

Home Oxygen Use, Adult



When a medical condition keeps you from getting enough oxygen, your health care provider may instruct you to take extra oxygen at home. Your health care provider will let you know:

- When to take oxygen.
- How long to take oxygen.
- How quickly oxygen should be delivered (*flow rate*), in liters per minute (LPM or L/M).

Home oxygen can be given through:

- A mask.
- A nasal cannula. This is a device or tube that goes in the nostrils.
- A transtracheal catheter. This is a small, thin tube placed in the windpipe (*trachea*).
- A breathing tube (*tracheostomy tube*) that is surgically placed in the windpipe. This may be used in severe cases.

These devices are connected with tubing to an oxygen source, such as:

- A tank. Tanks hold oxygen in gas form. They must be replaced when the oxygen is used up.
- A liquid oxygen device. This holds oxygen in liquid form. Liquid oxygen is very cold. It must be replaced when the oxygen is used up.
- An oxygen concentrator machine. This filters oxygen in the room. There are two types of oxygen concentrator machines—stationary and portable.
 - A stationary oxygen concentrator machine plugs into the main electricity supply at your home. You must have a backup cylinder of oxygen in case the power goes out.
 - A portable oxygen concentrator machine is smaller in size and more lightweight. This machine uses battery supply and can be used outside the home.

Work with your health care provider to find equipment that works best for you and your lifestyle.

What are the risks?

Delivery of supplemental oxygen is generally safe. However, some risks include:

- Fire. This can happen if the oxygen is exposed to a heat source, flame, or spark.
- Injury to skin. This can happen if liquid oxygen touches your skin.
- Damage to the lungs or other organs. This can happen from getting too little or too much oxygen.

Supplies needed:

To use oxygen, you will need:

- A mask, nasal cannula, transtracheal catheter, or tracheostomy.

- An oxygen tank, a liquid oxygen device, or an oxygen concentrator.
- The tape that your health care provider recommends (optional).

Your health care provider may also recommend:

- A humidifier to warm and moisten the oxygen delivered. This will depend on how much oxygen you need and the type of home oxygen device you use.
- A pulse oximeter. This device measures the percentage of oxygen in your blood.

How to use oxygen



Your health care provider or a person from your medical device company will show you how to use your oxygen device. Follow his or her instructions. The instructions may look something like this:

1. Wash your hands with soap and water.
2. If you use an oxygen concentrator, make sure it is plugged in.
3. Place one end of the tube into the port on the tank, device, or machine.
4. Place the mask over your nose and mouth. Or, place the nasal cannula and secure it with tape if instructed. If you use a tracheostomy or transtracheal catheter, connect it to the oxygen source as directed.
5. Make sure the liter-flow setting on the machine is at the level prescribed by your health care provider.
6. Turn on the machine or adjust the knob on the tank or device to the correct liter-flow setting.
7. When you are done, turn off and unplug the machine, or turn the knob to OFF.

How to clean and care for the oxygen supplies

Nasal cannula

- Clean it with a warm, wet cloth daily or as needed.
- Wash it with a liquid soap once a week.
- Rinse it thoroughly once or twice a week.
- Air-dry it.
- Replace it every 2–4 weeks.
- If you have an infection, such as a cold or pneumonia, change the cannula when you get better.

Mask

- Replace it every 2–4 weeks.
- If you have an infection, such as a cold or pneumonia, change the mask when you get better.

Humidifier bottle

- Wash the bottle between each refill:
 - Wash it with soap and warm water.
 - Rinse it thoroughly.

- Clean it and its top with a disinfectant cleaner.
- Air-dry it.
- Make sure it is dry before you refill it.

Oxygen concentrator

- Clean the air filter at least twice a week according to directions from your home medical equipment and service company.
- Wipe down the cabinet every day. To do this:
 - Unplug the unit.
 - Wipe down the cabinet with a damp cloth.
 - Dry the cabinet.

Other equipment

- Change any extra tubing every 1–3 months.
- Follow instructions from your health care provider about taking care of any other equipment.

Safety tips

Fire safety tips



- Keep your oxygen and oxygen supplies at least 6 ft (2 m) away from sources of heat, flames, and sparks at all times.
- **Do not** allow smoking near your oxygen. Put up "no smoking" signs in your home. Avoid smoking areas when in public.
- **Do not** use materials that can burn (*are flammable*) while you use oxygen. This includes:
 - Petroleum jelly.
 - Hair spray or other aerosol sprays.
 - Rubbing alcohol.
 - Hand sanitizer.
- When you go to a restaurant with portable oxygen, ask to be seated in the non-smoking section.
- Keep a fire extinguisher close by. Let your fire department know that you have oxygen in your home.
- Test your home smoke detectors regularly.

Traveling

- Secure your oxygen tank in the vehicle so that it does not move around. Follow instructions from your medical device company about how to safely secure your tank.
- Make sure you have enough oxygen for the amount of time you will be away from home.
- If you are planning to travel by public transportation (airplane, train, bus, or boat), contact the company to find out if it allows the use of an approved portable oxygen concentrator. You may also need documents from your

health care provider and medical device company before you travel.

General safety tips

- If you use an oxygen cylinder, make sure it is in a stand or secured to an object that will not move (*fixed object*).
- If you use liquid oxygen, make sure its container is kept upright at all times.
- If you use an oxygen concentrator:
 - Tell your electric company. Make sure you are given priority service in the event that your power goes out.
 - Avoid using extension cords if possible.

Follow these instructions at home:

- Use oxygen only as told by your health care provider.
- **Do not** use alcohol or other drugs that make you relax (*sedating drugs*) unless instructed. They can slow down your breathing rate and make it hard to get in enough oxygen.
- Know how and when to order a refill of oxygen.
- Always keep a spare tank of oxygen. Plan ahead for holidays when you may not be able to get a prescription filled.
- Use water-based lubricants on your lips or nostrils. **Do not** use oil-based products like petroleum jelly.
- To prevent skin irritation on your cheeks or behind your ears, tuck some gauze under the tubing.

Where to find more information

- American Lung Association: www.lung.org/oxygen

Contact a health care provider if:

- You get headaches often.
- You have a lasting cough.
- You are restless or have anxiety.
- You develop an illness that affects your breathing.
- You cannot exercise at your regular level.
- You have a fever.
- You have persistent redness under your nose.

Get help right away if:

- You are confused.
- You are sleepy all the time.
- You have blue lips or fingernails.
- You have difficult or irregular breathing that is getting worse.
- You are struggling to breathe.

These symptoms may represent a serious problem that is an emergency. Do not wait to see if the symptoms will go away. Get medical help right away. Call your local emergency services (911 in the U.S.). Do not drive yourself to the hospital.

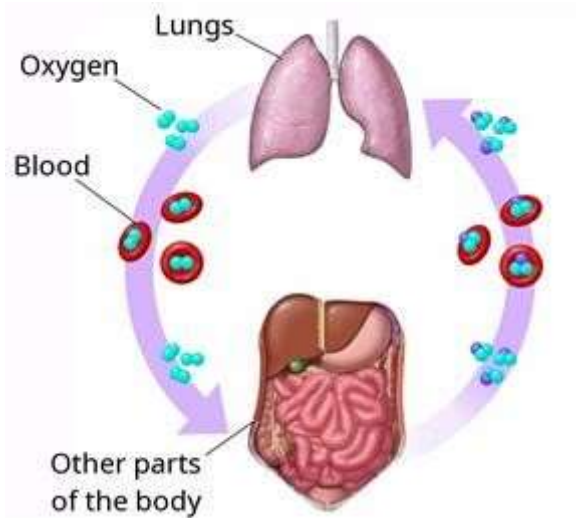
Summary

- Your health care provider or a person from your medical device company will show you how to use your oxygen device. Follow his or her instructions.
- If you use an oxygen concentrator, make sure it is plugged in.
- Make sure the liter-flow setting on the machine is at the level prescribed by your health care provider.
- Use oxygen only as told by your health care provider.
- Keep your oxygen and oxygen supplies at least 6 ft (2 m) away from sources of heat, flames, and sparks at all times.

This information is not intended to replace advice given to you by your health care provider. Make sure you discuss any questions you have with your health care provider.

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Hypoxemia



Hypoxemia happens when the blood does not have enough oxygen in it. Every part of the body needs oxygen to work well. Oxygen enters the lungs when a person breathes in, and then it travels to all parts of the body through the blood.

Hypoxemia can develop suddenly or slowly and can be mild to severe.

What are the causes?

Causes of hypoxemia may include:

- Lung conditions. These may include:
 - Long-term (*chronic*) lung disease, such as:
 - Asthma.
 - Chronic obstructive pulmonary disease (COPD).
 - Interstitial lung disease.
 - Problems that affect breathing at night, such as sleep apnea.
 - Fluid buildup in the lungs.
 - Lung infection (*pneumonia*).
 - Lung or throat cancer.
 - A collapsed lung.
- Heart or blood vessel (*vascular*) conditions, such as:
 - A blood clot in the lungs (*pulmonary embolism*).
 - Certain types of heart disease.
- Other causes may include:
 - Certain diseases that affect nerves or muscles.
 - Slow or shallow breathing due to being very overweight (*obesity hypoventilation*).
 - High altitudes, as there is less oxygen in the air.
 - Toxic chemicals, smoke, and gases.

What are the signs or symptoms?

In some cases, there may be no symptoms of this condition. If you do have symptoms, they may include:

- Shortness of breath.
- Breathing that is fast, noisy, or shallow.
- Bluish color of the skin, lips, or nail beds.
- A fast heartbeat.
- Feeling tired or sleepy.
- Feeling confused or agitated.

If hypoxemia develops quickly, it is likely you will suddenly have trouble breathing. If hypoxemia develops slowly over months or years, you may not notice any symptoms.

How is this diagnosed?

This condition is diagnosed by:

- A physical exam.
- A blood test that measures the amount of oxygen in your blood.
- A test that measures the percentage of oxygen in your blood (*pulse oximetry*). This is done by placing a sensor on your finger, toe, or earlobe.

How is this treated?

Treatment for this condition depends on the cause or the severity of your hypoxemia.

- You will likely be treated with oxygen therapy to restore your blood oxygen level.
- You may need oxygen therapy for a short time, such as weeks or months, or you may need it for the rest of your life.
- You may be asked to lie on your stomach (*prone*). This may help bring your oxygen level up or help you feel less short of breath.

Your health care provider may also recommend other therapies to treat the underlying cause of your hypoxemia.

Follow these instructions at home:



- Take over-the-counter and prescription medicines only as told by your health care provider.
- If you are on oxygen therapy, follow oxygen safety precautions as directed by your health care provider. Precautions may include:
 - Always have a backup supply of oxygen.
 - **Do not** let anyone smoke or have an open flame near your oxygen supply.
 - Handle oxygen tanks carefully as told by your health care provider.
- **Do not** use any products that contain nicotine or tobacco. These products include cigarettes, chewing tobacco, and vaping devices, such as e-cigarettes. If you need help quitting, ask your health care provider. Stay away from people who smoke.
- Keep all follow-up visits. This is important.

Contact a health care provider if:

- You have any concerns about your oxygen therapy.
- You have trouble breathing, even while wearing an oxygen supply.
- You become short of breath when you exercise.
- You are still tired or have a headache when you wake up.

Get help right away if:

- Your shortness of breath gets worse, especially with normal activity or only a little bit of activity.
- Your skin, lips, or nail beds are a bluish color.
- You become confused, or you cannot think properly.
- You have chest pain.
- You have a fever.

These symptoms may represent a serious problem that is an emergency. Do not wait to see if the symptoms will go away. Get medical help right away. Call your local emergency services (911 in the U.S.). Do not drive yourself to the hospital.

Summary

- Hypoxemia occurs when the blood does not have enough oxygen in it.
- Hypoxemia may or may not cause symptoms. Often, the main symptom is shortness of breath.
- Depending on the cause of your hypoxemia, you may need oxygen therapy for a short time, such as weeks or months, or you may need it for the rest of your life.
- If you are on oxygen therapy, follow oxygen safety precautions as directed by your health care provider.

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Hypoxia

Hypoxia is a condition that happens when there is a lack of oxygen in the body's tissues and organs. When there is not enough oxygen, organs cannot work as they should. This causes serious problems throughout the body and in the brain.

What are the causes?

This condition may be caused by:

- Exposure to high altitude.
- A collapsed lung (*pneumothorax*).
- Lung infection (*pneumonia*).
- Lung injury.
- Long-term (*chronic*) lung disease, such as chronic obstructive pulmonary disease (COPD) or emphysema.
- Fluid collecting in the chest cavity (*congestive heart failure*), or blood collecting in the chest cavity (*hemothorax*).
- Food, saliva, or vomit getting into the airway (*aspiration*).
- Reduced blood flow (*ischemia*).
- Severe blood loss.
- Slow or shallow breathing (*hypoventilation*).
- Blood disorders, such as anemia.
- Carbon monoxide or cyanide poisoning.
- The heart suddenly stopping (*cardiac arrest*).
- Medicines or recreational drugs with severe sedating effects.
- Drowning.
- Choking.

What are the signs or symptoms?

Symptoms of this condition include:

- Headache.
- Feeling tired (*fatigue*).
- Forgetfulness.
- Nausea.
- Confusion.
- Shortness of breath.
- Dizziness.
- Bluish color of the skin, lips, or nail beds (*cyanosis*).
- Change in consciousness or awareness.

If hypoxia is not treated, it can lead to convulsions, loss of consciousness (*coma*), or brain damage, which can be life-threatening.

How is this diagnosed?

This condition may be diagnosed based on:

- A physical exam.

- Blood tests.
- A test that measures how much oxygen is in your blood (*pulse oximetry*). This is done with a sensor that is placed on your finger, toe, or earlobe.
- Imaging, such as a chest X-ray or CT scan.
- Tests to check your lung function (*pulmonary function tests*).
- A test to check the electrical activity of your heart (*electrocardiogram*, ECG).

You may have other tests to determine the cause of your hypoxia.

How is this treated?



Treatment for this condition depends on what is causing the hypoxia. You will likely be treated with oxygen therapy. This may be done by giving you oxygen through a face mask or through tubes in your nose.

Your health care provider may also recommend other therapies to treat the underlying cause of your hypoxia.

Follow these instructions at home:

- Take over-the-counter and prescription medicines only as told by your health care provider.
- **Do not** use any products that contain nicotine or tobacco. These products include cigarettes, chewing tobacco, and vaping devices, such as e-cigarettes. If you need help quitting, ask your health care provider.
- Avoid secondhand smoke.
- Work with your health care provider to manage any chronic conditions you have that may be causing hypoxia, such as COPD.
- Keep all follow-up visits. This is important.

Contact a health care provider if:

- You have a fever.
- You become extremely short of breath when you exercise.

Get help right away if:

- Your shortness of breath gets worse, especially with normal or very little activity.
- You have trouble breathing, even after treatment.
- Your skin, lips, or nail beds have a bluish color.
- You become confused or you cannot think properly.
- You have chest pain.

These symptoms may be an emergency. Get help right away. Call 911.

- **Do not wait to see if the symptoms will go away.**
- **Do not drive yourself to the hospital.**

Summary

- Hypoxia is a condition that happens when there is a lack of oxygen in the body's tissues and organs.
- If hypoxia is not treated, it can lead to convulsions, loss of consciousness (*coma*), or brain damage.
- Symptoms of hypoxia can include a headache, shortness of breath, confusion, nausea, and a bluish skin color.
- Hypoxia has many possible causes, including exposure to high altitude, carbon monoxide poisoning, or other health issues, such as blood disorders or cardiac arrest.
- Hypoxia is usually treated with oxygen therapy.

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Pulse Oximetry



Pulse oximetry is a technology that measures the oxygen saturation level in the blood through the skin without the need for a blood sample. This may also be referred to as oxygen level. The device used to measure the oxygen level is called a pulse oximeter. This device also measures the heart rate (*pulse*). Pulse oximetry helps to assess:

- Current oxygen level, including low blood oxygen levels (*hypoxemia*).
- The need for or effectiveness of oxygen therapy or other treatments, including the need for more or less oxygen.
- Blood flow (*circulation*) to different parts of the body.
- Oxygen level during activity.

What are the benefits?

Benefits of pulse oximetry include:

- Not needing a blood sample to measure the oxygen level.
- The test does not hurt.
- Having the option to measure oxygen level continuously or as needed.
- An alarm to tell you when your oxygen levels are out of range if pulse oximetry is continuous.

What are the risks?

The risks associated with pulse oximetry are rare. However, there is a risk of skin sores if the sensor is left in the same spot for long periods of time.

What happens during the test?

Pulse oximetry is done using a pulse oximeter device with a light sensor attached.

- One side of the sensor passes a red beam of light through the skin, and the other side of the sensor measures the amount of light that is absorbed while it passes through. The sensor is connected to the pulse oximeter.
- The pulse oximeter uses the information from the sensor to calculate the percentage of blood cells carrying oxygen in the blood.
- The sensor is placed on an area of the body where the beam of light can easily pass through the skin.
 - For adults and children, the sensor is usually a clip placed on a finger, with the light centered over the nail bed. The sensor may also be placed on an earlobe or toe.
 - For babies, the sensor is usually a sticky tape strip that is placed around areas such as the sole of a foot or the palm of a hand.

What can I expect after the test?

- The pulse oximetry results should be available right away.

- If your pulse oximetry results are low, you may need to use oxygen.
- The pulse oximetry results are a percentage. The normal value may vary depending on your medical condition.
 - Most healthy people have oxygen saturation levels between 95% and 100%.
 - Low oxygen saturation levels are below 90%. This may happen in people with lung conditions, such as long-term (*chronic*) obstructive pulmonary disease (COPD).

What can affect the accuracy of the oximetry reading?

Pulse oximetry depends on the amount of light absorbed as it passes through skin tissue. Because of this, the accuracy of this measurement can be affected by one or more of the following:

- Factors such as:
 - Dark nail polish or artificial nails.
 - Very dark skin.
 - Shivering or too much movement.
 - Bright, artificial lighting.
 - Chronic smoking and recent breathing-in (*inhalation*) of smoke or carbon monoxide.
- Conditions such as:
 - Cool skin or poor blood flow to the area where the sensor is placed.
 - Sweating or very warm skin in the area where the sensor is placed.
 - Anemia, or low levels of hemoglobin or red blood cells.
 - Polycythemia vera. This is a bone marrow disease that causes high levels of red blood cells, white blood cells, and platelets.

If a more accurate measurement is needed, a blood sample will be taken.

Summary

- Pulse oximetry uses a device to measure the oxygen level in the blood.
- Pulse oximetry does not hurt. The risks associated with pulse oximetry are rare.
- Most healthy people have oxygen levels between 95% and 100%. A low oxygen saturation level is below 90%.
- People with low oxygen levels may need supplemental oxygen.

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