SUBJECT: OXYGEN THERAPY

1. PURPOSE:

This policy will outline the guidelines and procedures to be followed when providing oxygen therapy at this facility.

2. POLICY:

1. With a physician’s order, any licensed nursing staff may administer oxygen
2. Unless specifically indicated by a physician order, with documentation supporting the specific necessity for the 1:1 observation, individuals will not be placed on 1:1. If an order is obtained it will be for a period not to exceed 24 hours, and the physician must personally see/reevaluate the individual and document the necessity for renewal prior to renewing the order each time it requires renewal.
3. The pulse oximeter shall be used for all individuals receiving O2 to monitor their oxygen saturation rate.
4. Oxygen administration up to 6 liters per minute via nasal cannula, 6 to 10 liters face mask or non-rebreathing mask, and up to 15 liters/minute via Venturi Mask may be given by a Registered Nurse to individuals with no history of Chronic Obstructive Pulmonary Disease prior to a physician’s order in emergency situations. A physician’s order must be obtained immediately thereafter. Indications for use may include but are not limited to:
   a. Check pain
   b. Shortness of Breath
   c. Respirations less than 8 per minute
   d. Status epilepticus
   e. Low pulse oximetry readings (Pulse Oxygen Saturation [SpO2] less than 90%)
5. Oxygen administration up to 2 liters via nasal cannula or up to 28% oxygen concentration by Venturi Mask may be given by a Registered Nurse to individuals with a history of chronic Obstructive Pulmonary Disease prior to a physician’s order in emergency situations. A physician’s order must be obtained immediately thereafter.
6. Check the Oxygen tank and tubing weekly and after each use. Replace the tank if Oxygen is below 500 lbs. replace the mask and tubing after each use. Complete the “Oxygen Tank Check List”.

7. The facemask must be attached to the green adapter on the oxygen tank to insure readiness for an emergency.

8. Individuals requiring positive pressure breathing treatment and/or medication via humidifier or arterial blood sampling are referred to an outside medical facility.

9. Registered Nurses who are ACLS certified may insert a Laryngeal Mask Airway (LMA) in an emergency prior to obtaining a physician’s order.

3. **GENERAL INFORMATION:**

   1. Oxygen is delivered by nasal prongs or face mask to prevent or reverse hypoxemia and reduce the work of breathing.

   2. Oxygen tanks with gauge and masks are located on every unit in the Treatment Rooms and on all Emergency Carts.

   3. Used oxygen tanks with less than 500 lbs. pressure should be returned to Central Supply for replacement. Mask, tubing, and oxygen supplies are obtained from Central Supply.

   4. Post the “Oxygen Tank Check List” near the tank. The oxygen tank is to be checked weekly and after each use to ensure its readiness for an emergency. Records must be retained for at least one year. Unit Supervisor/designee shall assure that policy is followed. The form is obtained from the Warehouse.

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### TABLE OF GUIDELINES FOR TYPES AND USE FOR OXYGEN THERAPY

<table>
<thead>
<tr>
<th>Type</th>
<th>Where Located</th>
<th>When Indicated</th>
<th>Oxygen Flow Range</th>
<th>Advantages</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasal cannula</td>
<td>Emergency Carts</td>
<td>Acute or chronic conditions; if longer use is needed, attach humidifier</td>
<td>1-6 L/min</td>
<td>Permits taking and eating, able to breathe through nose, more comfortably</td>
<td>Dries nasal passages unless used with humidifier. Less effective in mouth breathers. Difficult to regulate oxygen concentration inhaled.</td>
</tr>
<tr>
<td>Standard Face Mask</td>
<td>Oxygen tank attachment; Emergency Carts</td>
<td>Usually for Emergency conditions. If longer use is needed, consider humidifier.</td>
<td>6-10 L/min</td>
<td>Provides more concentration than nasal cannula</td>
<td>Difficult to regulate exact concentration</td>
</tr>
<tr>
<td>Venturi Mask</td>
<td>Emergency Carts</td>
<td>Non-emergency, Short-term</td>
<td>3-15 L/min</td>
<td>Consistent oxygen concentration (24-50%) via a mask with 7 different selections</td>
<td>Depends upon correct oxygen flow rate and dilution setting for exact concentration</td>
</tr>
<tr>
<td>Non-Rebreathing Mask</td>
<td>Emergency Carts</td>
<td>Emergency for maximum oxygen concentration</td>
<td>6-10 L/min</td>
<td>Gives maximum oxygen concentration</td>
<td>Requires high flow rate</td>
</tr>
</tbody>
</table>

4. **PRECAUTIONS:**

1. Oxygen supports combustion, therefore, flames and sparks from all sources must be avoided. Smoking materials must be removed from client access.
2. **OXYGEN IN USE** signs must be posted; one on the room door and one in view of the individual.
3. NO electrical equipment is to be used in the vicinity of oxygen unless they are equipped with OSHA approved plugs and are necessary for individual care and treatment.
4. The oxygen tank must be secured to the carrier to prevent accidentally knocking it over and causing damage to the gauge.
5. When replacing the tank from Central Supply, remove the gauge prior to transport. Replace the gauge onto the new tank upon return to the unit.
6. The tank *must* be transported in its carrier. The tank has the potential to become a dangerous projectile due to the high pressure content. Proper transport of the tank is essential. Report improper transport to the supervisor.
7. The individual with Chronic Obstructive Pulmonary Disease (COPD) should receive only 2 liters of oxygen/minute vial nasal cannula, or 28% Oxygen concentration vial Veturi mask pending physician’s order. Greater concentrations can remove the respiratory drive that has been created by the individual’s low oxygen tension. Thus, ventilation becomes reduced and my lead to acute acidosis and carbon dioxide narcosis.
8. When oxygen therapy is being discontinued, watch for signs of hypoxia (e.g., change in mental acuity, restlessness, mental confusion, dyspnea; cyanosis is a late sign).
9. Give less than 6 liters of oxygen per minute via facial mask will cause carbon dioxide accumulation in the mask.
10. Giving more than 6 liters of oxygen via nasal cannula may cause drying of the mucous membranes without additional clinical benefit.
11. 1:1 observation may be considered for individuals receiving oxygen, for the individual’s protection. (See Policy Item # 2)
5. **ASSESSMENT:**

   1. Assess the respiratory patterns of the individual. Determine rate, ease of inspiration and expiration, presence of cyanosis, and breath sounds.
   2. Assess the individual's history of respiratory problems/diseases
   3. Assess the individual's history of tobacco use, duration, and frequency

6. **PLAN:**

   1. Ensure that the individual receives the correct oxygen delivery device and oxygen flow rate
   2. Observe for signs of inadequate oxygenation
   3. Evaluate the individual's reaction and tolerance to oxygen therapy
   4. Provide the prescribed treatment in a safe and therapeutic manner
   5. provide health education to the individual regarding the safety and purpose of oxygen administration.

7. **EQUIPMENT NEEDED:**

   1. Oxygen tank
   2. Cannula or mask
   3. Humidifier (plastic disposable with PSI Pressure Relief Valve, for long term use only)
   4. Flow Meter
   5. OXYGEN IN USE signs
   6. Sterile distilled water (available in Emergency Cart)
   7. Venturi Mask (located in Emergency Cart)
   8. Non-rebreathing Mask (located in Emergency Cart)
   9. Laryngeal Mask Airway (LMA) (located in Emergency Cart)

8. **CLIENT TEACHING:**

   1. Explain the procedure and reason for oxygen therapy to the individual before bringing the equipment into the room. This helps to ease anxiety and fears. (The individual may feel that a need for oxygen means the condition has worsened)
   2. Teach the individual “safety” precautions with oxygen in the room
   3. Explain to individual the necessity for the sign “OXYGEN IN USE”
   4. Document all individual teaching utilizing the “Wellness and Recovery Individual/Family Health Education Record”
Use of oxygen:

**NURSING ACTION** | **KEY POINTS**
---|---
A. Verify Physician’s order | A. Use the six rights of medication administration: Right Client, Right Medication, Right Form, Right Route, Right Time, and Right Dose
B. Wash hands | B. Maintain asepsis
C. Assemble equipment at the individual’s bedside. Transport the oxygen tank in a cylinder cart. | C. Choose appropriate mask or nasal cannula as ordered by physician. )See designated section for specific use of mask or cannula).
D. Post OXYGEN IN USE signs | D. Maintain safety precautions
E. “Crack” they oxygen tank by opening the valve allowing a small amount of oxygen to escape. Then immediately close the valve. | E. A loud popping sound occurs
F. Open the valve on the oxygen tank. | F. Use the “key” provided
G. Turn on the oxygen to the appropriate number of liters per the minutes. | G. Check the physician’s order for the appropriate amount of oxygen to be provided.

Use of humidifier for long term therapy:  
(Nasal Cannula or Standard Face Mask Only)

**NURSING ACTION** | **KEY POINTS**
---|---
A. Fill the humidifier plastic container two-thirds full with sterile distilled water. Fill container only to marker. | A. Sterile distilled water is located in the top drawer of the Emergency Cart. Tap water causes mineral deposits. A humidifier is not necessary when oxygen is used in an emergency. A humidifier is used for long term therapy only.
B. Screw the filled humidifier container to its adapter and connect it to the flow meter. Replace or refill humidifier as necessary. | B. A special oxygen regulator obtained from Central Supply is required to use humidification.
C. Open the valve on the oxygen tank |  
D. Turn the oxygen to 2-3 liters per minute and watch for bubbles in the distilled water. | D. To ensure patency of the humidifier.
E. Then, place your hand at the container opening to check for the airflow and humidity. | E. Monitor humidifier water level and refill as needed.
Use of nasal cannula:

<table>
<thead>
<tr>
<th>A.</th>
<th>Attach the connector tubing of the nasal cannula, connecting tubing to the oxygen tank outflow.</th>
<th>A.</th>
<th>Humidifier not need in an emergency.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.</td>
<td>Set the flow rate, as ordered</td>
<td>B.</td>
<td>Avoid exceeding the safe limit of HIGH FLOW oxygen: 6 liters/minute via nasal cannula.</td>
</tr>
<tr>
<td>C.</td>
<td>Place straight prongs of the nasal cannula in the individual’s nostrils</td>
<td>C.</td>
<td>Inspect skin behind ears periodically for irritation or breakdown.</td>
</tr>
<tr>
<td>D.</td>
<td>Hook the cannula tubing behind the individual’s ears and then slide the adjuster upward under the chin to secure the tubing.</td>
<td>D.</td>
<td>Do not over tighten the adjuster as this can result in pressure areas, and can also occlude the cannula prongs.</td>
</tr>
</tbody>
</table>

Use of oxygen mask:

| A. | Place the mask over the nose, mouth, & chin. Press its flexible metal edge so it fits the bridge of the nose. Adjust the elastic band around the head to assure a snug fit. | A. | Without a seal, room air dilutes the Oxygen thus preventing the delivery of rescribed concentration. |

Use of venturi mask:

**9. GENERAL INFORMATION:**

The Venturi Mask delivers low concentrations of oxygen via mask (24-50%). It is often used with Chronic Obstructive Pulmonary Disease (COPD) individuals or individuals prone to CO2 retention. It is used when the individual can not tolerate a nasal cannula, are mouth breathers, or different concentration of oxygen is required due to the individual’s specific needs.

Venturi masks are best tolerated for relatively short periods because of their size and appearance. They also must be removed for eating and drinking. With improvement in individual’s condition, a nasal cannula may often be substituted. Venture masks are mostly used for non-emergency or chronic conditions.

**NURSING ACTION**

| A. | Select the appropriate oxygen diluter (green for 24%, 26%, 28%, or 30%; while for 35%, 40%, or 50%). |

**KEY POINTS**

| A. | To ensure the correct air/oxygen mix, oxygen must be set at the prescribed flow rate (flow rate as ordered by the physician). Prescribed flow rates differ for different oxygen |
concentrations. This information is printed on the mask or interchangeable color-coded dials.

| B. Slip the diluter onto the multi-vent barrel | B. In order to select the oxygen concentration |
| C. Select the prescribed oxygen concentration by setting the indicator on the diluter to the appropriate percentage on the barrel. | C. This ensures the correct air/oxygen mix |
| D. Firmly slide the locking ring into position over the diluter | D. The locking ring keeps the diluter from accidentally moving to another oxygen concentration |
| E. Connect supply tubing to the diluter and to the appropriate oxygen source. | E. This ensures that mask is flushed and patent |
| F. Adjust the oxygen flow to the appropriate level and check for gas flow through the device | F. Flow rates are recommendations only (flow rates are to be ordered by the physician) |
| G. Use of a humidifier other than those recommended may create excessive backpressure, causing the relief valve to activate and thereby affecting gas flow to the individual | G. For short-term or emergency use, a humidifier is not required. |
| H. Show the Venturi mask to the individual and explain the procedure | H. Decreases individual's fear |
| I. Place Venturi mask over the individual's nose and mouth and under the chin. Adjust the elastic strap | I. Ensures a secure fit |
| J. Check to make sure the individual's bedding does not obstruct holes for air entry. | J. Exhaled gases would build up if air holes were blocked |

Non-rebreathing mask:

10. **GENERAL INFORMATION:**

The non-rebreathing mask is usually used in temporary or emergency situations to deliver the highest possible oxygen concentration. It may be used while transporting the individual to an acute care facility. Individuals receiving such high concentrations of oxygen are extremely acute and must be monitored continuously to assure correct oxygen saturation levels.

Because this mask delivers a high concentration of oxygen to the individual it is contraindicated with COPD clients. Some COPD individuals depend on low oxygen concentrations to drive respiration. Increased concentration decreases the stimulus to breathe.
Some indications for its use are individuals who are very short of breath, tachypneic, or hypoxic. This mask prevents room air inspiration as it fits snugly. The individual can get the exhaled gases out of the mask, but cannot breathe room air gases back in. This effectively maintains a high concentration. This is due to the built-in valves or diaphragms found in the mask these are not to be removed.

Use of the non-rebreathing mask:

<table>
<thead>
<tr>
<th>NURSING ACTION</th>
<th>KEY POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Attach the oxygen supply tubing to the gas (oxygen) source.</td>
<td>A. To ensure that oxygen is used to fill the reservoir of the mask</td>
</tr>
<tr>
<td>B. Set the oxygen to the desired flow rate (usually 6-10 L/min)</td>
<td></td>
</tr>
<tr>
<td>C. Check for flow through the device. Always verify proper function of the valves</td>
<td>C. Proper functioning of the valves ensures the individual is not re-breathing their own gases. The valve between the mask and the reservoir should rise on inspiration and lower on exhalation. The valve located on the external mask surface should open during exhalation.</td>
</tr>
<tr>
<td>D. Always check oxygen flow through inlet valve before placing the mask on the individual</td>
<td>D. To ensure valve is working and the oxygen is filling up to the reservoir bag of the mask. If this is not done prior to application of the mask, the individual could suffocate.</td>
</tr>
<tr>
<td>E. Place the mask on the individual’s face with the elastic strap below the ears and around the neck. Gently pull the strap ends until the mask is secure. Mold the metal strip on the mask to fit the face.</td>
<td>E. Correct application and placement of the mask ensures full benefit from use of oxygen and non-rebreathing mask. Place the strap below the ears decreases the chance for the skin to</td>
</tr>
<tr>
<td>F. Check for dryness of mucous membranes</td>
<td>F. High concentrations of oxygen are usually used temporarily or in emergency situations. For short-term use humidification is not needed.</td>
</tr>
<tr>
<td>G. Ensure mask is tight fitting and well sealed.</td>
<td>G. Inspect skin beneath ears periodically for irritation or breakdown</td>
</tr>
<tr>
<td>H. Maintain mask in secure position without being uncomfortably tight.</td>
<td>H. Do not over tighten straps, as this can result in pressure areas, and can occlude vessels in the neck. Proper fit ensures against the loss of gases into the room</td>
</tr>
<tr>
<td>I. Remove mask periodically to dry the</td>
<td>I. these actions reduce moisture</td>
</tr>
</tbody>
</table>
Use of the laryngeal mask airway (LMA):

The standard Laryngeal Mask Airway (LMA) can be inserted by trial and error with relative ease, utilizing the following insertion technique transforms the process into a simple maneuver with minimal respiratory or hemodynamic consequences. Moreover, insertion of the reinforced LMA is very much less forgiving to deviations in insertion technique.

THE LMA SHOULD ONLY BE INSERTED INTO AN UNCONSCIOUS INDIVIDUAL IN AN EMERGENCY.

The deflated, lubricated LMA is best inserted with the head and neck positioned as for normal intubation. With an assistant (if possible) temporarily holding the mouth open until the widest part of the mask is past the teeth, or using the third finger of the inserting hand, the tip of the LMA is inserted into the mouth, pressing the tip against the hard palateas (palate) it is advanced cephalad into the pharynx with the right hand. Then, with the index finger positioned at the cuff/tube interface, the LMA is inserted as far as possible into the hypopharynx. Before removing the index finger, bring the other hand up to the connector and press gently but firmly in the cephalad direction. When resistance is felt, the tip of the cuff is positioned at the upper esophageal sphincter. After assuring that the black line on the LMA is facing the upper lip, the cuff is inflated.

<table>
<thead>
<tr>
<th>NURSING ACTION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>A. Remove LMA from the Emergency Cart, 3rd drawer. Make sure packaging is intact (item should be sterile).</td>
<td>A. Check cuff and valve to ensure proper functioning.</td>
</tr>
<tr>
<td>B. Lubricate with “KY Jelly” or other sterile lubricant.</td>
<td>B. To ensure ease of insertion</td>
</tr>
<tr>
<td>C. Evacuation all air from the cuff, preferably using the LMA deflator.</td>
<td>C. If there is air in cuff prior to insertion, insertion will be more difficult.</td>
</tr>
<tr>
<td>D. Make sure that LMA looks like the figure to the right prior to insertion:</td>
<td></td>
</tr>
</tbody>
</table>
**E.** Press mask tip upward against the hard palate to flatten it out advance the mask into the pharynx using the index finger. **CAUTION:** Be sure to carefully “fit” the deflated LMA tip into the convexity of the hard palate as this is the KEY to successful insertion.

**F.** With neck flexed and head extended, press the LMA into the posterior pharyngeal wall using the index finger.

**G.** Complete the insertion by exerting cephalad pressure by the non-dominant hand prior to removing the index finger.

**H.** Inflate LMA and secure in place with tape.
Synopsis of Insertion Technique

1. Check that the LMA is prepared properly.
2. Keep the neck flexed and the head extended with the non-dominant hand during insertion procedure.
3. Using the index finger to maintain a continuous cephalad pressure, slide the LMA over the hard plate and soft palate into the hypopharynx until definite resistance is felt.
4. Complete the insertion by exerting cephalad pressure by the non-dominant hand prior to removing the index finger.
5. Inflate mask with air without holding the tube (a short outward movement is normal).
6. Secure LMA and bite-block with tape

Setting the prescribed flow rate:

<table>
<thead>
<tr>
<th>NURSING ACTION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>A. Adjust the oxygen flow as ordered by Physician</td>
<td>A. Total gas flow at the individual’s face must meet or exceed peak inspiratory flow rate.</td>
</tr>
<tr>
<td>B. Remain with the individual for a period of time to ease fears and to assess individual’s condition</td>
<td></td>
</tr>
<tr>
<td>C. Check equipment at regular intervals for proper functioning and amount of oxygen available in tank</td>
<td></td>
</tr>
<tr>
<td>D. Change cannula/mask, humidifier, and other equipment exposed to moisture EVERY 7 DAYS or sooner if needed. Record the date and time of equipment change in the chart</td>
<td>D. Individuals on intermittent oxygen, or other forms of oxygen treatment, should have a CHANGE OF EQUIPMENT EVERY 7 DAYS or sooner if needed, if it has been used. Date and time of equipment change must be documented.</td>
</tr>
<tr>
<td>E. REPORT TO ONCOMING SHIFT:</td>
<td>E. Refer to NP&amp;P #vii “Change of Shift Procedure”</td>
</tr>
<tr>
<td>a. Individual/client status</td>
<td></td>
</tr>
<tr>
<td>b. The number of lbs. of O2 remaining in the tank.</td>
<td></td>
</tr>
</tbody>
</table>

11. EVALUATION:

Documentation in chart should include:

1. Date & time (include length of time on oxygen)
2. Problem number
3. Procedure
4. Flow rate, (liters/minute)
5. Any abnormal conditions noted
6. Information given to physician
7. vital signs
8. Individual's symptoms prior to and after treatment
9. Type of delivery system (cannula/mask)
10. Individual's reaction
11. Individual Health teaching

12. **PULSE OXIMETER AVAILABLE LOCATIONS:**

- Continuous Vital Sign Monitor with Pulse Oximeter (Welch Allyn) on each unit Treatment room, Safety Center, Staff Development Center
- Small Pulse Oximeters (Pro Med) at Central Supply, Clinic Center, Admissions Suite, Med/Surg Clinic, HSS Office.

**Oxygen tank exchange from central supply:**

- Used oxygen tanks with less than 500-lbs. pressure should be returned to Central Supply for replacement. Mask, tubing, and oxygen supplies are obtained form Central Supply.
- When replacing the tank from Central Supply, remove the gauge prior to transport. Replace the gauge onto the new tank upon return to the unit.
- The tank must be transported in its carrier. The tank has to potential to become a dangerous projectile due to the high-pressure content. Proper transport of the tank is essential.
- Staff coming from the unit will fill-out a requisition slip with a copy (using Central Supply’s requisition form)
- Take requisition form together with the empty oxygen cylinder tank secured in its carrier to the EB Building Central Supply storage room.
- Exchanges should be one-for-on. That is, one empty oxygen tank in exchange for one full one.
- During business hours, coordinate exchange with Central Supply staff.
- After-hours, staff should make arrangements with the HSS on duty to coordinate the exchange. Staff HSS are to sign the Central Supply requisition slip and eave it in Central Supply Room on the desk. Copy the requisition slip to be given to the staff.