

INTERNATIONAL LIFE SAVING FEDERATION

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ILS POLICY STATEMENT N° 8.

STATEMENTS ON THE USE OF OXYGEN BY LIFESAVERS

BACKGROUND

All drowning victims can be in respiratory distress due to hypoxia, as a result of asphyxia or pulmonary damage or both. Immediate oxygen therapy in these situations can be life saving.

During mouth-to-mouth ventilation, the expired air from the rescuer consists of 16 -18% oxygen. With oxygen treatment, between 21 and 100% oxygen is given. A higher concentration of oxygen that is provided to the victim, will increase the delivery of oxygen to the cells, if ventilation and circulation are effective, therefore increasing survivability of the patient and lessening the chance of permanent damage to the brain and vital organs.

Several methods are available to deliver oxygen to spontaneously breathing victims and to victims in respiratory arrest.

Breathing Victim

If bottled oxygen is used to support a victim who is able to breathe spontaneously:

- A nasal canula at a flow of 1 – 5 litres per minute will deliver 24 – 40% oxygen
- A mask at a flow of 10 – 15 litres per minute will deliver 50 – 70% oxygen
- A non-rebreathing mask at a flow of 15 litres per minute will deliver 100% oxygen
- A semi-automatic ventilator with an inspiratory oxygen concentration of 100% will deliver 100% oxygen

Non-Breathing Victim

If bottled oxygen is used to support ventilation during resuscitation of a non-breathing victim:

- mouth-to-mask resuscitation at a flow of 10 litres will deliver 35 – 50% oxygen
- a bag-valve-mask system at 15 litres per minute will deliver 90% - 100% oxygen
- a ventilator will deliver 100% oxygen

The technique of oxygen delivery is likely to be more difficult to learn than Basic Life Support, because of the additional skills required, in combination with technical knowledge of oxygen delivery equipment (oxygen cylinder, pressure regulator, flowmeter, oxygen delivery devices as bag or mask). No study data are available regarding necessary instruction time, retention time, and the quality of performance in real situations, but organisations in several countries have developed effective courses of instruction for lifesavers and others, involving as little as two hours of training. Experiences show

positive results with the use of oxygen when the lifesaver has received good theoretical and practical training on a regular basis and when on-site supervision is available. In most cases, particular in cases of non-breathing patients, two lifesavers can most effectively deliver oxygen to the patient.

An important element in the value of oxygen delivery is the interval between start of Basic Life Support by lifesavers and the provision of Advanced Life Support, either by ambulance crews or in the hospital. The value of delivering oxygen immediately, rather than waiting for persons with Advanced Life Support training and equipment will depend on the anticipated time interval (delay before oxygen is available), the maintenance and management of the equipment, the skill level of the persons who will provide oxygen treatment and the organisation of care in connection with the local emergency medical system.

In most countries, strict regulations on the use of oxygen are defined with respect to responsibilities, both for the equipment and the practical performance. These legal aspects must be considered, although lifesaving organisations may choose to work to modify legal barriers to allowing lifeguards to provide oxygen.

The American Heart Association has adopted a categorisation system for medical aid interventions, which has been adapted by the International Liaison Committee on Resuscitation. This system includes:

Class 2 - Weight of evidence in favour of efficacy and safety and it is probably not harmful

Class 2A - Therapeutic option for which the weight of evidence is in favour of its usefulness and efficacy

Class 2B - Therapeutic option that is not well established by evidence but may be helpful and probably not harmful

The following categorisation with respect to the use of oxygen by non-medical professionals or lay-persons is proposed:

- Oxygen in spontaneously breathing victims using non-rebreathing masks: CLASS 2A
- Oxygen during CPR using facemasks: CLASS 2B
- Oxygen during CPR using automatic ventilators: CLASS 2B

STATEMENT

1. The physiological benefit of immediately providing oxygen to spontaneously breathing drowning victims or those requiring CPR is clear and advocates that oxygen should be used in all drowning victims. The use of oxygen may also benefit other victims, but that is beyond the scope of this statement.
2. In the absence of oxygen, mouth-to-mouth ventilation is effective. CPR without oxygen is always good and absence of oxygen equipment should not deter the rescuer from taking these most appropriate steps immediately. (See ILS Medical Statement on Communicable Disease)
3. Lifesavers should be allowed to provide oxygen to drowning victims once their lifesaving organisation has developed minimum training and competency standards, formal theoretical and practical training courses, an instruction manual, exams, regular refresher courses and a designated person to oversee the program. Any such program should conform to applicable laws.
4. From a practical and educational point of view, the equipment should be simple, unambiguous, reliable, and simple to assemble. This means standardisation. A minimum of variety in oxygen delivery equipment should be available at local, regional and national level. From the available equipment, we recommend a non-rebreathing mask with a fixed flow of 15 litres of oxygen per minute for spontaneously breathing victims and a transparent mask with oxygen inlet for patients in ventilatory arrest. Other types of oxygen delivery systems may be considered depending upon the level of training of the lifesaver. The oxygen container should be large enough to allow oxygen delivery until Advanced Life Support providers can be expected to be available to assist the victim.
5. As is the case for any lifesaving equipment, the cost and training time required must be balanced against needs for other lifesaving equipment and training, as well as the relative value considering

the availability of nearby Advanced Life Support. For example, drowning prevention campaigns, improved lifesaving equipment, and other steps may be appropriate before advanced medical equipment, such as oxygen, is acquired.

6. Responsibility, quality assurance and jurisdiction should be defined at a local, regional and national level. A responsible person should be in charge of the quality assurance.
7. Quality assurance also includes the regular control of equipment and level of performance. A formal report about each time that the oxygen equipment is used, could be an important element in quality assurance. Ideally, the lifeguard who has given oxygen to a victim should be evaluated after an intervention. The use of oxygen should be reported in yearly reports.

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