

	<p>Policies and Procedures</p> <p>Title: VENTILATION – CHRONIC- CARE OF MECHANICALLY VENTILATED ADULT PERSON</p> <p>RNSP: RN Clinical Protocol: Advanced RN Intervention</p> <p>LPN Additional Competency: Care of Chronically Mechanically Ventilated Adult with an Established Plan of Care</p> <p>I.D. Number: 1145</p>
<p>Authorization:</p> <p><input checked="" type="checkbox"/> SHR Nursing Practice Committee</p>	<p>Source: Nursing</p> <p>Date Effective: August , 2017</p> <p>Scope: Saskatoon City Hospital (6200) Royal University Hospital(ICU, CCU,6200,) St. Paul’s Hospital(ICU) Parkridge Centre</p>

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DEFINITIONS

Chronic: Residents or clients who are mechanically ventilated for a prolonged time. These persons are less complex, more predictable and at lower risk for negative outcomes. These persons will have a tracheostomy tube in most circumstances.

Established Plan of Care: The plan of care for chronically ventilated persons will be established once it has been determined the person is unable to be weaned from the ventilator. This plan of care must be documented in the nursing care plan. The plan of care is no longer considered established if there is any change in the person’s status, including a need for increased frequency of assessments or vital signs.

Person(s): For the purpose of this policy, the term will refer to patients in Acute Care and residents in Long Term Care.

ROLES

Registered Nurses (RNs): RNs identified by their manager in targeted practice settings will be certified in the RN Specialty Practice (RN Procedure): Ventilation – Care Of Chronically Mechanically Ventilated Adult Person. If a change is required to an established 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.

Registered Psychiatric Nurses (RPNs): RPN certification for this Specialty Practice is under review, by the SHR Nursing Practice Committee. As assigned, currently certified RPNs may continue to provide Care of Chronically Mechanically Ventilated Adult Person. RPNs requiring initial certification will not be certified until the review is completed.

Registered Respiratory Therapist (RRT): The initiation, monitoring and weaning of a mechanical ventilator are basic competencies for the Registered Respiratory Therapist (RRT) under the direction of the Most Responsible Physician (MRP) or designate.

Licensed Practical Nurses (LPNs): LPNs identified by the manager in targeted practice settings, will be certified in the LPN Addition Competency: Care of the Chronically Mechanically Ventilated Adult Person with an Established Plan of Care, and may provide care autonomously, as assigned, for persons who are less complex, more predictable and at lower risk for negative outcomes. If a change is required in the established plan of care, the LPN will consult with a certified RN, RRT 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 care, as assigned, but LPNs requiring initial certification will not be certified until targeting is approved for the practice setting.

1. PURPOSE

- 1.1 To provide evidenced based standards of nursing care for safe and efficient management of a mechanically ventilated person.
- 1.2 To meet the needs, comfort and goals set for the person with chronic ventilation requirements.

2. POLICY

- 2.1 The RNs certified in this RNSP and LPNs certified in this LPNAC will have first completed the following learning modules/activities prior to performing the nursing care of chronically mechanically ventilated person:
 - 2.1.1 Review the policy and procedure
 - 2.1.2 Complete the required learning module and quiz (teaching and learning methods may vary e.g. classroom and/or self- study using paper module or on line)
 - 2.1.3 Be deemed competent in the competencies and policies:
 - Suctioning Adult Clients with Artificial Airways
 - Tracheostomy Care-Adult-Pediatric-Neonate
 - 2.1.4 Complete a skills checklist with a certified RN, RPN or LPN during simulation or during care, to ensure safety checks are followed appropriately.
 - 2.1.5 Provide documentation of learning module quiz and skills checklist to educator/supervisor
- 2.2 The RN or LPN shall be knowledgeable of current and prescribed ventilator settings.

- 2.3 Ventilator and bedside alarms must be on at all times, never leave a person unattended with alarms off.
- 2.4 Alarm response: for all audible ventilator alarms, the nearest available RN or RRT will respond immediately to the person's bedside and assess for respiratory distress or a disconnection.
 - 2.4.1 In LTC LPN's who respond to alarms must notify RN who will notify RRT or call 911 if needed.
- 2.5 Suction equipment, oxygen, and Bag Valve Mask (BVM) are readily available at the bedside of all persons with artificial airways.

3. PROCEDURE:

- 3.1 The MRP or designate will write orders to initiate Mechanical Ventilation to change ventilator settings.
 - 3.1.1 Orders must include:
 - Mode, Tidal Volume, Frequency, FiO₂ as applicable.
 - Positive End Expiratory Pressure (PEEP) as applicable.
 - Pressure Support (PS) as applicable.
 - Any other ventilator parameters depending on the mode of ventilation.
- 3.2 The RRT per the MRP or designate will:
 - 3.2.1 Provide and set up the mechanical ventilator, accessories and tubing specific to person's needs.
 - 3.2.2 Set up in-line suction for ventilated persons.
 - 3.2.3 Initiate ventilation, set the alarms and provide adjunctive ventilator equipment.
 - 3.2.4 Set the ventilation parameters based on the person's ideal body weight and medical condition.
 - 3.2.5 Adjust ventilator settings in conjunction with the physician orders.
 - 3.2.6 Monitor ventilator and person after setting changes and after reinitiating ventilator i.e.: post transport.
 - 3.2.7 Monitor ventilator and person OD in acute care. In LTC, monitor OD on weekdays and as needed on weekends.
 - 3.2.8 Change Heat and Moisture Exchanger (HME) q24h and prn. In Long Term Care the HME will be changed on weekends and prn by RN or LPN.
- 3.3 The Registered Nurse will:
 - 3.3.1 In Acute Care; chronic person assessment and vital signs q shift or done more frequently if clinically warranted and always post transport. In Long Term Care: assess person OD and vital signs done q weekly -- vital signs include Temperature, HR, RR, BP, and SPO₂.
 - 3.3.2 Respiratory assessment to include chest auscultation, work of breathing and person's comfort with the ventilator.

- 3.3.3 Ventilator settings are also checked in acute care Q4H and in Long Term Care Q8h which include: mode, FiO₂, SP0₂, PEEP, pressure support, RR and tidal volume.
 - 3.3.4 Verify security of artificial airway – see policy:
 - Tracheostomy Care – Adult, Pediatric, Neonate.
 - 3.3.5 Physician orders and ventilator setting change requests are promptly communicated to the RRT.
 - 3.3.6 Ensure the securement device goes around the neck and is comfortable for the person.
 - 3.3.7 In Acute Care Only, consider whether the person needs physical restraints to prevent accidental removal of the tracheostomy tube.-See Policy of Least Restraint.
 - 3.3.8 For Acute Care follow Ventilator Associated Pneumonia (VAP) Prevention Protocol see Appendix A. Long Term Care should refer to the Nosocomial Infection Report Form if pneumonia is suspected - see Appendix B
 - 3.3.9 Suction as required both orally and via the artificial airway – see Policy Suctioning Adult Clients with Artificial Airways.
 - 3.3.10 Respond to all alarms and assess person, determine the cause and take appropriate action.
 - 3.3.10.1 If unable to determine the reason for an alarm sounding, remove person from the ventilator and manually ventilate the person with FiO₂ 1.0 (O₂ 100%) and page RRT.
 - 3.3.11 Identify a method of communication with the person so that the person will be able to alert the nurse when needed. Ensure that the method is communicated to the rest of the healthcare team.
 - 3.3.12 Reassure and remind person frequently about intubation and ventilation. Reassure family and provide education as needed.
- 3.4 The LPN will:
- 3.4.1 In Acute Care; chronic person assessment and vital signs q shift or done more frequently if clinically warranted and always post transport. In Long Term Care: assess person OD and vital signs done q weekly -- vital signs include temperatures, HR, RR, BP, and SPO₂.
 - 3.4.1.1 If assessments and vital signs are needed more frequently due to a change in the person's status, the LPN must provide care collaboratively with an RN or care must be transferred to the RN.
 - 3.4.1.2 Assessment includes chest auscultation (if not provided by RN, RT, or Physiotherapy), work of breathing, and person's comfort with the ventilator.
 - 3.4.2 In Long Term Care ventilator settings are checked Q8h which include: mode, FiO₂, SP0₂, PEEP, pressure support, RR and tidal volume.

- 3.4.3 In Acute Care follow Ventilator Associated Pneumonia (VAP) Prevention Protocol- see Appendix A.
- 3.4.4 Long Term Care refer to the Nosocomial Infection Report Form if pneumonia is suspected - see Appendix B
- 3.4.5 Verify security of artificial airway – see policy Tracheostomy Care – Adult, Pediatric.
- 3.4.6 Suction as required both orally and via the artificial airway – see Policy Suctioning Adult Clients with Artificial Airways.
- 3.4.7 Identify a method of communication with the person that they can alert the nurse when needed. Ensure the method that is determined is communicated to the rest of the healthcare team.
- 3.4.8 Reassure and remind person frequently about intubation and ventilation. Reassure family and provide education as needed.

4. Transport of a mechanically ventilated person:

4.1 In Acute Care

- 4.1.1 If a chronically ventilated person becomes acutely ill, they will need to be accompanied by two qualified healthcare staff when they are transported between departments. i.e. to medical imaging or the OR. Qualified staff includes RN with RNSP, physician, RRT, physiotherapist, paramedic.
- 4.1.2 Persons who are chronically ventilated may be transported with one qualified staff and a second support staff member as required for the circumstance.

4.2 In Long Term Care

- 4.2.1 An RN/LPN may accompany a stable ventilated person to an appointment.
- 4.2.2 An EMS Paramedic is required to transport unstable ventilated person to acute care.

4.3 Persons must be transported on a transport or portable ventilator or manually ventilated with a BVM

- 4.3.1 If using a transport ventilator ensure additional batteries are available.

4.4 Persons with a tracheostomy in place should have all supplies that would be required for replacement of tracheostomy tube in case of accidental dislodgement. This includes BVM with PEEP valve see policy Tracheostomy Care.

- 4.4.1 Oxygen source with reserve of 30 minutes longer than is required. It is preferred to conserve transport oxygen and use an alternate oxygen source if one can be obtained from a non-transport source while person is having test / procedure.

4.5 All Acute Care Adult mechanically ventilated persons are required to have SpO2 monitoring on transport.

4.6 Persons being transferred from Acute Care to Long Term Care must have:

- Form # 103125 Transfer To Long Term Care Home Checklist.

5. DOCUMENTATION

5.1 Document:

- Type, size of tracheostomy tube.
- The ventilator settings at the onset of the shift and with any change in orders or person's condition.
- Amount, consistency and color of tracheal secretions after each suction session on the flow sheet.
- Unexpected outcomes and nursing interventions.
- Refer to Region Wide Policy Title: Transfer of Information for Ongoing Care for correct transfer of information and forms required.

6. REFERENCES

Capital Health. Mechanical ventilation – initiation, monitoring, and weaning. Interdisciplinary Clinical Manual: Policy and Procedure. 2014.

http://policy.nshealth.ca/Site_Published/DHA9/document_render.aspx?documentRender.IdType=6&documentRender.GenericField=&documentRender.Id=48982

<https://www.criticalcareontario.ca/EN/Toolbox/Toolkits/Long-Term%20Mechanical%20Ventilation%20Toolkit%20for%20Adult%20Acute%20Care%20Providers.pdf>

University of Kentucky/UK HealthCare Policy and Procedure. Management of Persons with Endotracheal Tubes, With or Without Mechanical Ventilatory Assistance.

<http://www.hosp.uky.edu/policies/viewpolicy.asp?PolicyID=1567>

University of Toledo Medical Center Ventilator management. Policy and Procedure. 2014.

https://www.utoledo.edu/policies/utmc/respiratory_care/pdfs/3364-136-07-01.pdf

Appendix A

ICU - Ventilator Associated Pneumonia (VAP) Surveillance Form

*(Review criteria with mechanically ventilated persons during daily rounds but do not complete forms unless VAP criteria met) – use only one form/mechanically ventilated person/ICU admission

Determination of VAP based on the following criteria (all “Yes” level criteria must be satisfied)

Yes	Criteria
<input type="checkbox"/> (1 or more criteria met)	<input type="checkbox"/> New or progressive and persistent infiltrate <u>or</u> <input type="checkbox"/> Consolidation, <u>or</u> <input type="checkbox"/> Cavitation on CXR compatible with pneumonia
<input type="checkbox"/> (1 or more criteria met)	<input type="checkbox"/> WBC \geq 12,000 or $<$ 4,000 <u>or</u> <input type="checkbox"/> Temperature greater than 38 degrees Celsius with no other cause <u>or</u> <input type="checkbox"/> Altered mental status with no other cause, in person $>$ 70 years old.
<input type="checkbox"/> (2 or more criteria met)	<input type="checkbox"/> New onset of purulent sputum, <u>or</u> change in character of sputum, <u>or</u> increase respiratory secretions or increase in suctioning requirements <input type="checkbox"/> New onset or worsening cough, or dyspnea, or tachypnea <input type="checkbox"/> Rales (crackles) or bronchial breath sounds on auscultation <input type="checkbox"/> Worsening gas exchange (e.g., O2 desaturations, PaO2/FiO2 $<$ 240, an increase in O2 requirements or an increase in ventilation demand)
<input type="checkbox"/>	Mechanical ventilation in place for at least 48 hours prior to meeting above criteria
<input type="checkbox"/>	Infection evident for at least 48 hours after meeting above criteria

VAP criteria met – Date _____ Time _____ Physician _____

Possible contributing factors for VAP- (complete at time of VAP diagnosis)

Complete VAP Bundle Difficult to Achieve Yes No

if Yes – which component unmet (provide rationale):

<input type="checkbox"/> Head of bed 30-45° for \geq 21.6hrs / 24 hr period	<input type="checkbox"/> Daily sedation vacation <u>with</u> spontaneous breathing trial
<input type="checkbox"/> EVAC or Tracheotomy tube insitu	<input type="checkbox"/> Oral vs Nasal access for trachea and stomach tubes

Additional Considerations:

Chlorhexidine oral care (q1-4hrs) <input type="checkbox"/> Yes <input type="checkbox"/> No	On DVT prophylaxis <input type="checkbox"/> Yes <input type="checkbox"/> No	Receiving nutrition <input type="checkbox"/> Yes <input type="checkbox"/> No
Initiation of anti-microbial treatment prior to VAP diagnosis <input type="checkbox"/> Yes <input type="checkbox"/> No	Early Tracheotomy (48hrs) <input type="checkbox"/> Yes <input type="checkbox"/> No	

• Person admitted to ICU with neurological impairment Yes No

• High risk for aspiration at time of intubation Yes No

• Person diagnosed with more than one infection during ICU stay Yes No

↪ If Yes – was there evidence of another infection within 24 hours prior to VAP diagnosis? Yes No

Appendix B

<p>SASKATOON HEALTH REGION Saskatoon, Saskatchewan</p> <p><input type="checkbox"/> RUH <input type="checkbox"/> SCH <input type="checkbox"/> SPH Other _____</p> <p>CONTINUING CARE - INFECTION CONTROL NOSOCOMIAL INFECTION REPORT Page 1 of 4</p>	
COMPLETE ONE FORM FOR EACH INFECTION	
Date _____ Facility _____ Unit _____ Date of Birth _____ (dd/mm/yyyy)	
INFECTION CATEGORY (check category box only after criteria have been met)	
INFECTION SITE (must meet criteria indicated)	CRITERIA (check all that apply)
<input type="checkbox"/> Sepsis Resident is not suspected of having an infection. Any 2 other criteria that can not be explained by a known or unknown medical condition:	<input type="checkbox"/> Temp greater than 38.0 OR less than 36.0 oral <input type="checkbox"/> HR greater than 90/minute <input type="checkbox"/> RR greater than 20/minute PLUS at least one of the following: <input type="checkbox"/> Hypotension: SBP less than 90mmHg and/or MAP less than 70mmHg <input type="checkbox"/> Hypoxemia: PaO2 less than 70mmHg OR SpO2 less than 90% <input type="checkbox"/> Oliguria: decreased urine output <input type="checkbox"/> Mottled skin, capillary refill greater than 3 seconds <input type="checkbox"/> Altered mental status <input type="checkbox"/> Immunocompromised
<input type="checkbox"/> RESPIRATORY TRACT	
<input type="checkbox"/> Common cold/pharyngitis	At least two of the following: <input type="checkbox"/> runny nose/sneezing <input type="checkbox"/> nasal congestion <input type="checkbox"/> dry cough <input type="checkbox"/> swollen/tender neck glands <input type="checkbox"/> sore throat/hoarseness/difficulty swallowing
<input type="checkbox"/> Pneumonia	The following MUST be present: <input type="checkbox"/> Interpretation of a chest radiograph as demonstrating pneumonia, probable pneumonia, or the presence of a new infiltrate and 2 other criteria At least one of the following: <input type="checkbox"/> new or increased cough <input type="checkbox"/> pleuritic chest pain <input type="checkbox"/> new or increased sputum <input type="checkbox"/> RR >/- 25/min <input type="checkbox"/> New or changed lung exam abnormalities <input type="checkbox"/> Oxygen saturation < 94% on room air or a reduction of 3% from baseline And at least one of the following: <input type="checkbox"/> Fever (single >37.8°C oral, repeated >37.2°C, >1.1 over baseline from any site) <input type="checkbox"/> Leukocytosis (> 14,000 leucocytes/mm ³ or Left shift [>6% bands of >/- 1500 bands/mm ³]) <input type="checkbox"/> Change in mental status (Must meet all of the following: acute onset, fluctuating course, inattention and either disorganized thinking or altered level of consciousness) <input type="checkbox"/> Acute functional decline (bed mobility, transfer, locomotion within LTC, dressing, toilet use, personal hygiene, eating)
RR = Respiratory Rate	
Word Form # 102739 06/13 Category: Assessments/Histories	

**CONTINUING CARE - INFECTION CONTROL
NOSOCOMIAL INFECTION REPORT**

Page 2 of 4

Patient Name: _____

HSN: _____ DOB _____

INFECTION SITE
(must meet criteria indicated)

CRITERIA
(check all that apply)

Other Lower Respiratory Tract Infection

Chest radiograph not performed or negative for pneumonia or new infiltrate

At least two criteria of the following:

- new or increased cough pleuritic chest pain
- new or increased sputum RR \geq 25/min
- new or changed lung exam abnormalities
- Oxygen saturation $<$ 94% on room air or a reduction of 3% from baseline

And at least one of the following:

- Fever (single $>$ 37.8°C oral, repeated $>$ 37.2°C, $>$ 1.1 over baseline from any site)
- Leukocytosis ($>$ 14,000 leucocytes/mm³ or Left shift [$>$ 6% bands of \geq 1500 bands/mm³])
- Change in mental status (**Must meet all of the following:** acute onset, fluctuating course, in attention and either disorganized thinking or altered level of consciousness)
- Acute functional decline (bed mobility, transfer, locomotion within LTC, dressing, toilet use, personal hygiene, eating)

Reminder: If TB-Mantoux is 10mm or more and resident has a productive cough for 3-4 weeks, obtain a sputum specimen and contact TB Control.

NOTE: If Influenza criteria (sudden onset, cough [new or increased], sore throat, myalgia or body aches, new headache or eye pain, malaise or loss of appetite) is met for 2 or more residents in a 24 hour period contact Infection Prevention & Control or Public Health Services.

GASTROINTESTINAL TRACT

Gastroenteritis

At least one criterion MUST be present:

- 2 or more loose or watery stools above what is normal for that resident in 24 hours
- 2 or more episodes of vomiting in 24 hours
- positive stool culture and one of: nausea, vomiting, abdominal pain/tenderness, diarrhea

NOTE: If gastroenteritis criteria is met for 2 or more residents (in a 24 hour period) contact Infection Prevention & Control or Public Health Services.

***Clostridium difficile* Infection**

One of the following MUST be present:

- Diarrhea, three or more liquid or watery stools above what is normal for the resident within a 24 hour period
- presence of toxic megacolon (abnormal dilatation of the large bowel documented radiologically)

One of the following MUST be present:

- stool sample yields a positive laboratory test for *C. difficile* toxin A or B
- Pseudomembranous colitis is identified during endoscope examination, surgery, or biopsy

NOTE: If *Clostridium difficile* infection criteria is met for 1 resident contact Infection Prevention & Control.

**CONTINUING CARE - INFECTION CONTROL
NOSOCOMIAL INFECTION REPORT**

Page 3 of 4

Patient Name: _____

HSN: _____ DOB _____

INFECTION SITE
(must meet criteria indicated)

CRITERIA
(check all that apply)

URINARY TRACT

UTI without catheter

At least one of the following:

- Acute dysuria or acute pain, swelling, or tenderness of testes, epididymis, or prostate
- Fever (single $>37.8^{\circ}\text{C}$ oral, repeated $>37.2^{\circ}\text{C}$, >1.1 over baseline from any site) or leukocytosis ($> 14,000$ leucocytes/ mm^3 or Left shift [$>6\%$ bands of ≥ 1500 bands/ mm^3])

And at least one of the following:

- new flank or suprapubic pain or tenderness
- gross hematuria
- new or increased incontinence
- new or increased urgency
- new or increased frequency

Note: If no fever or leukocytosis are present at least two urinary sub-criteria must be present.

And at least one of the following:

- $\geq 10^5$ cfu/ml of no more than 2 species of microorganisms in a voided urine
- $\geq 10^2$ cfu/ml of any number organisms in a specimen collected by in and out catheter

UTI with catheter

At least one of the following:

- fever $< 38^{\circ}\text{C}$, rigors or new onset hypotension, with no alternate site of infection
- either acute change in mental status or acute functional decline with no alternate diagnosis and Leukocytosis
- new flank or suprapubic pain or tenderness
- purulent discharge from around the catheter or acute pain, swelling, or tenderness of the testes, epididymis, or prostate

The following MUST be present:

- Urinary catheter culture with $\geq 10^5$ cfu/ml of any organism(s)

NOTE: Urinary catheter specimens for cultures should be collected following replacement of the catheter (if current catheter has been in place for 14 days).

**CONTINUING CARE - INFECTION CONTROL
NOSOCOMIAL INFECTION REPORT**

Page 4 of 4

Patient Name: _____

HSN: _____ DOB _____

INFECTION SITE
(must meet criteria indicated)

CRITERIA
(check all that apply)

SKIN

Cellulitis/soft tissue/wound

The following MUST be present:

pus present at a wound, skin, or soft tissue site

And at least four of the following:

- heat at site swelling at site
- redness at site serous drainage at site
- tenderness or pain at site

And at least one of the following:

- Fever (single >37.8⁰C oral, repeated >37.2⁰C, >1.1 over baseline from any site)
- Leukocytosis (> 14,000 leucocytes/mm³ or Left shift [>8% bands of >= 1500 bands/mm³])
- Change in mental status (**Must meet all of the following:** acute onset, fluctuating course, inattention and either disorganized thinking or altered level of consciousness)
- Acute functional decline (bed mobility, transfer, locomotion within LTC, dressing, toilet use, personal hygiene, eating)

Scabies

The following MUST be present:

maculopapular and/or itching rash

One of the following MUST be present:

- Physician diagnosis
- Lab confirmation (scraping or biopsy)
- Epidemiologic linkage to a case of scabies with laboratory confirmation

NEW DIAGNOSIS OF ANTIBIOTIC RESISTANT ORGANISM

MRSA ESBL VRE

Date of onset: _____ Culture <input type="checkbox"/> Yes <input type="checkbox"/> No Culture result: _____ <div style="text-align: right; padding-right: 50px;">(organism grown)</div>
Sent <input type="checkbox"/>

Date: _____ Signature: _____