

	<p>Policies and Procedures</p> <p>Title: <b>SUCTIONING ARTIFICIAL AIRWAYS – ADULTS – Ventilated and Non-Ventilated</b></p> <p><b>RN Specialty Practice: RN Procedures</b>  Suctioning via Endotracheal Tubes  Suctioning Ventilated Clients</p> <p><b>LPN Additional Competency</b>  Suctioning Chronically Ventilated Clients with an Established Plan of Care</p> <p>I.D. Number: <b>1019</b></p>
<p>Authorization:</p> <p><input checked="" type="checkbox"/> Critical Care Committee  <input checked="" type="checkbox"/> SHR Nursing Practice Committee</p>	<p>Source: <b>Nursing/Respiratory Therapy/Physiotherapy</b></p> <p>Date Revised: September 2017  Date Effective: June 2005  Scope: <b>SHR &amp; Affiliates</b></p>

Any PRINTED version of this document is only accurate up to the date of printing 23-Oct-17. Saskatoon Health Region (SHR) cannot guarantee the currency or accuracy of any printed policy. Always refer to the Policies and Procedures site for the most current versions of documents in effect. SHR accepts no responsibility for use of this material by any person or organization not associated with SHR. No part of this document may be reproduced in any form for publication without permission of SHR.

**DEFINITIONS:**

**Acute Ventilation** – mechanical ventilation with a goal to wean

**Artificial Airway** – A tube or tube-like device that is inserted through the nose, mouth or into the trachea to:

- Create a route for mechanical ventilation
- Allow easy access of suctioning
- Relieve mechanical airway obstruction
- Protect the airway from aspiration related to impaired cough or gag reflexes

**NOTE: For the purpose of this policy, artificial airways include endotracheal tubes (ETT) and tracheostomy tubes.**

**Chronic ventilation** - mechanically ventilated for a prolonged time. Chronically ventilated clients are less complex, more predictable and at lower risk for negative outcomes, and will have a tracheostomy tube in most circumstances.

**Closed Suctioning Technique** – Utilizes an in-line suction catheter with client remaining attached to ventilator and may be recommended for clients with high oxygen requirements or increased levels of positive end-expiratory pressure (PEEP). It can also be used in non-ventilated clients that require frequent suctioning. Closed technique reduces de-recruitment of alveoli and subsequent atelectasis. It also minimizes aerosolization of contaminated secretions and may prevent nosocomial infections.

**Client** - For the purpose of this policy, client will be used when referring to clients, patients, and residents.

**Endotracheal Tube (ETT)** – A type of tracheal tube that is inserted through the mouth (orotracheal) or nose (nasotracheal). Typically an ETT is constructed of polyvinyl chloride. Most ETTs have an inflatable cuff to seal the trachea and bronchial tree against air leakage and aspiration of gastric contents, blood, secretions, and other fluids.

**Established Plan of Care** - based on an RN assessment of care needs, the plan of care for suctioning chronically ventilated clients may be considered established once it has been determined the client is unable to be weaned from the ventilator. The ventilation and suctioning plan of care must be documented in a nursing care plan. A chronically ventilated client does not have an established plan of care if the client has deteriorating vital signs or a stoma that is not established.

**Health Care Practitioner (HCP)** – Physician, Registered Respiratory Therapist (RRT), Registered Nurse (Nurse Practitioner) RN (NP), physiotherapist (PT), who has the knowledge and skill in suctioning artificial airway. For students - see roles.

**Open Suctioning Technique** – Client is not connected to a ventilator or is temporarily disconnected from the ventilator and is suctioned with a sterile suction catheter.

**Tracheostomy Tube** – A type of tracheal tube. This 67 mm to 105 mm long curved metal or plastic tube is inserted into the trachea through a surgical incision in the neck or with a percutaneous dilatation technique. Several types of tracheostomy tubes are available, with or without a cuff, for neonatal, pediatric and adult uses.

## ROLES

**Graduate Nurses (GN)** – GNs may provide suctioning via tracheostomy tube for non-ventilated clients under the supervision of an RN until deemed competent.

**Graduate Licensed Practical Nurse (GLPN)** – GLPNs may provide suctioning via tracheostomy tube for non-ventilated clients with established stomas who are less complex, more predictable and at lower risk for negative outcomes, under the direct supervision of a LPN, RN or RPN until deemed competent.

**Licensed Practical Nurse (LPN)** – All LPNs may provide suctioning via tracheostomy tube for non-ventilated clients with established stomas who are less complex, more predictable and at lower risk for negative outcomes. LPNs identified by their manager in targeted practice settings will be certified in the LPN Additional Competency

- Suctioning of Chronically Ventilated Clients with an Established Plan of Care  
LPN to provide care independently, as assigned, for clients who are less complex, more predictable, at lower risk for negative outcomes. If a change is required in the plan of care, the LPN will consult with a certified RN, RRT, PT, RN(NP) or physician and work collaboratively to establish a new plan of care.

In practice settings which are not targeted, LPNs currently educated or certified may continue to provide Suctioning of Chronically Ventilated Clients, as assigned, but LPNs requiring initial certification will not be certified until targeting is approved for the practice setting.

**Registered Nurses (RN)** – All RNs and student nurses under direct supervision of a RN may provide suctioning via tracheostomy tube for non-ventilated clients. For clients with endotracheal tubes and ventilated clients, RNs identified by their manager in targeted practice settings, will be certified in the RN Specialty Practice: (RN Procedures)

- Suctioning via Endotracheal Tubes and/or

- Suctioning Ventilated Clients.

If a change is required to a plan of care within an LPN's assignment, an RN will provide consultation as needed and work collaboratively with the LPN until a new plan of care is established. At any time, if care needs are beyond the individual competence of a certified RN, she will consult and work collaboratively with another certified RN, RRT or physician to provide care. RN may need to take over client assignment until this is accomplished.

**Registered Psychiatric Nurse (RPN)** – All RPNs may provide suctioning via tracheostomy tube for non-ventilated clients with established stomas.

**NOTE:** RPN certification for Suctioning Chronic Ventilated Clients is under review, by the SHR Nursing Practice Committee. As assigned, currently certified RPNs may continue to provide this care. RPNs requiring initial certification will not be certified until the review is completed.

**Registered Physical Therapist (PT)** – all PTs and student PTs under direct supervision of a PT may provide suctioning via artificial airways for both ventilated and non-ventilated clients.

**Registered Respiratory Therapist (RRT)** - all RRTs and student RTs under direct supervision of a RT, may provide suctioning via artificial airways for both ventilated and non-ventilated clients.

## 1. PURPOSE

- 1.1 To promote effective and safe suctioning practices
- 1.2 To minimize infection, oxygen desaturation and other complications associated with suctioning artificial airways.

## 2. POLICY

- 2.1 The RN certified in this RNSP will have first completed the following learning module/activities prior to caring for and suction Ventilated patients with ETT tubes independently:
  - Review Endotracheal Tubes( Adult , Pediatric) - securing , care of policy #1176  
<https://www.saskatoonhealthregion.ca/about/NursingManual/1176.pdf>
  - Review Ventilation - Acute - Care of Mechanically Ventilated Patients - Adult # 1138  
<https://www.saskatoonhealthregion.ca/about/NursingManual/1138.pdf>
  - Complete the Care of the Mechanically Ventilated Patient Learning package and quiz
  - Complete a competency checklist with a certified nurse (certified RN) during first suction of ventilated / non-ventilated ETT Tubes. If a certified nurse is not available, supervision can be done by a RRT, physician or nurse practitioner.
  - Provide documentation of learning module quiz and skills checklist to educator/supervisor.
- 2.2 The LPN certified in this LPNAC will have first completed the following learning module/activities prior to suctioning a client with a trach tube who is chronically ventilated with an Established Plan of Care
  - Review Tracheostomy Care Policy # 1184:  
<https://www.saskatoonhealthregion.ca/about/NursingManual/1184.pdf>
  - Review Ventilation - Chronic - Care of Mechanically Ventilated Adult Persons # 1145:  
<https://www.saskatoonhealthregion.ca/about/NursingManual/1145.pdf>
  - Complete Care of the Mechanically Ventilated Patient Learning package and quiz
  - Complete a competency checklist with a certified nurse (certified RN or LPN) during first suctioning of a chronic ventilated client with an established plan of care.
  - Provide documentation of learning package quiz and skills checklist to educator/supervisor.

## 2.3 Special Considerations

2.3.1 Nursing staff (RN, LPN, RPN) will notify the Respiratory Therapy department as soon as possible when a client is admitted or transferred to the unit with an artificial airway.

**NOTE:** *In sectors where a RRT is not available, nursing staff will notify a practitioner (MRP, RN (NP)).*

2.3.1.1 In the acute care setting, a RRT will assess the client with an artificial airway at a minimum of once every 24 hours and more often if clinically required.

2.3.1.2 In rural acute care settings where a RRT is not available, the client with an artificial airway will be assessed by an practitioner (MRP, RN(NP) every 24 hours and more often if clinically required

2.3.2 When planning the transfer of a client with tracheostomies between acute care units, to rural, Home Care (HC), or Long-Term Care (LTC), nursing staff will alert the receiving site as soon as possible, so appropriate resources and/or staff training can be determined and put into place. Avoid transfers on weekends, statutory holidays, and bank days to rural, HC, and LTC.

2.3.3 Suction only when clinically indicated based on client assessment in order to:

- Maintain patency of the artificial airway by removing secretions or foreign objects from the trachea and artificial airway when the client is unable to expectorate on his/her own.
- Decrease the potential risk for infection that may result from accumulated secretions.
- Obtain a sputum specimen for diagnostic purposes.

2.3.4 The client should be encouraged to cough up secretions independently.

2.3.5 Routine instillation using sterile normal saline is not recommended.

2.3.6 Secretions will be mobilized through the use of postural drainage, percussion, vibration, cough assist device or client ambulation if indicated, prior to suctioning.

2.3.7 For information on tracheostomy care and accidental decannulation, refer to policy # 1184 – Tracheostomy Care – Adult, Pediatric & Neonate

## 2.4 Infection Control

2.4.1 Perform hand hygiene before and after client contact.

2.4.2 Aseptic technique will be used for suctioning artificial airways.

2.4.3 The use of personal protective equipment (PPE) for staff performing suctioning is mandatory. This includes mask with attached visor and sterile/non-sterile gloves as required by the situation (based on a point-of-care risk assessment. The use of other appropriate PPE such as a gown may be considered.

2.4.4 Elevate head of bed (HOB) 30-45° unless contraindicated.

2.4.5 All equipment and supplies should be appropriately disposed of or sent to reprocessing for proper high-level disinfections..

2.4.6 Suction canister, suction tubing, in-line suction catheter, and Yankaeur tip if used should be changed every 72 hours and when visibly soiled. Catheters used for open suctioning are disposed after each suctioning session.

### 3. PROCEDURE

3.1 Assess the client's respiratory status. If necessary, encourage coughing or suction the client to remove secretions.

3.2 Monitoring

3.2.1 The following should be monitored before, during and after suctioning procedure:

- Breath sounds
- Oxygen saturation
- Respiratory rate and pattern
- Heart rate and blood pressure, if indicated
- ETCO<sub>2</sub> if used
- Sputum characteristics
- Cough characteristics
- Intracranial pressure, if indicated and monitoring capabilities available
- Ventilator parameters, if applicable
- Client response and comfort

3.3 Explain procedure to client/family and how they may assist as appropriate.

Rationale:

- Suctioning is an uncomfortable and often frightening procedure
- The client is intubated and is therefore unable to vocalize
- The presence of the catheter in the trachea may make the client highly anxious and restless
- Suctioning may cause hypoxemia
- The client may have a smothered feeling

3.4 Perform hand hygiene and don PPE

3.5 Check suction equipment to ensure proper set-up and is functioning properly. Set suction as low as possible while still keeping it high enough to clear secretions effectively.

**NOTE: Appropriate wall suction range for adults is 80-120mmHg.**

**NOTE: Suction on portable suction units may be pre-set or may need to be adjusted.**

3.6 Position client in semi-Fowler's or Fowler's position, with neck slightly extended (unless contraindicated).

3.7 Hyperoxygenate the client prior to suctioning if indicated. Methods of hyperoxygenation include:

- Increasing oxygen per ventilator for the ventilated client
- Use of a manual resuscitation device connected to oxygen flow meter at flush
- Having the client take 2-3 deep breaths while receiving a higher than normal concentration of oxygen

### 3.8 Open Suctioning Technique

#### 3.8.1 Gather Suctioning Supplies

- Catheter suction kit (where available) #12 French catheter (SKU 62838) or #14 French (SKU 62927)
- Suction catheters of appropriate size (see Appendix A for size chart)
- Mask with attached visor
- Clean gloves
- Sterile gloves
- 0.9% Sodium Chloride, sterile 250 ml bottle
- Sterile 0.9% Sodium Chloride, 15 ml ampoules, for instillation if required
- Pulse oximetry
- Manual ventilation device
- Stethoscope
- Sterile sputum trap for specimen collection if applicable

**NOTE: Use smaller suction catheters whenever possible. Refer to Appendix A for corresponding suction catheter sizes.**

3.8.2 Perform hand hygiene and don PPE (mask with attached visor and clean gloves, as well as gown if required.)

3.8.3 Keeping catheter sterile at all times, attach sterile catheter to non-sterile suction tubing.

3.8.4 Remove clean gloves. Perform hand hygiene. Don sterile gloves.

3.8.5 Lubricate catheter and tubing by dipping the tip in sterile normal saline and suctioning a small amount of solution (can be done directly from the bottle – discard bottle after each use).

3.8.6 On inhalation, insert catheter until resistance is met, then withdraw 1 cm.

**NOTE: Do not apply suction while inserting catheter. Take care to avoid traumatizing the trachea or carina.**

3.8.7 Apply continuous suction while withdrawing

**NOTE: Limit duration of each suction event to less than 15 seconds.**

**NOTE: If contamination occurs, change the catheter and sterile gloves before re-suctioning.**

3.8.8 Clear the catheter and connecting tubing with sterile normal saline before reinserting and at the end of the procedure. After completion, remove and discard the suction catheter.

3.8.9 Repeat suctioning procedures until secretions are cleared from the airway and breath sounds are improved.

**NOTE: Limit catheter passes to the minimum necessary - usually should not exceed two – three passes.**

3.8.10 Allow adequate time (at least 1 minute) between suction passes for the client to rest and re-oxygenate. Hyperoxygenate the client prior to additional suctioning passes if clinically indicated.

3.8.11 Properly dispose of suction supplies.

3.8.12 Remove and discard PPE. Perform hand hygiene.

### 3.9 Closed Suctioning Technique

**NOTE: The closed suctioning technique facilitates continuous mechanical ventilation and oxygenation while suctioning.**

**NOTE: The catheter is part of the circuit and is changed by RRT with each circuit change and when contaminated.**

#### 3.9.1 Gather Suctioning Supplies

- In-line suction set-up
- Mask with attached visor
- Clean gloves
- Sterile 0.9% Sodium Chloride, 15 ml ampoules, for instillation if required and flushing catheter after use
- Manual ventilation device
- Pulse oximetry
- Stethoscope
- Sterile sputum trap for specimen collection if applicable

**NOTE: Use smaller suction catheters whenever possible. Refer to Appendix A for corresponding suction catheter sizes.**

**NOTE: if obtaining a sputum specimen, new in-line suction catheter set-up should be used to decrease risk of contamination with old secretions.**

3.9.2 Perform hand hygiene, and don PPE (mask with attached visor and clean gloves, as well as gown if required).

3.9.3 Pick up suction catheter enclosed in plastic sleeve with dominant hand.

3.9.4 On inhalation, insert catheter until resistance is met, then withdraw 1 cm.

**NOTE: Do not apply suction while inserting catheter. Take care to avoid traumatizing the trachea or carina.**

3.9.5 Apply suction while withdrawing

**NOTE: Limit duration of each suction event to less than 15 seconds.**

3.9.6 Withdraw catheter completely into plastic sheath so it does not obstruct the airway.

3.9.7 Irrigate the catheter after completion of suctioning or if secretions accumulate. Ensure the catheter is fully retracted out of the airway. Open the cap on the irrigation port and attach a sterile normal saline ampule or syringe with sterile normal saline. Intermittently depress and release the thumb control while squirting saline into the irrigation port until the catheter and chamber are clear. Use caution to ensure

irrigation fluid does not enter ETT or tracheostomy tube. After completion, remove and discard the sterile saline ampule or syringe, do not leave attached to the irrigation port.

- 3.10 Repeat suctioning procedures until secretions are cleared from the airway and breath sounds are improved.

**NOTE: Limit catheter passes to the minimum necessary - usually should not exceed two passes.**

- 3.10.1 Allow adequate time (at least 1 minute) between suction passes for the client to rest and re-oxygenate. Hyperoxygenate the client prior to additional suctioning passes if clinically indicated.

- 3.11 Properly dispose of suction supplies.

- 3.12 Remove and discard PPE. Perform hand hygiene.

- 3.13 Follow-up Care

- 3.13.1 If clinically indicated, hyperoxygenate for at least 1 minute following suctioning as described in 3.9

- 3.13.2 Auscultate lung fields for improvement and/or changes in breath sounds.

- 3.13.3 Monitor closely for any adverse reactions and until all physiological parameters have returned to baseline values.

- 3.13.4 Ensure there are enough supplies available for the next suctioning event. Do not overstock supplies.

- 3.14 Oral Care (done by staff or taught to client)

- 3.14.1 Oral cavity should be assessed every shift or HC visit.

- 3.14.2 Oral care should be routinely performed per unit specific standards.

- 3.14.3 Perform hand hygiene and don clean gloves and mask with attached visor to provide oral care.

- 3.14.4 Oral care includes:

- Tooth brushing to prevent plaque buildup every 12 hours and as needed.
- Oral cleansing to promote healing and maintain integrity of the oral tissues.
  - Should be done every 2-4 hours in the intubated clients.
- Antiseptic agent for oral swabbing to prevent or reduce bacterial load and colonization per unit specific standards.
- To minimize the risk of aspiration, suctioning of secretions from the back of the oropharynx should be performed every 6 hours, as needed, and prior to deflating the tracheostomy cuff.

**NOTE: The oropharynx may be suctioned with a Yankauer tip or the same catheter used for tracheal suctioning, provided the oropharynx is suctioned last.**



- Application of a water-based mouth moisturizer to provide moisture and maintain the integrity of the oral mucosa.

### 3.15 Documentation and Reporting

3.15.1 Charting on the appropriate record (Progress Record, Flow Sheet, Ventilator Record or NISS), as per unit policy, following the procedure. Include the following specifics:

- Technique used – open or closed
- Reason for suctioning
- Time of suctioning
- Amount, consistency, color and odor of secretions
- Client response including changes in vital signs
- Client/family education
- If applicable:
  - Hyperoxygenation
  - Instillation of sterile normal saline
  - Specimen sent
  - Any complications and actions taken

3.15.2 Document when oral care has been provided.

3.15.3 Communicate concerns, complications, and/or recommendations to the physician or HCP (if applicable) and document in appropriate record.

#### 4.0 REFERENCES

Åkerman E, Larsson C, Ersson A. Clinical experience and incidence of ventilator-associated pneumonia using closed versus open suction-system. *Nursing In Critical Care*. January 2014;19(1):34-41.

Caparros A. Mechanical Ventilation and the Role of Saline Instillation in Suctioning Adult Intensive Care Unit Patients. *Dimensions Of Critical Care Nursing*. July 2014;33(4):246-253.  
<http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&AN=00003465-201407000-00010&LSLINK=80&D=ovft>

Credland N. How to perform open tracheal suction via an endotracheal tube. *Nursing Standard*. April 27, 2016;30(35):36-38.

Credland N. How to suction via a tracheostomy. *Nursing Standard*. March 9, 2016;30(28):36-38.

Özden D, Görgülü R. Development of standard practice guidelines for open and closed system suctioning. *Journal Of Clinical Nursing*. May 2012;21(9/10):1327-1338.

Özden D, Görgülü R. Effects of open and closed suction systems on the haemodynamic parameters in cardiac surgery patients. *Nursing In Critical Care*. May 2015;20(3):118-125.

Schreiber M. Clinical 'How To'. Tracheostomy: Site Care, Suctioning, and Readiness. *MEDSURG Nursing*. March 2015;24(2):121-124.  
<http://ezproxy.saskatoonhealthregion.lib.sk.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=rzh&AN=103796928&site=ehost-live>

Seckel MA. Suctioning: Endotracheal or Tracheostomy Tube. In: Wiegand D. *AACN Procedure Manual for High Acuity, Progressive, and Critical Care*. American Association of Critical-Care Nurses; 2017; 69-78. <http://ezproxy.saskatoonhealthregion.lib.sk.ca/login?url=>

Smith N, Caple C. Endotracheal Suctioning (Child and Adult): Performing. *CINAHL Nursing Guide*. November 25, 2016.  
<http://ezproxy.saskatoonhealthregion.lib.sk.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=nup&AN=T703821&site=nup-live&scope=site>

Smith Medical : <https://www.smiths-medical.com/products/airway-management/suction-catheters/suctionpro-72>

Sole M, Bennett M, Ashworth S. Clinical Indicators For Endotracheal Suctioning In Adult Patients Receiving Mechanical Ventilation. *American Journal Of Critical Care*. July 2015;24(4):318-325.  
<http://ezproxy.saskatoonhealthregion.lib.sk.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=rzh&AN=109815734&site=ehost-live>

Walsh, K. Schub, E. (2016) Tracheostomy tubes; suctioning using a closed system. *CINAHL Nursing Guide*. November 18, 2016  
. <http://web.b.ebscohost.com/nup/detail/detail?vid=2&sid=c563f5a7-d6d4-44e2-85db-2d0f01f5e863%40sessionmgr103&bdata=JnNpdGU9bnVwLWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#AN=T908534&db=nup>

Woten M, Pilgrim J. Tracheostomy Tubes: Suctioning Using an Open System. *CINAHL Nursing Guide*. September 16, 2016.  
<http://ezproxy.saskatoonhealthregion.lib.sk.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=nup&AN=T706734&site=nup-live&scope=site>

## Appendix A

**CORRESPONDING SIZES**

Shiley Product Size	Inner Diameter	Suction Catheter to Use
PED/NEO 3.0	3.0 mm	5/6 Fr
PED/NEO 3.5	3.5 mm	6 Fr
PED/NEO 4.0	4.0 mm	6 Fr
PED/NEO 4.5	4.5 mm	8 Fr
PED/NEO 5.0	5.0 mm	8 Fr
PED/NEO 5.5	5.5 mm	10 Fr
4 DCT	5.0 mm	8 Fr
6 DCT	6.4 mm	12 Fr
8 DCT	7.6 mm	14 Fr
10 DCT	8.9 mm	16 Fr

\*These are the most commonly used tracheostomy tubes. There are other sizes and types. To determine the correct suction catheter to use, double the inner diameter (ID) and use the next smallest size catheter. Ex: 6.0 mm ID X 2 = 12, next smallest catheter is 10 Fr.