explain the risk of an adverse reaction to the patient. Tell them to notify the nurse promptly if they experience any change at all in how they are feeling.
- All persons receiving vaccinations or medication administered in the practice must be supervised in the practice for 20 minutes post administration.

Signs and Symptoms

<table>
<thead>
<tr>
<th>Airway</th>
<th>Pharyngeal or laryngeal oedema, hoarse voice, stridor, swallowing difficulties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breathing</td>
<td>Dyspnoea, increase respiratory rate, wheeze, bronchospasm, hypoxia, pulmonary oedema, cyanosis and respiratory arrest</td>
</tr>
<tr>
<td>Circulation</td>
<td>Shock (pale, clammy), tachycardia, hypotension, dizziness, collapse, deterioration when sitting or standing, decreased consciousness, myocardial ischaemia, ECG changes, cardiac arrest</td>
</tr>
<tr>
<td>Skin</td>
<td>Erythema, urticaria, flushing, itching, angioedema</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>Abdominal pain, cramps, vomiting, diarrhoea</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Nervous system</td>
<td>Anxiousness, confusion, agitation</td>
</tr>
</tbody>
</table>

Patients often experience a sense of “impending doom” prior to symptom manifestation.

*NB: Cardiovascular collapse can occur without respiratory symptoms.*

*Early treatment of anaphylaxis is vital.*

*Refer to attached table Anaphylaxis VS Faint.*
**Treatment/Procedure**

- **CALL FOR HELP** – call for a doctor or ask another person to dial 111. **NEVER** leave the recipient alone.

- **ASSESS** – if unconscious, place in the recovery position and institute standard procedures for basic life support (airway, breathing, circulation). If cardiopulmonary arrest occurs, administer age-appropriate CPR and life support measures.

- **ADMINISTER ADRENALINE** – 1:1000 solution (1mg/ml).

Adrenaline dosage is 0.01 mg/kg up to a maximum of 0.5 mg. If weight unknown, use the following guidelines:

<table>
<thead>
<tr>
<th>AGE</th>
<th>ADRENALINE 1:1000 (1mg/ml) DOSE (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant &lt;12 months</td>
<td>0.05-0.1 mL</td>
</tr>
<tr>
<td>Infant 1yr -&lt;2yrs</td>
<td>0.1 mL</td>
</tr>
<tr>
<td>Child 2yr- &lt;5yr</td>
<td>0.2 mL</td>
</tr>
<tr>
<td>Child 5yr- &lt;11yr</td>
<td>0.3 mL</td>
</tr>
<tr>
<td>Adolescent &gt;11yr</td>
<td>0.3-0.5 mL</td>
</tr>
<tr>
<td>Adult</td>
<td>0.5 mL</td>
</tr>
</tbody>
</table>

- Route: deep IM e.g. anterolateral aspect of middle third of thigh.
- Expect to see some response to the adrenaline within 1-2 minutes.
- If necessary, repeat adrenaline at 5-15 minute intervals, to a **maximum of three doses** while waiting for assistance. Use alternative sites/limbs for additional doses.

- **ADMINISTER OXYGEN** at high flow rates where there is respiratory distress, stridor or wheeze.

- If **HYPOTENSIVE** – elevate legs.

- If **STRIDOR PRESENT** – elevate head and chest.

- **RECORD VITAL SIGNS** every 5-10 minutes (BP, colour, pulse, temp, respirations).

- **DOCUMENT** all symptoms and treatment given fully.

- **ESTABLISH an IV line** – in all moderate and severe cases. Establish TWO wide bore lines in severe anaphylaxis if possible.

- If a medical practitioner is present, advance treatment as appropriate.

- **ADMIT TO HOSPITAL** – all cases of anaphylaxis should be admitted to hospital for observation. Rebound anaphylaxis can occur 12-24 hours after the initial episode.
Note: Only experienced medical practitioners should administer IV adrenaline as a slow injection or infusion. Only use 1:10,000 solution at a dose of 50mcg (0.5 ml) and stop when response obtained.

Documentation is essential and should include:

- Assessment history
- Record of vital sign observations
- Advice given
- Treatment given and by whom (including drug names, times given, dose, route of administration, expiry dates, batch numbers)
- Any referrals if further follow-up is required by other agencies
- Fill in CARM form as required
- Example of Treatment Documentation Sheet provided (see attached form below)
- Add a medical warning/alert of allergy to patient’s file
- Provide patient information and education regarding the allergen that has affected them so they can avoid a reoccurrence of this event in the future

References

- The Management of Anaphylaxis in Primary Care, BPac Issue 18, 2008.
<table>
<thead>
<tr>
<th></th>
<th>FAINT</th>
<th>ANAPHYLAXIS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Onset</strong></td>
<td>• Usually at the time or soon after the injection&lt;br&gt;• More common</td>
<td>• Usually some delay, between 5-30 minutes after injection&lt;br&gt;• Less common</td>
</tr>
<tr>
<td><strong>Systemic Reaction</strong></td>
<td>Benign</td>
<td>Potentially fatal if untreated</td>
</tr>
<tr>
<td><strong>Skin</strong></td>
<td>• Pallor</td>
<td>• Flushing especially face, neck&lt;br&gt;• Urticaria/wheals&lt;br&gt;• Oedema face, neck, mouth</td>
</tr>
<tr>
<td></td>
<td>• Cold and clammy</td>
<td></td>
</tr>
<tr>
<td><strong>Respiratory</strong></td>
<td>• Shallow respirations</td>
<td>• Dyspnoeic&lt;br&gt;• Bronchospasm/wheeze&lt;br&gt;• Stridor&lt;br&gt;• Substernal pressure&lt;br&gt;• Respiratory arrest</td>
</tr>
<tr>
<td><strong>Gastrointestinal</strong></td>
<td>• Nausea</td>
<td>• Vomiting&lt;br&gt;• Abdominal pain</td>
</tr>
<tr>
<td><strong>Cardiovascular</strong></td>
<td>• Bradycardia – slow, big volume&lt;br&gt;• Transient hypotension</td>
<td>• Tachycardia – fast, weak volume&lt;br&gt;• Hypotension&lt;br&gt;• Dysrhythmias&lt;br&gt;• Circulatory collapse</td>
</tr>
<tr>
<td><strong>Neurological</strong></td>
<td>• Transient loss of consciousness&lt;br&gt;• Good response once prone&lt;br&gt;• Convulsion</td>
<td>• Progression to loss of consciousness as a late event in severe cases&lt;br&gt;• Little response once prone&lt;br&gt;• Feeling of impending doom&lt;br&gt;• Convulsion</td>
</tr>
</tbody>
</table>
# EMERGENCY SHEET

<table>
<thead>
<tr>
<th>Name:</th>
<th>Date:</th>
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<tbody>
<tr>
<td>DOB:</td>
<td>Sex:</td>
</tr>
<tr>
<td>Address:</td>
<td>NHI:</td>
</tr>
<tr>
<td>Home Ph:</td>
<td>Regular GP:</td>
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<tr>
<td>NOK:</td>
<td>Ph:</td>
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<td></td>
<td>Cell Ph:</td>
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## EVENT HISTORY


## OBSERVATIONS

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<tr>
<th>Time</th>
<th>Colour</th>
<th>BP</th>
<th>Pulse</th>
<th>Temp</th>
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</table>

## MEDICATION GIVEN + route

<table>
<thead>
<tr>
<th>Time</th>
<th>Dose</th>
<th>Batch No.</th>
<th>Expiry</th>
</tr>
</thead>
</table>

## OTHER RELEVANT DETAILS

### ALLERGIES KNOWN:

### PATIENT OUTCOME:

**NOK contacted** if patient transported to secondary care.

Names of Drs/Nurses involved in treatment: ..................................................

.................................................................

**PTO**
## GCS Total

<table>
<thead>
<tr>
<th>Motor</th>
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<td>5 Purposeful</td>
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<tr>
<td>4 Withdraws</td>
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<td>3 Flexion</td>
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<td>2 Extension</td>
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<td>4 Confused</td>
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<td>4 Spontaneous</td>
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<td>3 To Voice</td>
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</tr>
<tr>
<td>2 To Pain</td>
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<td>1 Nil</td>
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## PUPILS

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</tbody>
</table>

**NB:** Photocopies of the Emergency Sheet may be required to follow patient to secondary services or for patient to take with them.

**Place Emergency Sheet in patient file or scan into clinical notes.**
References

Figure 1. Retrieved from http://eastcountymagazine.org/node/3948

Figure 2. Retrieved from http://www.nsupport.co.nz/?page_id=78

Figure 3. Retrieved from http://calsprogram.org/manual/volume1/Section4_Path/05-PATH4NeonatalEmergencies13.html

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Figure 13. Retrieved from http://www.nzrc.org.nz/guidelines/