unit seven
basic oxygen

learning outcomes

Perform basic resuscitation techniques

- Define the contents of the oxygen unit and safety precautions when using oxygen.
- Perform oxygen-aided resuscitation technique.
- Demonstrate the use and knowledge of oxygen therapy.

how you might be assessed

Underpinning knowledge

- A number of oral or written questions may be asked relating to the use of oxygen, safety precautions, routine checks and so forth.

Practical demonstration

- You may be asked to demonstrate the routine checks of oxygen equipment (not including the air bag).
- You may be asked to demonstrate the administration of oxygen therapy.

Scenario

- You may be required to use oxygen therapy on one or more patients and to demonstrate mouth-to-mask with oxygen.

why use oxygen?

Oxygen administration is useful for any patient who does not appear to be adequately perfused or not maintaining sufficient oxygen levels. Qualified personnel may safely administer oxygen to any patient who is not adequately perfused. Patients likely to benefit from oxygen include those with the following conditions:

- unconsciousness
- shock
- blood loss
- chest pain
- shortness of breath, including asthma
- circulatory distress
- severe pain
- injuries
- after resuscitation
- absent breathing.

safety precautions when using oxygen

Oxygen must be used with care and respect at all times.

- Never use oxygen near an open flame.
- Never use oxygen near cigarettes.
- Never use grease or oil with oxygen equipment.
- Remember that oxygen promotes all types of burning (combustion).
- Do not allow anyone to tamper with oxygen equipment.
- Store the oxygen unit in a cool place.
- Store oxygen bottles lying flat, or securely fastened, if upright.
- Use only medical oxygen.
- Never use oxygen when delivering a shock via a defibrillator.

oxygen equipment

Oxygen is often used in the treatment of serious illness and injury and has been used with great success by Australian lifesavers since 1973.

checking equipment before use

Oxygen equipment must be checked thoroughly before patrol.

Turning oxygen on

position of equipment

When oxygen is in use, the equipment must be placed so that the operator responsible for it can reach it easily and can see the contents gauge.

Contents gauge

the components of oxygen resuscitation equipment

It is very important for those trained in the use of oxygen resuscitation units to make sure that they are aware of the components and operation of the unit or units in use at their location.

Oxygen units come in many shapes

The basic components are:

- Protective case. This houses all the relevant equipment. In some models it will include the oxygen cylinder.
- Oxygen cylinder. The body of the cylinder may be black or silver–grey but the shoulders of oxygen cylinders are white. (It may also come in a silver cylinder marked medical oxygen.) Note that medical oxygen is the only gas to be used in the oxygen equipment. The cylinder is constructed with two pin index holes next to the main outlet. These index holes mate with pins on the mounting yoke of the oxygen equipment. A fresh, full cylinder will usually have a protective wrapping of blue or white plastic around the oxygen outlet to prevent dust and dirt from entering during transport. Before attaching the cylinder to the oxygen equipment, all of this wrapper must be removed and the cylinder 'cracked'.
- Cylinder cradle. This provides support for the oxygen cylinder.
- Cylinder yoke. This is the connection for the oxygen cylinder. In some instances, it is part of the case; otherwise it may be attached as part of the regulator.
- Sealing washer. This fits in the yoke to prevent leakage from the cylinder joint. Spare seals are kept in the oxygen equipment case.
- Locating pins. These are in the yoke so that the operator can position the oxygen cylinder correctly.
- Thumb screw. This helps to secure and maintain the cylinder in position.
- Cylinder key wheel. This is used to open or close the cylinder valve.
- External cylinder connection. This allows larger oxygen cylinders to be attached. It is important to remember that when an external cylinder is in use, a small cylinder or the yoke plug should be firmly in place to prevent oxygen leaking.
  NOTE this connection is not found on all units.
- Contents gauge. This indicates the amount of oxygen in the cylinder. When the cylinder is full, it will register FULL.
- Regulator. This regulates the oxygen pressure and flow of oxygen to the therapy and oxygen control valve.
- Oropharyngeal (OP) airways. These work to maintain a clear airway and can only be used by qualified personnel.

Yoke showing sealing washer and thumb screw

- Air bag. This is used for inflating a patient's lungs, and supplies oxygen from an oxygen reservoir and may only be used by appropriately qualified personnel.
- Oxygen reservoir. Attached to an air bag, this supplies up to 95 per cent oxygen when connected to an oxygen supply and may only be used by appropriately qualified personnel.
- Tubing. Dependent on the unit, there will be either one or two tubes, usually clear and/or green in colour. This tubing supplies oxygen to the airbag and for oxygen therapy.
- Control valves. These are turned on when using the air bag resuscitator or oxygen therapy. They give a fixed flow rate of oxygen. On some models the control valve and flow rate are built into the regulator.
- Anaesthetic masks. (Each unit should contain one adult and one child-size mask.)
- Therapy masks. (A clear, colourless disposable type of therapy mask is recommended.)
- Chalk. This is used to mark the volume of oxygen in the cylinder.

Two pairs of gloves, note pad and pen should be included in the unit.

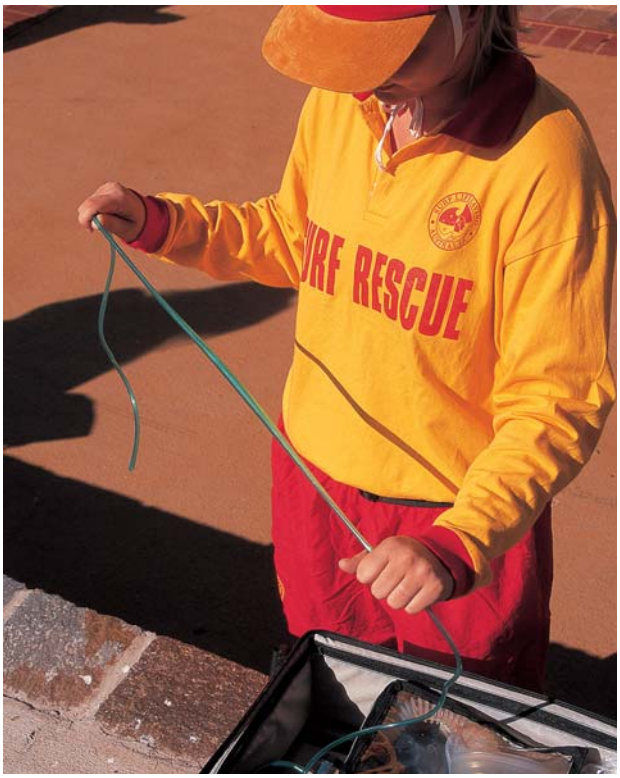
The SLSA Oxygen Equipment Policy is located on the SLSA web site (visit: *www.slsa.com.au*).

routine check of oxygen equipment

Keep the whole unit clean and free from sand, sea water, oil, grease, etc.

1. Before a cylinder is fitted to the oxygen equipment, the protective plastic wrapping must be removed.
2. The cylinder is 'cracked' by turning it on and off very briefly, keeping the cylinder as upright as possible and taking care that the outlet is not pointed at any person or at the sand. Cracking the cylinder removes any foreign matter from its valve opening. Check that the sealing washer is present and is not damaged or dirty, otherwise the machine cannot be used. The cylinder must be inserted into the yoke, lining up the inlet and outlet holes together with the locating pins and spigot. The thumb screw is then firmly screwed home.
3. Check the contents of the cylinder by using the key to open the cylinder valve slowly until the gauge reaches a steady point. This slow build up of pressure saves damage to the regulator and gauge by avoiding a sudden rush of oxygen. Open the cylinder valve fully, then turn the key wheel back half a turn to prevent locking. The gauge should register FULL. Reject the cylinder if it is half or less than half full, and fit a new cylinder.

   NOTE Some units have a lever switch to turn the cylinder on and off.



Check the oxygen tubing for cracks or other damage

4. Check all the oxygen tubing for cracks or other damage. Ensure that the open end of the therapy tubing will fit easily to both therapy masks.
5. Check both therapy masks for cleanliness and serviceability.
6. Check the condition of the anaesthetic mask cuffs for fit, perishing or cracks.
7. Ensure the OP airways are present and clean. These are for use by appropriately qualified personnel.
8. Check for chalk, pens, pencils, papers, gloves and spare sealing washers in the case: chalk for marking the quantity of oxygen in the cylinder; pens, pencils and paper for recording information; gloves for personal protection during emergency care; and spare seals to replace defective or missing seals as required.
9. Check the flow of oxygen from the cylinder through the tubing.
10. Check the operation of the oxygen nipple by turning the oxygen valve to the ON position.
11. Close the cylinder valve, then drain oxygen from the system by operating both of the two delivery systems.
12. Check that the needle on the oxygen cylinder's contents gauge falls to zero.
13. Mark the cylinder with the contents, time and date of inspection.
14. The airbag (4 checks) should be checked by an ARC qualified person and is not part of the Bronze Medallion or SRC.

NOTE As each item is checked, it should be returned to the case in a neat and tidy fashion.

oxygen therapy

Oxygen therapy is only used for patients who are breathing. It may be safely given by qualified lifesavers to any patient about whom they are worried. This may include patients suffering:

- unconsciousness
- shock
- blood loss
- chest pain
- shortness of breath, including asthma
- after resuscitation
- severe pain
- injuries.

NOTE The unconscious breathing patient will be in the lateral position.

The conscious person will be nursed according to their needs. For instance, heart patients and asthmatics will usually be most comfortable sitting up, while patients who have lost blood will need to be flat, perhaps with their legs raised.

procedure for administering oxygen therapy

Having checked the oxygen equipment and placed it correctly, connect the therapy mask to the tubing.

The mask, with oxygen turned on, should be placed onto the patient's face from the chest upwards, cupping the patient's chin in the mask first and then gently placing the nosepiece into position.

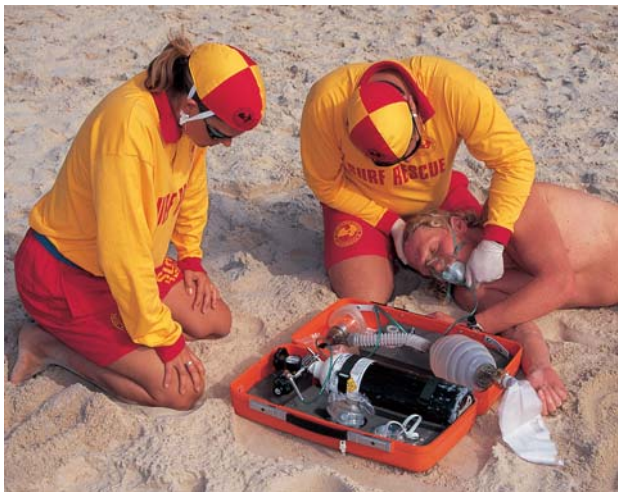
Operators should communicate with the patient, so that the patient has confidence in the treatment being delivered.

If a conscious patient does not want to use the mask, remove the tubing from it and direct the oxygen flow around the mouth and nose.

Reassuring the patient while introducing the therapy mask

Oxygen rich air provided to a patient without a mask

Alternatives such as allowing a conscious patient to hold the mask up to their face (no straps on) are quite acceptable.



Use of oxygen therapy on an unconscious patient

For the unconscious breathing patient, oxygen should be administered in the lateral position while observing airway, breathing and signs of life.

REMEMBER THIS

rescue breathing & ECC = CPR

mouth-to-mask rescue breathing with oxygen

Research has shown that adding oxygen during mouth-to-mask rescue breathing can increase the oxygen received by the patient from 16 per cent to 50 per cent. (Sixteen per cent is the oxygen content of expired air from the airway operator.) If the therapy setting of 8 litres per minute is used, the concentration of oxygen in the patient's lungs will be almost 50 per cent, but if the resuscitation setting is used and the seal is good, the concentration for the patient will be slightly higher. It is recommended the higher setting be used if there is enough oxygen available. If not, the flow of 8 litres per minute is very satisfactory.

Mouth-to-mask resuscitation with oxygen

method

This is not a one-operator technique. One person needs to do mouth-to-mask whilst a second person handles the oxygen unit. The oxygen is turned to the setting decided upon and the tubing fitted either to the oxygen port, or through the opening of the mask in use. Masks with ports are highly recommended for this procedure.

resuscitation masks

There are a number of different face masks approved for use with the air bag and for mouth-to-mask rescue breathing. Some of these have oxygen ports that allow the oxygen therapy tubing to be connected.

Example of an oxygen resuscitation unit