Suction

Definition of Suctioning:-

Suctioning is an invasive procedure by introducing a sterile control suction catheter into patient’s airway through the nasopharynx, oropharynx and into the tracheobronchial tree and also tracheostomy to aspirate the secretions.

Rationale: to maintain patent, clear airway of patients who cannot mobilize or expectorate the secretion without assistance.

Indications:

1. Inadequate cough and inability to mobilize secretions

2. Unusually thick secretions which are difficult to mobilize and/or expectorate

3. Depressed, bypassed or absent cough reflex (CVA, CNS depression, brainstem injury, pain or muscle weakness)

4. Presence of clinical signs identified (restlessness, agitation, rhonchi on auscultation, audible rhonchi, tactile fremitis, decreased breath sounds, decreased pulse oximetry)

5. Presence of neuro- muscular disorder, CVA or any other conditions which places patient at risk for aspiration

Other indication

Therapeutic or Diagnostic

1. Therapeutic

- Coarse breath sounds
- Noisy breathing
- Visible secretions in the airway
- Decreased SpO2 in the pulse oximeter & Deterioration of arterial blood gas values
- Clinically increased work of breathing
- Suspected aspiration of gastric or upper airway secretions
- Patient’s inability to generate an effective spontaneous cough
- Changes in monitored flow/pressure graphics
- Increased PIP; decreased Vt during ventilation
- X-ray changes consistent with retained secretions
- The need to maintain the patency and integrity of the artificial airway
- The need to stimulate a cough in patient’s unable to cough effectively secondary to changes in mental status or the influence of medication
- Presence of pulmonary atelectasis or consolidation, presumed to be associated with secretion retention
- During special procedures like Bronchoscopy & Endoscopy

2. Diagnostic
   - The need to obtain a sputum specimen / ETA (Endo Tracheal Aspiration) for Bacteriological or microbiological or cytological investigations.

**Hazards / Potential Complications:**

1. Hypoxia
2. Cardiac dysrhythmias
3. Hypotension
4. Lung collapse – pneumothorax microatelectasis
5. Mucosal membrane damage
6. Tracheitis
7. Nasocomial Infections
8. Injury to the airway
NURSING MANAGEMENT:

- **Clinical assessment** of the patient through chest auscultation and the previous amounts of secretion obtained through suctioning should guide our practice. For instance if the patient has copious amounts of secretions every 2nd hour then they require more frequent suctioning. If the patient have scant secretions every 2nd hour then the patient does not require 2nd hourly suctioning. Besides auscultation and secretion quantity there are contraindications for routine suctioning including patients with raised ICP, patients in Pulmonary oedema and patients on 100% oxygen and requiring PEEP level > 10cmsH2O to maintain acceptable SaO2 levels.

- **Report** any difficulty in inserting the suction catheter.

- **Report** any alteration in the colour of sputum - e.g. from white to green or blood stained/frothy.

- A sputum trap is required if a sputum specimen is to be obtained.

- **In-Line suction catheters are used for patients with copious secretions and or infectious secretions:**
  - Attach in line suction catheter with single axis swivel connector to ET tube connector.
  - Insert catheter down ET tube without applying suction. Insert catheter until resistance is felt or a cough is stimulated.
  - Apply suction (depress button) whilst withdrawing catheter.
  - Catheters are changed 2nd daily in accordance with the date sticker.
1. Performing Oropharyngeal and Nasopharyngeal Suctioning CHECKLIST

**Equipment:** Stethoscope

Clean or Sterile examination gloves (as applicable)
Sterile control suction catheter
Vacuum source and connecting tube

- Recommended vacuum settings: **Adult 80-120 mm Hg**
- Children 80-100 mm Hg
- Infants 60-100 mm Hg

Sterile water for rinsing (as needed)
**PROCEDURE STEPS**

<table>
<thead>
<tr>
<th>Step</th>
<th>done</th>
<th>Not done</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Positions the patient:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. <strong>For oropharyngeal suctioning</strong>: Semi-Fowler’s position with his head turned toward the nurse.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. <strong>Nasopharyngeal suctioning</strong>: Semi-Fowler’s position with his head hyperextended (unless contraindicated).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Places the linen-saver pad or towel on the patient’s chest.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Puts on a face shield or goggles.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Turns on the wall suction or portable suction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Tests the suction equipment by occluding the connection tubing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Opens the suction catheter kit or the gathered equipment if a kit is not available If using the nasal approach, opens the water-soluble lubricant.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Dons sterile gloves; keeps the dominant hand sterile; considers no dominant hand nonsterile.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Pours sterile saline into the sterile container, using the nondominant hand.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Picks up the suction catheter with the dominant hand and attaches it to the connection tubing (to suction).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Puts the tip of the suction catheter into the sterile container of normal saline solution and suctions a small amount of normal saline solution through the suction catheter. Applies suction by placing a finger over the suction control port.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11. Approximates the depth to which to insert the suction catheter:
   a. Oropharyngeal suctioning: Measures the distance between the edge of the patient’s mouth and the tip of the patient’s ear lobe.
   b. Nasopharyngeal suctioning: Measures the distance between the tip of the patient’s nose and the tip of the patient’s ear lobe.

12. Using the nondominant hand, removes the oxygen delivery device, if present. Has the patient take several slow deep breaths. If the patient’s oxygen saturation is < 94%, or if he is in any distress, administers supplemental oxygen before, during, and after suctioning.

13. Lubricates and inserts the suction catheter:
   a. Oropharyngeal suctioning
      1) Lubricates the catheter tip with normal saline.
      2) Using the dominant hand, gently but quickly inserts the suction catheter along the side of the patient’s mouth into the oropharynx.
      3) Advances the suction catheter quickly to the premeasured distance (usually 7 to 10 cm in the adult), being careful not to force the catheter.
   
   b. Nasopharyngeal suctioning
      1) Lubricates the catheter tip with the water-soluble lubricant.
      2) Using the dominant hand, gently but quickly inserts the suction catheter into the naris.
      3) Advances the suction catheter quickly to the premeasured distance (13 to 15 cm in the adult),
14. Places a finger (thumb) over the suction control port of the suction catheter and starts suctioning the patient. Applies suction while withdrawing the catheter in a continuous rotating motion.

15. Limits suctioning to 5 to 10 seconds.

16. After the catheter is withdrawn, clears it by placing the tip of the catheter into the container of sterile saline and applying suction.

17. Lubricates the catheter and repeats suctioning as needed, allowing at least 20-second intervals between suctioning. For nasopharyngeal suctioning, alternates nares each time suction is repeated.

18. Coils the suction catheter in the dominant hand. Pulls the sterile glove off over the coiled catheter. (Alternatively, wraps the catheter around the dominant gloved hand and holds the catheter while removing the glove over it.)

---

2. Performing endotracheal Suctioning CHECKLIST

AIM:
To remove secretions from tracheo-bronchial tree.

EQUIPMENT:
High wall suction
Suction catheter of appropriate size, ie:

ETT / Trachy Size
Mini-trach-7, 7-8.5 &9-10
**Suction Catheter Size** 8-10fg, 10fg ,10fg &10fg

Single sterile glove

Pulse oximeter to assess O2 saturation (SaO2)

Goggles / Face Shields

**Complications of endo tracheal suction**

Infection

Trauma to tracheo-bronchial mucosa

Hypoxia

Aggravation of pulmonary oedema

Raised intracranial pressure

Decreased lung compliance due to disconnection from ventilator and loss of PEEP

<table>
<thead>
<tr>
<th>PROCEDURE STEPS</th>
<th>Done</th>
<th>Not done</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technique</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Perform routine procedures before suctioning:

Administer medication, assemble equipment, explain the procedure to the patient, adjust bed to comfortable working position, prepare suction pressure, wash hands, and don gloves.

2. Hyperoxygenate the patient with 100% oxygen, using a manual resuscitation bag (MRB) or the ventilator.

3. Quickly but gently insert the catheter as far as possible into the artificial airway without application of suction.
4. Withdraw the catheter 1 to 2 cm, and apply intermittent suction while rotating and removing the catheter. Limit suction pressure to −80 to −120 mm Hg. Aspiration should not exceed 10 to 15 seconds. (Prolonged aspiration can lead to severe hypoxia, hemodynamic instability, and, ultimately, cardiac arrest.)

5. Hyperoxygenate the patient before and after each subsequent pass of the catheter for at least 30 seconds, and before reconnection to the ventilator.

6. Monitor heart rate and rhythm and pulse oximetry during and after suctioning.

7. Discontinue the procedure if the patient does not tolerate it, as evidenced by dysrhythmias, bradycardia, or a drop in SaO2.

8. Remove equipment.


10. Wash your hands.