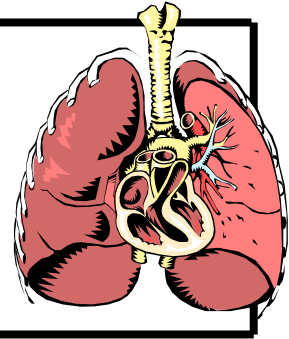


OXYGEN THERAPY



Teaching plan

To use this lesson for self-study, the learner should read the material, do the activity, and take the test. For group study, the leader may give each learner a copy of the Learning Guide and follow this Teaching Plan to conduct the lesson. The lesson should take approximately one hour.

Note: This lesson contains information about oxygen therapy. Most state regulatory bodies allow aides or personal care attendants to assist with oxygen therapy, although a few do not permit it. Use this material according to the rules in your state. Even if your workers do not assist with oxygen, they may assist a resident who is able to set liter flow or use oxygen independently, making this knowledge useful.

Objectives

At the conclusion of this lesson, a participant will be able to:

- Explain the body's normal mechanism for processing oxygen
- Describe conditions for which supplemental oxygen is used
- Recognize the different types of delivery systems for oxygen therapy
- Explain safety considerations for the use of oxygen

The lesson

Print a learning guide, test, and certificate for each participant. Using the learning guide, deliver a brief lecture on the body's normal mechanism for processing oxygen within the body, explaining what happens when oxygenation is poor and supplemental oxygen therapy must be used. Define the italicized words in the learning guide to be sure participants understand them.

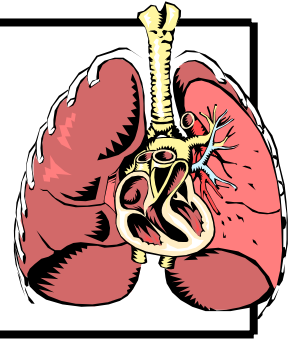
Review the different delivery systems generally used for the delivery of oxygen therapy (oxygen concentrators, portable tanks, liquid oxygen). If possible, ask a local oxygen or medical equipment supplier to bring different types of equipment to teach participants how to turn on the supply and set liter flow, allowing time for practice.

The Test

Have participants take the test. Review the answers together. Give certificates to those who answer at least 70% of the test questions correctly.

Test answers: 1. Oxygen; 2. Carbon dioxide; 3. Asthma, pneumonia, bronchitis, severe allergies; 4. False; 5. Compressed gas, liquid oxygen, oxygen concentrator; 6. True; 7. True; 8. Headaches, slurred speech, sleepiness, or shallow, slow breathing; 9. Difficult, irregular breathing; restlessness or anxiety; tiredness or drowsiness; blue fingernail beds or lips; confusion; being easily distracted; 10. True; 11. False; 12. Water; 13. Sterile or distilled water; 14. False; 15. True.

OXYGEN THERAPY



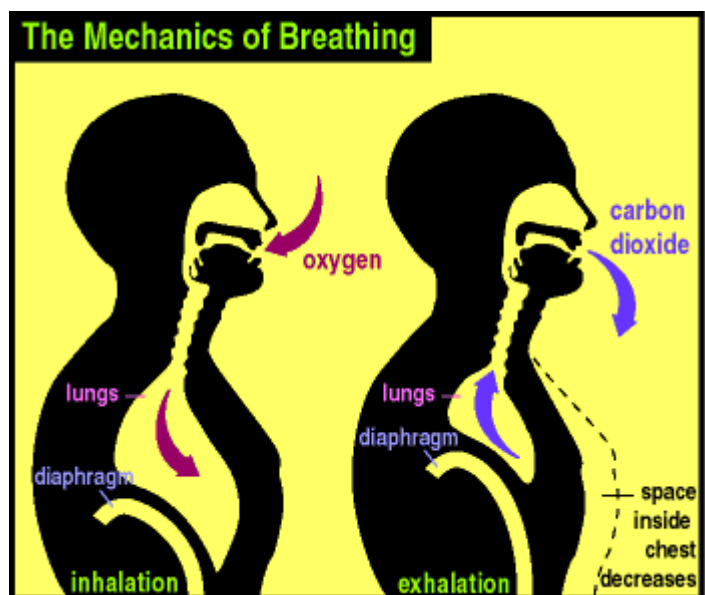
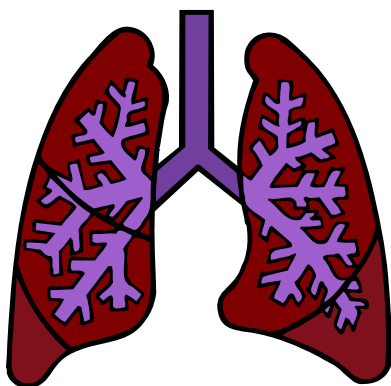
Learning guide

OXYGEN is one component of the air that is all around us. It is a colorless, odorless, tasteless gas that forms 21% of our atmosphere. About two-thirds of the human body is composed of oxygen. About nine-tenths of all water is oxygen. It is absolutely essential to life on this planet. The human body must constantly take in fresh oxygen. We cannot survive longer than a few minutes without it.

How a healthy person processes oxygen

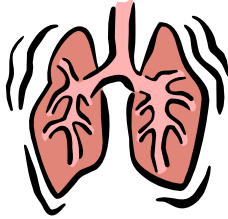
When we breathe in, or *inhale*, our **respiratory system** takes oxygen in through the nose, warming it as it moves down the **trachea** (windpipe), through the **bronchial tree**, and into the **lungs**. Once in the lungs, the oxygen moves into the blood through special cells called **alveoli**. In the blood, **red blood cells** trade waste products (**carbon dioxide**) for oxygen and carry the fresh oxygen to the cells.

When everything is working properly, the oxygen goes into the blood and to every cell in our body, providing oxygen for energy, growth, and cell reproduction. When the demand for oxygen increases, as when we exercise, we take more air into the body to meet the needs of the cells. The body also uses the mechanism of breathing to release carbon dioxide, a waste product, from the body. As we breathe out, or **exhale**, the carbon dioxide leaves the body. Look closely at the diagram and drawing below.



When things don't work right

When something goes wrong with the body's normal method for processing



oxygen, medications and supplemental oxygen are used to help make sure the body gets the oxygen it needs.

If a resident has **heart failure**, he or she may have difficulty breathing. In this case, oxygen is often given along with special medications to make sure tissues in the heart and throughout the body receive needed oxygen.



If a resident has **emphysema** or **COPD** (chronic obstructive pulmonary disease), the alveoli become ineffective in exchanging oxygen for carbon dioxide. Supplemental oxygen therapy helps meet the resident's need for oxygen.

Residents with sleep disorders such as **sleep apnea** may also need oxygen therapy.

Other conditions, such as **asthma**, **pneumonia**, **bronchitis**, and **severe allergies**, may require short-term use of oxygen therapy. Usually people with these conditions use extra oxygen for only a short time, until they are well.

Oxygen Therapy

Some people use oxygen only while exercising, others only need it while sleeping, and still others need oxygen continuously. A person's physician can do blood tests to help determine how much oxygen is needed and when. Oxygen therapy is a plan of oxygen supplementation prescribed by a doctor.

For people who do not get enough oxygen naturally, supplements of oxygen can have several benefits. Supplemental oxygen can improve their sleep and mood, increase their mental alertness and stamina, and allow their bodies to carry out normal functions. It also prevents heart failure in people with severe lung disease.

Oxygen at very high levels over a long period of time can be toxic and very harmful to one's health; therefore, a doctor's prescription is required. Oxygen used to treat medical conditions is a drug. We administer and document oxygen therapy according to the rules that govern medication administration.



The doctor's prescription will spell out the flow rate in liters per minute (LPM or L/M). This is how much oxygen the person needs per minute, and it should not be changed without a doctor's order.

Obtaining oxygen equipment

Medical equipment suppliers provide oxygen and an oxygen delivery system as ordered by a physician. When a resident obtains an oxygen system from the medical equipment supplier, you'll learn how to assist the resident to set it up, check for problems, and clean it. **Keep the supplier's phone number handy in case of problems.**

Types of oxygen delivery systems

The purpose of oxygen delivery systems is to get extra oxygen into the person's respiratory system and blood. Oxygen is available from three different delivery systems. Each system of delivery has advantages and disadvantages.

The three systems are:

Compressed gas

Oxygen gas can be compressed and stored in tanks or cylinders of steel or aluminum. These tanks come in many sizes; larger ones usually stay in one place, and people take the smaller ones with them when they want to move around. The tanks must be refilled with oxygen when the oxygen in them is gone.



PORTABLE LIQUID OXYGEN

Liquid oxygen

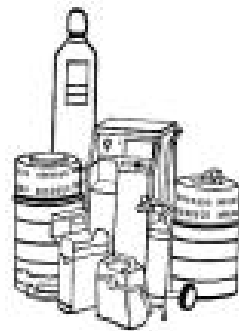
When oxygen gas is cooled, it changes to a liquid form. People who are more active often use liquid oxygen because larger amounts of it can be stored in smaller, more convenient containers than compressed oxygen. The disadvantage is that liquid oxygen cannot be kept for a long time because it will evaporate. The containers must be refilled with liquid oxygen.

Oxygen concentrators

Oxygen concentrators deliver higher concentrations of oxygen from the air. An oxygen concentrator is an electric device about the size of an end table. It produces oxygen by concentrating the oxygen that is already in the air and eliminating other gases. This method is less expensive, easier to maintain, and doesn't require refilling, but it is not portable. Some oxygen concentrators give off heat and are noisy. Back-up methods are necessary in case of a power failure, and the electric bill may rise. Oxygen concentrators may not deliver enough oxygen for some people. An oxygen concentrator will usually include a humidifier to warm and add moisture to the prescribed oxygen.



ELECTRICAL OXYGEN CONCENTRATOR



Large tanks and portable tanks

Skilled care facilities sometimes have a system for delivering oxygen directly into the person's room or apartment. Individuals living in any setting may have large tanks to store large amounts of liquid oxygen or compressed oxygen gas.

In either case, the resident may need small, portable tanks of liquid or compressed oxygen for brief periods—a few hours—outside his or her room or apartment. Portable tanks are a backup system suitable to use in an emergency or when the resident leaves the room or apartment for meals or outings.

Oxygen administration

Oxygen is usually administered with continuous flow through a two-pronged nasal tube called a **nasal cannula**, even though this system wastes oxygen. To improve efficiency and increase the person's ability to move around, there are other devices. These include face masks, reservoir cannulas, and demand-type systems. Usually, a respiratory therapist, medical equipment specialist, nurse, or physician instructs the person about proper oxygen use.



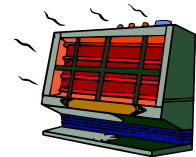
General Guidelines

When assisting with an oxygen tank, an oxygen concentrator, or liquid oxygen, follow these important guidelines:

- Always stabilize the oxygen tank (using a special stand) and store it in an area that is out of the way so it will not fall.



- Close the oxygen tank tightly when not in use.
- **Because oxygen can cause an explosion, keep the oxygen tank away from any flammable source, such as matches, heaters, or hair dryers.**

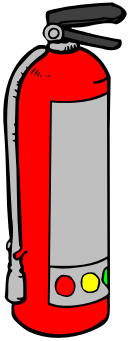


- Check the water level in the humidifier bottle (if one is provided) often. If it is near or below the refill line, pour out any remaining water and refill it with sterile or distilled water.



- If the resident complains of his or her nose "drying out," ask your supervisor about obtaining a water-soluble lubricant like K-Y Jelly to help keep nasal passages moist. Do not use petroleum-based products.
- If the oxygen tubing irritates the resident's skin (on sides of face or behind ears), ask your supervisor about using cotton balls or getting special moleskin protectors to protect skin from the tubing.
- If the resident's supply of oxygen is getting low (for portable tanks), advise him or her to re-order, or check with your supervisor about reordering. Oxygen should be ordered at least two or three days in advance to allow time for delivery.
- Maintain the oxygen flow at the prescribed rate. If you're not sure whether oxygen is flowing, check the tubing for kinks, blockages, or disconnection. Then make sure the system is on. If you're still unsure, submerge the nasal cannula in a glass of water, with the prongs pointing down. If bubbles appear, oxygen is flowing through the system. Shake off extra water before reinserting the cannula in the resident's nose.

Safety tips



- Oxygen is highly combustible and may explode. It should not be used near electrical equipment or while using an electric appliance, such as an electric razor.
- A sign is usually placed on or near the apartment or room door to alert visitors that oxygen is in use. In a care facility, your supervisor will notify the local fire department that oxygen is in use in the building.
- Familiarize yourself with the location of fire extinguishers in the resident's home or in the care facility. If a fire does occur, turn off the oxygen immediately.



- Don't smoke—and don't allow others to smoke—near the oxygen system. Keep the system away from direct sunlight, space heaters and other sources of heat, and open flames, such as in a gas stove.
- Don't run oxygen tubing under clothing, bed covers, furniture, or carpets.
- Keep the oxygen system upright.
- Make sure the oxygen is turned off when not in use.
- Keep oxygen concentrators away from the wall to allow air to circulate.

When to call your supervisor

The resident **may not be getting enough oxygen** if you notice these signs:

- difficult, irregular breathing
- blue fingernail beds or lips
- restlessness or anxiety
- confusion
- tiredness or drowsiness
- the resident is easily distracted

The resident may be getting **too much oxygen** if you notice these signs:

- headaches
- slurred speech
- sleepiness or difficulty waking up
- shallow, slow breathing

If any of these signs develop, call your supervisor or a nurse or doctor immediately. And—above all—**never change the oxygen flow rate** unless a licensed medical professional tells you to do so.

Oxygen therapy test

Name _____ Date _____ Score _____
(10 correct answers required to pass.)

1. When breathing is normal, inhaling causes _____ to be drawn into the lungs.
2. Exhaling releases _____ from the lungs.
3. People may need short-term oxygen therapy for _____, _____, _____, and _____.
4. It is safe to use electric razors and hair dryers in areas where oxygen is in use.
True or False
5. Three types of oxygen delivery systems are used. They are:
_____, _____, and _____.
6. You should not adjust the rate of oxygen flow unless the nurse or doctor directs you to do so. True or False
7. If a fire occurs, oxygen should be turned off immediately. True or False
8. If a resident is getting too much oxygen, these signs may be noticed (name three):
_____, _____, and _____.
9. If a resident is not getting enough oxygen, these signs may be noticed (name three):
_____, _____, and _____.
10. You should report signs or symptoms of too little or too much oxygen immediately.
True or False
11. Portable tanks should not leave the building. True or False.
12. Invert the nasal cannula in _____ to check if oxygen is flowing.
13. If water in the humidifier bottle is below the fill line, refill it to the line with
_____.
14. If oxygen tank supplies are low, oxygen can usually be delivered within an hour or two of re-ordering. True or False
15. A sign is usually placed on or near the door of a room or apartment to alert visitors that oxygen is in use. True or False