



St. Vincent Seton Specialty Hospital

Policies and Procedures Online Respiratory Therapy Indianapolis

Passy Muir Valve

► Review Information:

Facility: Indianapolis

Policy/Procedure Text POLICY STATEMENT

In keeping with the Mission, Vision and Core Values of the hospital, this procedure may be performed by a qualified caregiver who has been trained in the procedure, to assure quality service to our patients. If there are questions about the procedure or problems encountered in the performance of this procedure, the Respiratory Care associate will act as a resource for clarification, support, education or assistance.

PROCEDURE STATEMENT

Information:

The Passy Muir Valve (PMV) is a bias-closed, one-way valve, which allows the trach patient to inspire via the trach tube and exhale through the upper airway and vocal cords. It requires minimal effort to open (less than 2cm) and closes itself when inspiratory flow stops ("Bias closed," "Positive closure"). The PMV was initially designed to provide speech for long term trach and ventilator patients, but its use has been expanded to include the ventilator weaning process and rehab. The PMV also improves secretion management and swallowing (reducing aspiration risk) and restores the patient's sense of smell and taste. The PMV is not a voice prosthesis however, and cannot be used for laryngectomy patients. The PMV is to be initiated as early as 72 hours post-tracheotomy, and can be used whether or not the patient requires mechanical ventilation. These assessments are done by RCP's, and Speech Therapy who will do only non vented patients.

Indications for Use:

- *Sleep apnea
- *Bilateral vocal cord paralysis
- *Ventilator dependent patients
- *Tracheomalacia
- *Mild Stenosis
- *Patients who emotionally or physically cannot tolerate trach plugging

- *COPD
- *Traumatic brain injury
- *Quadriplegia
- *Amyotrophic Lateral Sclerosis
- *Bronchopulmonary Dysplasia
- *Laryngeal tumors
- *Neuromuscular disease

Contraindications:

1. Unconscious or comatose patients.
2. Severe medical instability.
3. Severe risk for gross aspiration.
4. Inability to tolerate cuff deflation.
5. Foam-filled cuff (Bivona Trach).
6. Severe stenosis/airway obstruction.
7. Thick and copious secretions.
8. Tracheal edema--immediately post op or after a trach tube change--creates an obstruction. Wait until the swelling subsides before using.

Assessment Criteria for Use of the Passy Muir Valve:

1. Cognitive status: Awake, alert, attempting to communicate.
2. Medically stable: PMV will be initiated within 72 hours post-op of trach placement, or admission, provided swelling and secretions are under control.
3. Ability to tolerate cuff deflation: Allows air to pass around the trach tube. Many patients can be successfully ventilated with a deflated cuff, using higher volumes, and are able to use the valve.
4. Secretion management: The trach tube itself can cause an increase in secretions which the patient needs to be able to expectorate or swallow, along with oral secretions.
5. Airway patency: The patient must be able to exhale efficiently around the tracheostomy tube, through the pharynx and larynx and out the mouth and nose. Obstructions caused by stenosis and granulation tissue are not uncommon following a lengthy intubation. The trach tube itself and cuff may cause obstruction requiring switching to a smaller or uncuffed tube.

6. **Bedside assessment of cuff deflation:** Suction trach and oropharynx, deflate cuff; and have patient inhale. Manually occlude the trach as patient exhales and says "ahhh" or blows tissue, etc. The patient may not be able to vocalize initially; this does not preclude use of the PMV.

7. **Lung compliance:** Severe COPD causes a loss of lung elasticity and recoil, prolonged exhalation and air trapping.

Trach tube size must allow for adequate expiratory flow.

Procedure for Initiating PMV:

The PMV assessment is initiated within 72 hours of admission or post trach. The Respiratory Therapist and/or Speech Therapist will complete a PMV assessment sheet, and place in the front of the RT gray book.

Guidelines for completion of PMV Assessment Sheet

A. Section 1. General Patient Information will be completed before proceeding to the actual procedure and will include:

- a. **Primary Dx:** The admitting diagnosis
- b. **Airway Hx:** Any pertinent information relating to possible airway damage.
- c. **Date of Tracheotomy/Type/Size:** Original date of surgery with type and size of trach placed. Include any changes in trach with date of most recent change out.
- d. **Mental Status:** How awake and alert is the patient.
- e. **Nutritional Status:** To include most current prealbumin. May include type and source of feeding.
- f. **Swallowing status:** Dates of bedside and/or 3 Phase testing and outcome.

B. Section 2. Bedside Assessment will be completed prior to PMV placement and will include:

- a. **Vital signs:** To include Pre and Post HR, RR, SpO₂, and may also include B/P.
- b. **Secretions:** Amount, Consistency, and Color
- c. **Vent Settings:** To include the mode, Vt, resp rate, pressure support, Peep, and FiO₂
- d. **Weaning:** To include the patient's current weaning schedule with the date order written and how patient is tolerating.
- e. **Air flow/Cuff Leak:** For vented patients, you must note the amount of air removed from the cuff and if air is able to leak around the tube. For non-vented patient occlude trach with cuff **deflated** and assess for stridor and/or forced exhalation.

C. Section 3. PMV Placement Data will be completed after procedure and includes:

- a. Date and time of procedure: Tolerated or Not Tolerated
- b. Use of accessory muscles: Yes or No
- c. Pt able to clear secretions: Yes or No
- d. Cough: Strong or Weak
- e. Vocal Intensity: Strong or Weak
- f. Voice Quality: Whisper/Clear/Raspy
- g. Back Pressure (Swoosh of air out of trach when PMV removed) Yes or No
- h. Anxiety: Yes or No

Use the Comment section to summarize the procedure: How procedure was tolerated, indicate follow-up needed and recommendations on usage. Then sign in space provided. If a reassessment is needed this will be documented with the date, signature and initials of therapist doing the follow-up, and the outcome with new recommendations in the Reassessment Follow-up section of the PMV sheet.

Completion of procedure when done by Respiratory Therapy will include checking the box for a pulmonary service charge on the vent sheet and charging this in the A2K charging system

The patient must have a completed assessment before other trained associates can place PMV.

Steps of Procedure:

1. Obtain baseline vital signs, SpO₂, RR and pattern, I:E ratio, breath sounds and work of breathing. Reassess throughout trial.
2. Explain procedure to patient, family.
3. Position patient comfortably. Make sure vent circuit is not tugging on trach tube.
4. Suction trach tube and oral cavity.
5. Slowly deflate trach tube cuff. Cuff must be completely deflated to maximize space for exhalation.
NOTE: PMV cannot be used with foam cuff trach tubes (Bivona, etc.).
6. Repeat suction if necessary.
7. Place PMV in line with vent circuit or oxygen set up. Use a ¼ twist for a friction tight fit to trach tube.
8. (VENT PATIENTS): Adjust alarms and vent settings:
 - a. Turn low volume alarms to minimal setting. Due to deflated cuff, exhaled air does not return through the vent circuit to be measured.
 - b. Adjust set VT to compensate for volume lost. Increase until PIP matches pre-PMV PIP (Not necessary with PC or PS ventilation).
 - c. Adjust PEEP levels; PEEP > 5 cm may need to be decreased to prevent air trapping.

PMV adds 2-3 cm additional PEEP.

d. To be performed by Respiratory Therapist only.

9. Continue to monitor patient parameters (#1) for undesirable changes.

Tracheal obstruction, loss of compliance due to end stage COPD, non-deflated cuff or too big of a trach tube can lead to prolonged exhalation and air-trapping.

10. Assess patient's ability to cough and clear secretions. If patient cannot clear secretions (thick, poor cough, too many), they can cause an obstruction (see #9).

11. Once PMV is in place and patient's breathing is relaxed, establish speech and assess quality, etc. Patient may require breathing/voice retraining; swallowing assessment. (Physician should request Speech to consult when PMV is ordered).

12. For ventilated patients, when finished, remove PMV and reinflate cuff. Reset vent settings and alarms.

13. Some patients may only tolerate short periods of time initially, and tolerance may vary from one day to the next.

Increase as tolerated until weaned, decannulated, or able to tolerate during waking hours.

Appropriately trained

nursing and other ancillary personnel, may utilize PMV on ATC patients only.

Note: Pt's should never wear the PMV through the night.

Troubleshooting Intolerance:

If the patient complains he/she can't breathe, chest is tight, is unable to cough, no voice, and/or no breath sounds are heard, look for evidence of an airway obstruction or air trapping. The PMV opens with minimal effort (< 2cm) and does not cause resistance. However, since the patient senses airflow through the nose and mouth, they may subjectively interpret this as difficulty with breathing.

Steps of Procedure:

1. Check for secretions, swelling. Hold PMV use until corrected.

2. Evaluate for stenosis or granulation. May require bronchoscopy or an ENT consult to rule out.

3. Recheck cuff deflation. May need smaller size or uncuffed trach tube if still obstructing.

4. If end stage COPD, may be physiological. Patient cannot use PMV at this time.

5. If no evidence of obstruction etc., provide reassurance, re-education, and limit use until patient is more comfortable.

PMV Re-assessment: If a patient is unable to use the PMV, a re-assessment should be done after the following:

1. The trach tube is downsized
2. An ENT consult regarding possible airway issues.

Care should be taken to either consult with an ENT, or read the physicians progress notes, for possible recommendations.

After the PMV re-assessment is done, document the findings in the "Re-assessment Follow Up" section of the PMV assessment form.

*** A PSP should be marked on the vent record sheet, and charged in the A2K.**

Transitioning Issues:

At times a patient will not tolerate the PMV although there is no physical reason such as obstruction. Other issues to look at include:

- *Patient motivation.
- *Anxiety and fear; depression.
- *Staff motivation.

Care and Cleaning:

1. PMV should be cleaned as needed.
2. Wash in pure soap (such as Ivory) and tepid water.
3. Rinse thoroughly with cool to tepid water.
4. Set aside to air dry.
5. Single patient use ONLY. With proper use and care, will last 2 months.
6. CAUTION: **DO NOT** USE Hot Water, peroxide, bleach, vinegar or alcohol, as they will damage the silastic membrane. Also, **do not** autoclave, use ETO or radiation sterilization. **DO NOT WIPE OR BRUSH VALVE.** Thoroughly rinse all residue to prevent sticking.

Appropriate Outcomes:

1. Patient able to tolerate the Passy Muir Valve without breathing compromise.
2. Patient able to verbalize thoughts and participate in social situations and care giving decisions.

References:

Application of the Passy-Muir Speaking Valves with Tracheostomized and Ventilator Dependent Patients. August 1995 Passy-Muir Inc.