

Table 1 Indications, Contraindications and Hazards of Suctioning

<p>Indications of suctioning</p> <ol style="list-style-type: none">1. Patient has an ineffective cough and unable to clear the secretion spontaneously (audible secretion sound in patients under mechanical ventilation)2. Retained secretion is causing patient distress or physiological derangement (e.g. increased work of breathing, respiratory rate, impaired oxymetry or blood gases)3. Maintain airway patency with secretion clearance4. When all other less invasive secretion clearance interventions have failed (e.g. cough assist (manual or mechanical), positioning, other breathing/coughing techniques)5. To stimulate cough6. To obtain sputum sample for microbiology or cytological analysis
<p>Contraindications and precautions of suctioning (NHS document Mar 2015):</p> <ol style="list-style-type: none">1. Severe bleeding disorder, unexplained hemoptysis2. Severe bronchospasm or laryngeal spasm, irritable airway3. Epiglottitis or croup4. Basal skull fractures / facial injury5. Cerebral spinal fluid leak6. Recent nasal, oral or esophageal surgery7. Occluded nasal passage, nasal bleeding8. Loose teeth, denture or crown9. Increased intra-cranial pressure10. Severe gag reflex11. Hemodynamic instability12. Tracheo/oesophageal fistulae <p>(*Clinician should seek medical advice if in doubt)</p>
<p>Possible hazards of suctioning:</p> <ol style="list-style-type: none">1. Mechanical trauma to the airway2. Bleeding3. Hypoxemia/hypoxia4. Cardiac arrhythmias5. Vasovagal stimulation (↓HR/BP)6. Gagging/vomiting7. Aspiration8. Pain/distress/discomfort9. Laryngospasm or bronchospasm10. Respiratory arrest

- 11. Changes in ICP
- 12. Atelectasis
- 13. Lesions in tracheal mucosa

Table 2 Clean vs. Sterile Technique

Different Techniques		
<p>Clean technique (for nasal or oral suctioning):</p> <ul style="list-style-type: none"> • Clean gloves, sterile catheter for deeper oral suctioning, & Personal Protection Equipment (PPE) as indicated. • For shallow/brief oral suctioning: Clean gloves, PPE, oral suction catheter (e.g. Yankauer) 	<p>Sterile Technique (for open artificial or permanent tracheostomy):</p> <ul style="list-style-type: none"> • Sterile gloves & sterile catheter 	<p>In-line / Close suctioning (for patients on mechanical ventilation in critical care or ER):</p> <ul style="list-style-type: none"> • Clean gloves & PPE as indicated

Table 3 Process of Suctioning

Example of General Steps of Suctioning:
<p>Pre-suction:</p> <ol style="list-style-type: none"> 1. Thorough chart review, patient & need assessment <ol style="list-style-type: none"> a. IPPA (Inspection, Palpation, Percussion, Auscultation) b. Monitor vitals c. Monitor oxygen saturation d. Check effectiveness of huff/cough if possible e. Be aware of patient's code status (or Goals of Care) and any high risk airways f. Provide pertinent physiotherapy intervention for airway clearance and secretion mobilization as indicated g. Check when was the last time patient was suctioned and frequency & outcome of suction 2. Provide appropriate explanation to patient (and family) and obtain consent for 3. Provide adequate sedation or pain relief (and or other medications) if indicated 4. Hand Hygiene 5. Set up & Equipment: <ol style="list-style-type: none"> a. Set up a clean bedside table for necessary equipment b. Turn on suction regulator, check & set negative pressure (-100 to -150 mmHg for adult, set pressure as low as possible and yet effectively clear secretions) 1,2

- c. Ensure proper working order of collection bottle/device (*i.e. not over-filling*)
 - d. Obtain & prepare suction catheters with appropriate caliber (*for artificial airway, the outside diameter of the suction catheter should be less than 50% of the inner diameter of the artificial airway*)^{2,3,5,10}
 - e. Personal Protective Equipment (*mask, eye or face shield, gown, etc*) as per infection prevention & control
 - f. Gloves (clean / sterile as per needs)
 - g. Water based lubricants for nasopharyngeal suction
 - h. Cups and clean water for oral suctioning, normal saline for nasopharyngeal suction/ open tracheostomy suction
 - i. Nasal trumpet/airway, oropharyngeal airway for frequent suctioning, or bite block as indicated
 - j. Pulse oximeter if available
 - k. Provide pre-oxygenation or supplementary oxygen source, ^{1,2,3}
 - l. resuscitation bag with mask
 - m. Other monitors (for vitals, ICP, ECG, etc.) as indicated
 - n. Arrange for help if a second staff if necessary (e.g. for hyperinflation, cough assist, safety, etc.)
 - o. Ensure adequate lighting
 - p. Good understanding of emergency protocol & procedure
6. Position patient on side, half-side lying or in half lying and tilt the head slight back if possible.
 7. Place a clean towel on patient's chest just in case
 8. Prepare sputum trapper if a sputum sample is needed
 9. Pause ventilator alarm just before suctioning if patient is on mechanical ventilator

During suction:

1. Without applying suction pressure, gently insert catheter into patient's airway
2. Clear any visible secretion before inserting the suction catheter deep into patient's nare , mouth or artificial airway
3. Do not force catheter in when experiencing resistance, reinsert catheter if needed
4. Stimulate cough if it does not occur naturally
5. Withdraw catheter slightly (1-2 mm) prior to applying suction
6. Apply suction only when withdrawing catheter in a rotating manner
7. No need to rotate catheter if using an in-line/closed suction system
8. Total suction duration should not exceed 15 seconds^{1,2, 3,11,12,13}
9. Rest between suction passes; closely monitoring patient vitals, discomfort and condition; calm patient if necessary^{13, 14}
10. Observe secretion aspirated (e.g. amount, color, tenacity, any blood in secretion, etc.)
11. Rinse suction catheter if necessary
12. Saline instillation is not recommended as a routine for patients with artificial airway^{2, 5, 7, 8}

Post suction:

1. Ensure patient is safe and stable
2. Monitor oxymetry if available
3. Rinse suction catheter & tubing
4. Discard used catheter and gloves
5. Hand hygiene
6. Reassess patient's cardiorespiratory status; repeat suctioning if indicated
7. Turn off suction source if no further suctioning is indicated
8. Set supplementary oxygen back to normal level if patient is stable
9. Check ventilator setting & alarm if patient is on ventilator support
10. Hand Hygiene
11. Documentation – details of patient response and outcome, time, secretion suctioned (quantities in measurable units such as in mls or teaspoonful, color, tenacity, smell, presence of blood, etc.), number of passes of catheter, preoxygenation needed, etc.
Follow site or program specific documentation guideline
12. Liaise with other disciplines (e.g. nursing, RTs, physicians) regarding any pertinent information about suctioning and patient's response
13. Coordinate suctioning with other disciplines if indicated (e.g. medication pre or post suctioning, jointed cough assist and suctioning with RT, etc.)