OXYGEN THERAPY COMPETENCY

Pulmonary Center of Excellence 2025

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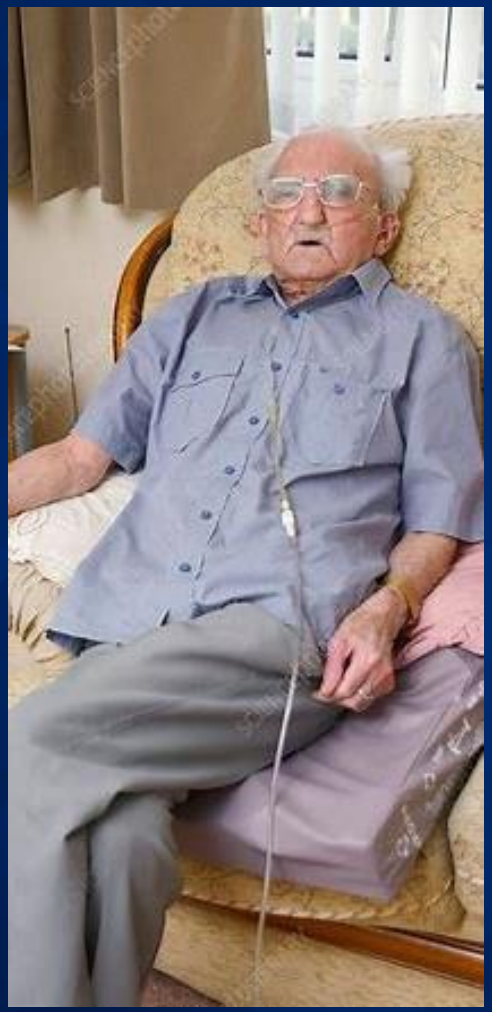

GOALS OF OUR OXYGEN COMPETENCY

a. Who needs oxygen therapy

b. Devices used to deliver oxygen therapy

c. Pulse oximetry to assess a patients oxygen level and response to treatment.

d. Recognizing a patient in respiratory distress

e. Interventions for low pulse oximetry levels or shortness of breath

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COPD

CHRONIC AIRFLOW LIMITATION

"EMPHYSEMA AND CHRONIC BRONCHITIS"

- Easily Fatigued
- Frequent Respiratory Infections
- Use of Accessory Muscles to Breathe
- Orthopneic
- Dysrhythmias
- Cor Pulmonale (Late in Disease)
- Thin in Appearance

- Wheezing
- Pursed-Lip Breathing
- Chronic Cough
- Barrel Chest
- Dyspnea, ↑Resp Rate
- Prolonged Expiratory Time
- Bronchitis - Increased Sputum
- Digital Clubbing
- ↑pCO_2 → Respiratory Acidosis

WHO USES SUPPLEMENTAL OXYGEN THERAPY

- We all require oxygen. The air we breath is 21% oxygen. Individuals with Cardiopulmonary disorders often have low blood oxygen levels and will benefit from using supplemental oxygen.
- Common diseases that benefit from supplemental oxygen are Chronic Obstructive Pulmonary Disease (COPD), Pneumonia, and Congestive Heart Failure (CHF)
- COPD is comprised of several diseases including Emphysema, Bronchitis, Bronchiectasis, and Asthma

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OXYGEN DELIVERY DEVICES

- **Oxygen Concentrator:** An electrically powered device that draws room air into the machine, purifying the air into Oxygen and delivering it to the resident. When turned on the concentrator continuously produces Oxygen. Concentrators must be inspected weekly to clean or replace filters based on the manufacturer recommendations. Oxygen purity must be testing according to the manufacturer recommendations to ensure the concentration of oxygen delivered to the resident is appropriate.

- **Oxygen Cylinder:** Contains pure Oxygen under pressure and the quantity of oxygen is limited to the size of the cylinder. A gauge on the cylinder displays how much oxygen is in the cylinder and will display when it is empty. The higher the liter flow required by the resident the shorter the time that the cylinder will last. Cylinders require safe handling and storage. They must always be stored in a cart, or carrier that will minimize the risk of the cylinder from falling or tipping over.

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OXYGEN DELIVERY DEVICES

- **Oxygen Concentrator;** Humidifier bottles can be added to the concentrator for residents with a dry or bloody nose

- **Oxygen Cylinder;** The gauge will display the liter flow delivered to the resident and the volume of Oxygen left in the cylinder

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OXYGEN DELIVERY DEVICES INTERFACES

- **Nasal Cannula;** A nasal cannula comes in various lengths to offer residents the ability to move about within their room. Caution must be used when using a long cannula for ambulating to ensure the resident or staff member do not trip over the tubing.

- **Masks**
  - **Simple mask;** As its name implies, the simple mask is a clear mask the covers the mouth and nose. For residents that require a higher oxygen concentration than what is available from the nasal cannula this mask requires a higher liter flow from 6lpm to 8lpm.
  - **Nonrebreather mask;** This mask can be identified from the simple mask by the presence of a reservoir bag located at the bottom of the mask. This mask should be run at 12lpm to 15lpm. If the oxygen flow is adequate the reservoir bag will not deflate completely during inspiration.

SIMPLE MASK

NON-REBREATHER MASK

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OXYGEN THERAPY

- Oxygen settings are ordered by a provider and are expressed in liters per minute (lpm) and why the resident should be using it. (i.e., continuously, ambulation or exertion only, or hours of sleep).
- The provider may prescribe a range for a resident's oxygen saturation. A COPD resident may have a baseline oxygen saturation (SpO2) range of 88% to 92%.
- The clinician may raise or lower the lpm based on the residents Pulse Oximetry measurement to maintain the SpO2 in the provider prescribed range.

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PULSE OXIMETRY

- Pulse oximetry is often called the 5th vital sign along with Heart Rate, Respiratory Rate, Blood Pressure, and Temperature.
- While pulse oximetry is an easy measurement to obtain, results must be evaluated for accuracy by comparison to the clinical assessment to the residents current condition.
- False low SpO2 measurements can be misleading. A resident who is active, speaking in full clear sentences, and not complaining of Shortness of Breath (SOB) probably does not have a low SpO2.
  - Reasons for potentially low measurement:
    - The probe is not completely on the finger or on the same finger for a prolonged time
    - The resident has cold hands or extremities
    - The resident has significant peripheral vascular disease or circulatory deficit
    - Residents with dark nail polish or darker pigmented skin
    - Broken or faulty equipment (confirm results using another pulse oximeter)

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PULSE OXIMETRY

- **Addressing low pulse oximetry measurement:**
  - Is the cannula or mask appropriately in the nares or on the face
  - Is the cannula or mask tubing connected to the humidifier or nipple adapter
  - Is the oxygen concentrator on and operating appropriately
  - Are the oxygen cylinder contents low, empty or off
  - Is the liter flow set to the appropriate level, especially after return to their room from an activity
  - Change the oximeter probe to a different finger or move it to the opposite hand
  - Wrap cold hands or arms in warm blankets
  - Remove nail polish
  - If possible, address circulatory issues
  - Is the oximeter faulty or broken (confirm results using a different pulse oximeter)

LOW PULSE OXIMETRY RESULTS

- **Low pulse oximetry measurement:**
  - For individuals participating in an activity or exercise, stop the activity and allow the resident to catch their breath
  - Does the resident's saturation return to baseline at rest in less than 5 minutes
  - Contact the provider for direction if their saturation does not return to baseline in in than 5 minutes
  - Consider increasing the flow of oxygen to the cannula or mask
  - For individuals with orders for inhaled medication, consider administering a nebulizer treatment or inhaler with a fast-acting bronchodilator (i.e., Albuterol)
  - If possible, get the resident out of bed to a chair or raise the head of the bed to 45 degrees or higher as tolerated
  - Perform breathing exercises (Incentive Spirometry), with pursed lip breathing and encourage coughing (PEP therapy device, i.e., Aerobika)

QUESTION 1

- Any time a resident is short of breath you can place them on oxygen. You do not need to have an order for Oxygen Therapy?

True

False

The correct answer is false. Oxygen is a drug and requires a provider order to be administered. The provider order requires a liter flow, delivery device (i.e., Nasal Cannula), and hours of use (i.e., continuously, during hours of sleep, or during exertion).

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QUESTION 2

- You obtain vital signs on your patient who has been resting in bed and the Oxygen Saturation is 84% while using a Nasal Cannula at 2lpm. What is the most appropriate response?

a. Assess the patient for shortness of breath, repeat the pulse oximetry on another finger or hand, increase the liter flow so the SpO2 rises to 92%, and call the provider to report the resident's current status.

b. Allow the patient to eat breakfast and repeat the vital signs and saturation in one-hour.

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QUESTION 3

- The resident is participating in a physical therapy session and complains of shortness of breath. What should you do first?

a. Encourage the resident to finish the physical therapy session

b. Continue the physical therapy session with a higher liter flow of oxygen

c. Pause the physical therapy session and administer 2 puffs of Albuterol before continuing exercise

d. Pause the physical therapy session, have the resident sit while performing deep breathing with pursed lip breathing. Measure the oxygen saturation and allow the resident to catch their breath. Notify the provider of the event and what was done to resolve the shortness of breath.

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QUESTION 4

- If a resident using oxygen via a nasal cannula at 3lpm complains of a bloody nose and nasal dryness you can add a humidifier bottle filled with tap water to the concentrator?

a. True

b. False

You may absolutely add a humidifier bottle to the oxygen concentrator, however you must use sterile water or distilled water in the humidifier bottle.

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QUESTION 5

- You are caring for a resident that is normally very social and actively participates in events without much encouragement. Today they mention they are tired and wish to remain in their room. What is your next step?

a. Allow them to remain in their room and allow them to eat in bed.

b. Check their vital signs and notify the provider if they are not consistent with their normal (baseline SpO2, HR, RR, Temp).

c. Come back in an hour to see if they feel better after a nap.

d. Increase the oxygen level and check back on them after you finish rounding.

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