CHAPTER 39  Oxygenation

DOCUMENTATION

Guidelines

Document the time of suctioning, your pre- and post-intervention assessment, reason for suctioning, route used, and the characteristics and amount of secretions.

Sample Documentation

9/17/12  1440 Patient with gurgling on inspiration and weak cough; unable to clear secretions. Lungs with sonorous wheezes in upper airways. Nasopharyngeal suction completed with 12F catheter. Large amount of thick, yellow secretions obtained. After suctioning lung sounds clear in all lobes, respirations 18 breaths per min, no gurgling noted.

—C. Bausler, RN

UNEXPECTED SITUATIONS AND ASSOCIATED INTERVENTIONS

- The catheter or sterile glove touches an unsterile surface: Stop the procedure. If the gloved hand is still sterile, call for assistance and have someone open another catheter or remove the gloves and start the procedure over.
- Patient vomits during suctioning: If the patient gags or becomes nauseated, remove the catheter; it has probably entered the esophagus inadvertently. If the patient needs to be suctioned again, change catheters, as it is probably contaminated. Turn patient to the side and elevate the head of the bed to prevent aspiration.
- Secretions appear to be stomach contents: Ask the patient to extend the neck slightly. This helps to prevent the tube from passing into the esophagus.
- Epistaxis is noted with continued suctioning: Notify physician and anticipate the need for a nasal trumpet. The nasal trumpet will protect the nasal mucosa from further trauma related to suctioning.

SPECIAL CONSIDERATIONS

Infant and Child Considerations

- For infants, use a 5 Fr to 6 Fr catheter.
- For children, use a 6 Fr to 10 Fr catheter.

EQUIPMENT

- Flow meter connected to oxygen supply
- Humidifier with sterile distilled water (optional for low-flow system)
- Nasal cannula and tubing
- Gauze to pad tubing over ears (optional)
- PPE, as indicated

IMPLEMENTATION

ACTION

1. Bring necessary equipment to the bedside stand or overbed table.
2. Perform hand hygiene and put on PPE, if indicated.
3. Identify the patient.
4. Close curtains around bed and close door to room if possible.

RATIONALE

Bringing everything to the bedside conserves time and energy. Arranging items nearby is convenient, saves time, and avoids unnecessary stretching and twisting of muscles on the part of the nurse.

Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.

Identifying the patient ensures the right patient receives the intervention and helps prevent errors.

This ensures the patient’s privacy.

(continued)
Skill 39-3 Administering Oxygen by Nasal Cannula continued

**ACTION**

5. Explain what you are going to do and the reason for doing it to the patient. Review safety precautions necessary when oxygen is in use. Place “No Smoking” signs in appropriate areas.

6. Connect nasal cannula to oxygen setup with humidification, if one is in use (Figure 1). Adjust flow rate as ordered (Figure 2). Check that oxygen is flowing out of prongs.

7. Place prongs in patient’s nostrils (Figure 3). Place tubing over and behind each ear with adjuster comfortably under chin. Alternately, the tubing may be placed around the patient’s head, with adjuster at the back or base of the head. Place gauze pads at ear beneath the tubing as necessary (Figure 4).

8. Adjust the fit of the cannula as necessary (Figure 5). Tubing should be snug but not tight against the skin.

9. **Encourage patients to breathe through the nose, with the mouth closed.**

**RATIONALE**

Explanation relieves anxiety and facilitates cooperation. Oxygen supports combustion; a small spark could cause a fire.

Oxygen forced through a water reservoir is humidified before it is delivered to the patient, thus preventing dehydration of the mucous membranes. Low-flow oxygen does not require humidification.

Correct placement of the prongs and fastener facilitates oxygen administration and patient comfort. Pads reduce irritation and pressure and protect the skin.

Proper adjustment maintains the prongs in the patient’s nose. Excessive pressure from tubing could cause irritation and pressure to the skin.

Nose breathing provides for optimal delivery of oxygen to patient. The percentage of oxygen delivered can be reduced in patients who breathe through the mouth.
10. Reassess patient’s respiratory status, including respiratory rate, effort, and lung sounds. Note any signs of respiratory distress, such as tachypnea, nasal flaring, use of accessory muscles, or dyspnea.

11. Remove PPE, if used. Perform hand hygiene.

12. Put on clean gloves. Remove and clean the cannula and assess nares at least every 8 hours, or according to agency recommendations (Figure 6). Check nares for evidence of irritation or bleeding.

These assess the effectiveness of oxygen therapy.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents the spread of microorganisms.

The continued presence of the cannula causes irritation and dryness of the mucous membranes.

FIGURE 5. Adjusting cannula if needed.

FIGURE 6. Cleaning cannula when indicated.

DOCUMENTATION

Guidelines

Sample Documentation

Document your assessment pre- and post-intervention. Document the amount of oxygen applied, the patient’s respiratory rate, oxygen saturation, and lung sounds.

9/17/12 1300 Oxygen via nasal cannula applied at 2 L/min. Humidification in place. Pulse oximeter before placing oxygen 92%; after oxygen at 2 L/min 98%. Respirations even and unlabored. Chest rises symmetrically. No nasal flaring or retractions noted. Lung sounds clear and equal all lobes.

—C. Bausler, RN

UNEXPECTED SITUATIONS AND ASSOCIATED INTERVENTIONS

- **Patient was fine on oxygen delivered by nasal cannula but now is cyanotic, and the pulse oximeter reading is <93%:** Check to see that the oxygen tubing is still connected to the flow meter and the flow meter is still on the previous setting. Someone may have stepped on the tubing, pulling it from the flow meter, or the oxygen may have accidentally been turned off. Assess lung sounds to note any changes.

- **Areas over ear or back of head are reddened:** Ensure that areas are adequately padded and that tubing is not pulled too tight. If available, a skin care team may be able to offer some suggestions.

- **When dozing, patient begins to breathe through the mouth:** Temporarily place the nasal cannula near the mouth. If this does not raise the pulse oximeter reading, you may need to obtain an order to switch the patient to a mask while sleeping.

(continued)
Administering Oxygen by Nasal Cannula continued

SPECIAL CONSIDERATIONS

Home Care Considerations

- Oxygen administration may need to be continued in the home setting. Portable oxygen concentrators are used most frequently. Caregivers require instruction concerning safety precautions with oxygen use and need to understand the rationale for the specific liter flow of oxygen.
- To prevent fires and injuries, take the following precautions:
  - Avoid open flames.
  - Place “No Smoking” signs in conspicuous places in the patient’s home. Instruct the patient and visitors about the hazard of smoking when oxygen is in use.
  - Check to see that electrical equipment used in the room is in good working order and emits no sparks.
  - Avoid using oils in the area. Oil can ignite spontaneously in the presence of oxygen.

EQUIPMENT

- Flow meter connected to oxygen supply
- Humidifier with sterile distilled water, if necessary, for the type of mask prescribed
- Face mask, specified by physician
- Gauze to pad elastic band (optional)
- PPE, as indicated

IMPLEMENTATION

**ACTION**

1. Bring necessary equipment to the bedside stand or overbed table.

2. Perform hand hygiene and put on PPE, if indicated.

3. Identify the patient.

4. Close curtains around bed and close door to room if possible.

5. Explain what you are going to do and the reason for doing it to the patient. Review safety precautions necessary when oxygen is in use. Place “No Smoking” signs in appropriate areas.

6. Attach face mask to oxygen source (with humidification, if appropriate, for the specific mask) (Figure 1). Start the flow of oxygen at the specified rate. For a mask with a reservoir, be sure to allow oxygen to fill the bag (Figure 2) before proceeding to the next step.

**RATIONALE**

- Bringing everything to the bedside conserves time and energy. Arranging items nearby is convenient, saves time, and avoids unnecessary stretching and twisting of muscles on the part of the nurse.
- Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.
- Identifying the patient ensures the right patient receives the intervention and helps prevent errors.
- This ensures the patient’s privacy.
- Explanation relieves anxiety and facilitates cooperation. Oxygen supports combustion; a small spark could cause a fire.
- Oxygen forced through a water reservoir is humidified before it is delivered to the patient, thus preventing dehydration of the mucous membranes. A reservoir bag must be inflated with oxygen because the bag is the source of oxygen supply for the patient.
7. Position face mask over patient’s nose and mouth (Figure 3). Adjust the elastic strap so that the mask fits snugly but comfortably on the face (Figure 4). Adjust the flow rate to the prescribed rate (Figure 5).

8. If the patient reports irritation or redness is noted, use gauze pads under the elastic strap at pressure points to reduce irritation to ears and scalp.

A loose or poorly fitting mask will result in oxygen loss and decreased therapeutic value. Masks may cause a feeling of suffocation, and the patient needs frequent attention and reassurance.

Pads reduce irritation and pressure and protect the skin.

(continued)
9. Reassess patient’s respiratory status, including respiratory rate, effort, and lung sounds. Note any signs of respiratory distress, such as tachypnea, nasal flaring, use of accessory muscles, or dyspnea.

10. Remove PPE, if used. Perform hand hygiene.

11. **Remove the mask and dry the skin every 2 to 3 hours if the oxygen is running continuously. Do not use powder around the mask.**

**FIGURE 5.** Adjusting flow rate.

- This helps assess the effectiveness of oxygen therapy.
- Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents the spread of microorganisms.
- The tight-fitting mask and moisture from condensation can irritate the skin on the face. There is a danger of inhaling powder if it is placed on the mask.

**DOCUMENTATION**

**Guidelines**

Document type of mask used, amount of oxygen used, oxygen saturation level, lung sounds, and rate/pattern of respirations. Document your assessment pre- and post-intervention.

**Sample Documentation**

**9/22/12** Patient reports feeling short of breath. Skin pale, respirations 30 breaths per minute and labored. Lung sounds decreased throughout. Oxygen saturation via pulse oximeter 88%. Findings reported to Dr. Lu. Oxygen via nonrebreather face mask applied at 12 L/min as ordered. Patient’s skin is pink after O₂ applied. Oxygen saturation increased to 98%. Respirations even and unlabored. Chest rises symmetrically. Respiratory rate 18 breaths per min. Lungs remain with decreased breath sounds throughout. Patient denies dyspnea.

—C. Bausler, RN
CHAPTER 39 Oxygenation

**UNEXPECTED SITUATIONS AND ASSOCIATED INTERVENTIONS**

- **Patient was previously fine but now is cyanotic, and the pulse oximeter reading is <93%:** Check to see that the oxygen tubing is still connected to the flow meter and the flow meter is still on the previous setting. Someone may have stepped on the tubing, pulling it from the flow meter, or the oxygen may have accidentally been turned off. Assess lung sounds for any changes.
- **Areas over ear or back of head are reddened:** Ensure that areas are adequately padded and that tubing is not pulled too tight. If available, a skin care team may be able to offer some suggestions.

**SPECIAL CONSIDERATIONS**

- Different types of face masks are available for use.
- It’s important to ensure the mask fits snugly around the patient’s face. If it’s loose, it will not effectively deliver the right amount of oxygen.
- The mask must be removed for the patient to eat, drink, and take medications. Obtain an order for oxygen via nasal cannula for use during mealtimes and limit the amount of times the mask is removed to maintain adequate oxygenation.

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**Skill 39-5 Suctioning the Tracheostomy: Open System**

**EQUIPMENT**

- Portable or wall suction unit with tubing
- A commercially prepared suction kit with an appropriate size catheter (See General Considerations) or
  - Sterile suction catheter with Y-port in the appropriate size
- Sterile disposable container
- Sterile gloves
- Towel or waterproof pad
- Goggles and mask or face shield
- Additional PPE, as indicated
- Disposable, clean gloves
- Resuscitation bag connected to 100% oxygen

**IMPLEMENTATION**

**ACTION**

1. Bring necessary equipment to the bedside stand or overbed table.
2. Perform hand hygiene and put on PPE, if indicated.
3. Identify the patient.
4. Close curtains around bed and close door to room if possible.
5. Determine the need for suctioning. Verify the suction order in the patient’s chart. **Assess for pain or the potential to cause pain. Administer pain medication as prescribed before suctioning.**
6. Explain to the patient what you are going to do and the reason for doing it, even if the patient does not appear to be alert. Reassure patient you will interrupt procedure if he or she indicates respiratory difficulty.

**RATIONALE**

Bringing everything to the bedside conserves time and energy. Arranging items nearby is convenient, saves time, and avoids unnecessary stretching and twisting of muscles on the part of the nurse.

Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.

Identifying the patient ensures the right patient receives the intervention and helps prevent errors.

This ensures the patient’s privacy.

To minimize trauma to airway mucosa, suctioning should be done only when secretions have accumulated or adventitious breath sounds are audible. Suctioning can cause moderate to severe pain for patients. Individualized pain management is imperative (Arroyo-Novoa et al., 2007). Suctioning stimulates coughing, which is painful for patients with surgical incisions.

Explanation alleviates fears. Even if patient appears unconscious, the nurse should explain what is happening. Any procedure that compromises respiration is frightening for the patient.

(continued)