# Fact Sheet
# Supplemental Oxygen Use

Oxygen is necessary for humans to survive. The air is made up of approximately 21% oxygen. When a person inhales, the lungs transfer the oxygen in the air to the red blood cells to "feed" their organs and tissues oxygen. At the same time, carbon dioxide is exchanged from the red blood cells to the lungs to be exhaled out. This gas exchange is crucial for good health.

If a healthcare provider believes that not enough oxygen is being exchanged in the lungs, extra oxygen may be given through supplemental oxygen. The oxygen might be delivered as needed, continuously, at night, or under other specific circumstances as prescribed by a healthcare professional. Supplemental oxygen may only be administered with a prescription and should be administered at the level prescribed. Increasing or decreasing the volume may cause harmful side effects (FDA, 2021).

## How is supplemental oxygen administered?

- Most oxygen is provided through tubing from an oxygen delivery system.
- A nasal cannula – a flexible tube with two prongs through which oxygen may flow – is the most common way to administer oxygen.
- The nasal cannula is placed at the end of the oxygen tubing; the two prongs are placed in the nostrils at the entrance to the nose.
- A mask that covers both the mouth and nose may be used in place of the nasal cannula if a higher dose of oxygen is needed or for comfort.

### Three primary methods of oxygen delivery:

- Concentrators
    - Concentrators pull air from the area around them and filter out nitrogen and other gases to deliver only oxygen to the user.
    - Oxygen is delivered continuously at the rate programmed.
    - Concentrators can be stationary or portable.
        - A stationary concentrator is usually a larger device that must be plugged into an electrical outlet.

- A portable oxygen concentrator (POC) is smaller and easier to transport. A POC can be plugged into an electrical outlet or powered by rechargeable batteries.

- Compressed oxygen
  - This is the delivery system most often seen with green metal tanks.
  - Oxygen compressed in tanks is delivered at a steady rate based on a gauge connected to the tank.
  - The tanks are refillable.
  - The size and portability of tanks vary depending on the amount of oxygen prescribed.

- Liquid oxygen
  - Oxygen becomes liquid when it is compressed and cooled.
  - Liquid oxygen is normally stored in larger, stationary units.
  - Portable devices to be used by individuals are filled from the larger unit.
  - Portable containers do not require electricity to function, due to their high concentration of oxygen.
  - Liquid oxygen is very cold, so caution should be taken when filling portable devices from the stationary unit.

(American Lung Association, 2022)

## How do I know the oxygen is working?

- Ask the healthcare professional how they would like to monitor oxygen therapy. One suggestion is a pulse oximeter, also known as a "pulse ox".
  - Typically, a pulse ox is placed on the tip of a finger. It is non-evasive and does not hurt.
  - The pulse ox uses a beam of light to measure the amount of oxygen in a person's blood.
  - A digital number will appear in the pulse ox window to express the percentage of oxygen in the bloodstream.
  - A healthcare provider may request documentation of these readings.
  - While the pulse ox is a valuable tool to monitor oxygen levels, there is a risk of inaccurate readings due to:
    - poor circulation
    - skin temperature and thickness
    - nail polish/artificial nails
    - tobacco use

- Tips that may ensure a more accurate reading:
    - Keep the hand as still as possible.
    - Keep the hand below heart level.
    - Make sure fingertip is clean from nail polish or soiling.
    - Ensure hand is warm to the touch.
    - Relax.
    - For best results, follow the manufacturer's guidelines for use.

- Ask the healthcare professional for signs or symptoms that oxygen therapy is not successful and when a healthcare professional should be notified.
    - Common signs of low oxygen levels include:
        - Difficulty breathing or shortness of breath
        - Chest pain or discomfort
        - Fast heart rate
        - Bluish tint to extremities and areas such as lips, nails, and face
        - Restlessness, confusion

(FDA, 2021)

## Will oxygen explode?

- Oxygen as a gas is generally very safe and will not explode.
- Flames need oxygen for combustion, oxygen – especially concentrated oxygen – will create an environment where a flame will become hotter and burn much faster.
- Use of oxygen must always be done with safety precautions in effect.

(Cincinnati Children's, 2021)

## Safety Tips and Guidelines for Oxygen Use

- Have a backup oxygen supply available in case of power outages or malfunctioning equipment.
- Do not use petroleum-based products on the face of anyone using oxygen.
- Only administer amount of oxygen prescribed by healthcare professional.
- Do not use oxygen tubing longer than 50 feet. This decreases the concentration of the oxygen delivered.
- Stay a minimum of 6 feet from a heat source or open flame. Be aware of candles, stoves, and portable heating devices.
- Post "No Smoking" and "Oxygen in Use" signs where appropriate. This includes vaping.
- Ensure fire alarms are in working order and a fire extinguisher is available.
- Keep area around oxygen supply well ventilated.
- Oxygen cylinders must be secured at all times.
- Keep oxygen supplies and containers dust free – follow manufacturer's instructions for cleaning.
- Avoid using substances known to cause oxygen to become flammable. Some common cleaning products include alcohol, grease, and oil. Other common household items that should be avoided are hair sprays and air fresheners.
- Check all electrical appliances to insure they are grounded and properly secured to the outlet.
- Avoid using game controllers or any other handheld electronic devices when using oxygen, including electrical appliances such as hair dryers and electric razors.
- Do not use extension cords on medical equipment.
- Check tubing daily for damage.
- Clean nasal cannulas and facemasks weekly using soapy water with a mild detergent, rinse and let air dry.
- Follow manufacturer's guidelines for oxygen concentrator cleaning. In general, a damp cloth with mild soap can be used to clean dust and soiling from the outside of the unit.
- Clean reusable filters on oxygen concentrator once a month using a mild soap, rinse and let air dry. Ensure filters are completely dry and intact before reusing. Concentrator should be turned off before removing filter. Do not use concentrator without filter.

(Summit Oxygen, Inc., n.d.; Cincinnati Children's, 2021)

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