

# Supplemental Oxygen Administration FINAL 2.12.2020

## 1. Content

### 1.1 Welcome




Notes:

## 1.2 Learning Objectives

**Learning Objectives**

- 1 Describe the benefits of supplemental oxygen during resuscitation.
- 2 Explain the parts of the Supplemental Oxygen System (SOS).
- 3 Demonstrate the use of the SOS.
- 4 Explain the necessary precautions when using the SOS.
- 5 Explain the basic care and maintenance of the SOS.
- 6 Demonstrate how to attach a resuscitation mask or bag-valve-mask (BVM) to the SOS and use these devices.




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### Progress (Slide Layer)

**Supplemental Oxygen Administration: Learning Objectives**

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## 1.3 Drowning and the Need for Supplemental Oxygen

### Medical Conditions and the Need for Supplemental Oxygen

- ✓ During a serious medical emergency such as drowning, oxygen is unable to reach the body's vital organs, such as the heart, lungs, and brain. These organs are not able to function without the continuous delivery of oxygen through the bloodstream.
- ✓ Supplemental oxygen should be provided to anyone experiencing severe respiratory distress.
- ✓ When providing rescue breaths through a resuscitation mask, approximately 16% oxygen is exhaled by the rescuer into the nonbreathing victim.
- ✓ While this is adequate to support the amount of oxygen needed to resuscitate the victim, providing a higher concentration of oxygen can improve oxygenation.




Notes:

## Progress (Slide Layer)

**Supplemental Oxygen Administration: Medical Conditions and the Need for Supplemental Oxygen**

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## 1.4 Supplemental Oxygen Systems (SOS)

### Supplemental Oxygen Systems (SOS)

- ✓ A supplemental oxygen system (SOS) can help with numerous breathing emergencies.
- ✓ Responders should be trained in the proper use of the particular supplemental oxygen system they will be using.
- ✓ use of supplemental oxygen. The device you use must be
- ✓ Your facility management is responsible for making sure that all local, regional, and state regulations governing emergency oxygen use are followed when providing a supplemental oxygen system, training, and operational protocols.
- ✓ minimize supply of oxygen and deliver a flow rate of at least 6 liters per minute.




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Notes:

## Cylinder Layer (Slide Layer)

### Oxygen Cylinder

- ✓ Oxygen used during emergency care will be provided in a cylinder.
- ✓ The cylinder is filled to a working pressure of approximately 2000 pounds per square inch (psi).
- ✓ In the United States, oxygen cylinders will be green or will have a green band around the middle.
- ✓ The size of the cylinder is identified by code letters. The most common sizes for portable oxygen cylinders are D and E cylinders, which hold 350-650 liters of oxygen at 2000 psi and 70°F (21°C).
- ✓ The size of the cylinder, the amount of oxygen in the cylinder, and the rate of oxygen flow from the cylinder will determine how long the oxygen in the cylinder will last.




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## Regulator Layer (Slide Layer)

### Pressure Regulator

- ✓ The SOS system at your facility may have a preset flowmeter that allows only a flow rate of 15 lpm. can be delivered.
- ✓ Preset flow rate regulators are designed to be used with oxygen tank valves that come equipped with their own pressure gauge.
- ✓ These regulators are installed on the tank in exactly the same way as the adjustable flow type, with the oxygen port and pin index connections above the tank valve pressure gauge.




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## Changing Cylinder Layer (Slide Layer)

### Changing Cylinders

- 1 Close the valve.
- 2 Open the flowmeter to bleed off oxygen remaining under pressure in the regulator (if adjustable).
- 3 Remove the regulator from the used oxygen cylinder.
- 4 Properly seat the regulator on the new oxygen cylinder and hand-tighten it in place.
- 5 With the flowmeter off, open the valve and read the starting pressure in the cylinder, which should be approximately 2000 psi.



## Progress (Slide Layer)



### Supplemental Oxygen Administration: Supplemental Oxygen Systems (SOS)

#### Supplemental Oxygen Systems (SOS)

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## 1.5 Supplemental Oxygen Delivery Devices

### Resuscitation Mask

- ✓ Some resuscitation masks have a port that allows oxygen to be attached through tubing connected to the oxygen flowmeter.
- ✓ This allows rescue breaths to be delivered with a higher concentration of oxygen.




Notes:

## BVM Layer (Slide Layer)

### Bag-Valve-Mask (BVM)

- Two rescuers: If you are using the BVM and the victim's chest does not rise when you squeeze the bag, the problem could be with the BVM or with your use of the BVM. Problems can be caused by failure to:
  - One rescuer with hands above the victim's head, open the airway, and hold the mask on the face.
  - Maintain a good mask seal.
  - Maintain an open airway.
  - Remove a foreign body airway obstruction.
- Squeeze the BVM to provide ventilations after each set of compressions. Under no circumstance should you forcefully or rapidly squeeze the bag. This is likely to cause complications or injuries.
- Regarding one hand: If you believe the problem is with the BVM, switch to a resuscitation mask attached to oxygen until another BVM is available.




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## Non-Rebreathing Mask Layer (Slide Layer)

### Non-Rebreathing Mask

- A non-rebreathing mask allows oxygen to be administered to a victim who is having breathing difficulty including a victim who might be experiencing a heart attack.
- To be effective, a non-rebreathing mask must be attached to a SOS capable of delivering an oxygen flow rate of 12-15 lpm.
- Exhaled air escapes through flapper valve ports on the sides of the mask. These valves prevent the victim from rebreathing exhaled gases, delivering oxygen at a concentration of about 90%.



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## Progress (Slide Layer)

**Supplemental Oxygen Administration: Supplemental Oxygen Delivery Devices**

### Resuscitation Mask

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## 1.6 Care and Maintenance of Supplemental Oxygen Systems

### Care and Maintenance of Supplemental Oxygen Systems

**GUIDELINES FOR PROPER CARE, MAINTENANCE, AND USE OF SOS**

- ❖ Do not expose the cylinder to temperatures above 130°F (54°C)
- ❖ Do not puncture or drop the cylinder
- ❖ Do not use any type of grease or oil (or petroleum jelly or suntan oil) on any part of the cylinder
- ❖ Do not use oxygen near a fire or open flame
- ❖ Do not remove the valve from the oxygen cylinder
- ❖ Have the cylinders refilled by a professional medical oxygen supplier
- ❖ Keep the cylinder secure in a carrying case. If you must remove the cylinder from its protective case, lay it down
- ❖ Replace masks, one-way valves, and oxygen tubing following use
- ❖ Depending on the equipment you have, the system may or may not be left assembled at the end of each day. Refer to the manufacturer's instructions for your system



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## SOS Checklist Layer (Slide Layer)

### SOS Checklist

Oxygen cylinder	Be certain the cylinder says oxygen, that there is no damage to the valve and that the cylinder is still within its safe hydrostatic safety testing period
Amount of oxygen in the cylinder	Check the pressure gauge. Replace the cylinder if there is less than 15 minutes or 500psi remaining. Know the capacity and refill recommendations for your specific oxygen cylinder
Oxygen tubing and masks	Check that tubing is attached to the regulator and the mask
Pressure regulator	Check to see that no oxygen is leaking when under pressure
Documents	Maintain all documents regarding the purchase, refill, hydrostatic safety test, and daily inspections

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## Progress (Slide Layer)

Supplemental Oxygen Administration: Care and Maintenance of Supplemental Oxygen Systems

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## 1.7 Pulse Oximetry

### Pulse Oximetry

The percentage of oxygen in the blood is measured using pulse oximetry, which uses a small device called a pulse oximeter.

The victim should be continuously monitored. If the oxygen level gets above 94%, decrease the flow rate of oxygen. If the victim is no longer having trouble breathing, you can stop the oxygen if you have a pulse oximeter to monitor the victim's oxygen level.

If the victim's condition worsens and the reading of less than 94% is observed, oxygen should be reapplied.

Victims with known chronic obstructive pulmonary disease (COPD), such as emphysema, should have their oxygen level maintained between 88% - 92%.

### Administering Oxygen to a Responsive Victim in Respiratory Distress


Is it needed? Look for these signs

- Breathing that is excessively fast, slow, weak, or labored
- Skin is cool to the touch, pale, or blue in appearance
- Reduced level of consciousness

If one or more of the above is true, confirm with pulse oximetry:

- Turn on device
- Place on dry finger
- Restrict victim's movement for 10 seconds
- Note the blood oxygen level:

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## Progress (Slide Layer)

**Supplemental Oxygen Administration: Pulse Oximetry**

### Pulse Oximetry

- ✓ The percentage of oxygen using pulse oximetry, which device called a pulse oximeter.
- ✓ The victim should be continuously monitored. If the oxygen level gets above 94%, decrease the flow rate of oxygen. If the victim is no longer having difficulty breathing, you have a pulse oximeter, and the victim's condition is stable, you can remove the pulse oximeter.
- ✓ If the victim's condition worsens, a reading of less than 94% requires the pulse oximeter to be reapplied.
- ✓ Victims with known chronic obstructive pulmonary disease (COPD), such as emphysema, should have a pulse oximeter reading between 88% - 92%.

#### Administering Oxygen to a Responsive Victim in Respiratory Distress


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## 1.8 Summary

### Key Terms

- ✓ Bag-valve-mask (BVM)
- ✓ Non-Rebreathing Mask
- ✓ Oxygen Cylinder
- ✓ Pressure Regulator
- ✓ Pulse Oximeter
- ✓ Pulse Oximetry
- ✓ Supplemental Oxygen System (SOS)



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Notes:

## Progress (Slide Layer)

**Supplemental Oxygen Administration: Summary**

### Key Terms

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