

Barlow Respiratory Hospital	PASSY-MUIR VALVE ASSESSMENT & USE WITH & WITHOUT MECHANICAL VENTILATOR	ISSUE DATE: 11/13	No.: NEW
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JC STANDARD/CDPH REGULATION: IC, NPSG, PC, RI, PI		REVIEW DATE(S): 11/13, 05/14	
		BARLOW CROSS REFERENCES: Mechanical Ventilation; TIPS Protocol; Tracheostomy Care; Suctioning, Pulse Oximetry; PMV Used with Mechanical Ventilator (Archived); One Way Speaking Valve-PMV (Archived)	

PURPOSE

The Passy-Muir Valve (PMV) is a medical device used by patients with a tracheostomy and a mechanical ventilator. When placed on the hub of the tracheostomy tube or in-line with the ventilator circuit, the PMV redirects air flow through the vocal folds, mouth and nose enabling voice and improved communication. The PMV improves the quality of life of patients by allowing them to verbally communicate their wants/needs.

SATELLITE UNITS

Same policy applies.

STANDARD OF PRACTICE

A physician order is required for assessment and placement of the PMV. These services are provided jointly by the Respiratory Care Practitioner (RCP), Speech-Language Pathologist (SLP) and Registered Nurse (RN). The SLP and RCP will provide safe assessment, application and instruction in the use of the device.

An order to initiate the TIPS weaning protocol prompts a PMV evaluation by the SLP. *See TIPS Protocol.*

PATIENT POPULATION

- I. All adult and geriatric inpatients who are tracheostomized and/or on mechanical ventilation
- II. Patients who are alert, responsive and able to make basic attempts at communication
- III. Patients who are able to tolerate cuff deflation without risk of gross aspiration of secretions (per assessment by SLP)
- IV. Generally medically stable

Patient Exclusion Criteria

1. Poor responsiveness
2. Unstable respiratory/cardiac status
3. History of tracheal stenosis, obstructing lesions or anatomical abnormalities, which may impact upon airway patency. May need to consult otolaryngology for these individuals.
4. Inability to tolerate cuff deflation. Full cuff deflation is mandatory.
5. DO NOT USE PMV WITH BIVONA FOAM FILLED CUFF (red pilot balloon)
6. Caution to be used in patients with end stage COPD.

LEVEL OF PRACTITIONER

Physician (MD)

Respiratory Care Practitioner (RCP)

Speech-Language Pathologist (SLP)

Registered Nurse (RN)

EQUIPMENT

- Personal Protective Equipment
- Passy-Muir Valve
- Oximeter
- Ambu Bag and oxygen delivery device (e.g. Venturi mask, nasal cannula)
- Syringe, 10 or 20 cc
- 15mm x 22mm Adapter
- Suction equipment

PROCEDURE

A. PMV ASSESSMENT / PMV USE WITHOUT MECHANICAL VENTILATOR

STEPS	RATIONALE	SPECIAL CONSIDERATIONS
<p>I. SLP to verify MD/TIPS order for PMV assessment. RCP/SLP to verify MD for PMV placement. SLP and RCP coordinate schedules for PMV assessment /trial.</p>	<p>Compliance with hospital policy and regulations.</p>	
<p>II. Verify patient using two identifiers.</p>	<p>Identification of patient per Hospital policy. Ensure proper treatment correct patient</p>	
<p>III. Assess patient for indications or contraindications in the use of the PMV via review of EMR and communication with RT/MD/RN as appropriate.</p>		<p>Do not use when patient has increased or severe pulmonary secretions. The PMV is not to be used with severe tracheal and laryngeal stenosis and is not a device for laryngectomized patients.</p>
<p>IV. Perform hand hygiene, don PPE, identify yourself and explain procedure to the patient, family.</p>	<p>Infection control Patient Safety Patient Rights</p>	
<p>V. Position patient for optimal breathing mechanics</p>		
<p>VI. Obtain patient's vital signs and place patient on pulse oximeter.</p>		<p>Baseline oximetry must be 93% or greater to initiate. RCP to adjust vent settings for in-line trials. See Section B below.</p>
<p>VII. Slowly deflate the cuff. Additional oral and tracheal suctioning may be required once cuff is fully deflated. For patients with increased secretions, consider suctioning <u>while</u> deflating the cuff.</p> <p>VIII. Place PMV on tracheostomy tube with a ¼ turn twist. If forced on too hard, it may occlude the valve.</p> <p>If patient is on mechanical ventilator, see Section B, Step XII.</p>		<p>It is recommended before cuff deflation, pre-oxygenation by increasing FiO2 5-10%.</p> <p>Complete cuff deflation is required prior to PMV placement. An inflated cuff will block the space in the airway around the tracheostomy tube decreasing the patient's ability to exhale.</p> <p>If a patient is requiring FiO2 50% and still desaturates below 90%, increase upper airway oxygenation with a nasal cannula.</p> <p>Patient with PMV in place must routinely be assessed for suction needs.</p> <p>Large volume/thick secretions may limit successful use of valve.</p>

<p>IX. SLP/RCP monitors patient for duration of trial with continuous pulse oximetry.</p> <p>Initial use of valve may be associated with some increased work of breathing, this is normal, and an attempt to work through this phase is recommended.</p> <p>Patient is evaluated by direct observation for the following:</p> <ul style="list-style-type: none"> • Respirations, HR, and O2 saturation. • Respiratory distress/adequate airflow/obstructed airway. • Vocal quality. • Overall comfort. May need to coach and re-educate patients to breathe through their upper airway. • Signs/symptoms of Hypercarbia. 	<p>Patient safety</p>	<p>Session may end if any of the following is observed and the patient demonstrates signs of distress:</p> <ul style="list-style-type: none"> -HR change by 20bpm -RR greater than 35 -SpO2 less than 89% -FiO2 greater than or equal to 60% - Pt reports difficulty breathing - Violent, persistent coughing
<p>X. SLP encourages the patient to blow/exhale through the oral cavity using diaphragmatic breathing technique. SLP begins voice evaluation, therapy and speech phrase techniques, if applicable.</p> <p>Voice therapy includes:</p> <ul style="list-style-type: none"> • Diaphragmatic breathing • Speech coordination • Breath support • Phonation, intensity, quality, resonance rate, articulation and prosody. 		<p>Initial PMV Sessions are short trials of 10-20 minutes and time is increased as tolerated.</p>
<p>XI. Once PMV is removed, cuff, if applicable, is inflated by RCP/SLP.</p>		

B. PMV ASSESSMENT / PMV USE WITH MECHANICAL VENTILATOR

<p><u>STEPS I-XI APPLY</u></p> <p>XII. Performed by RCP with Puritan Bennett 840 ventilator:</p> <p>A. Change to NIV mode. Once the ventilator is placed in NIV mode, the “D”-sense automatically shuts off.</p> <p>B. Zero out the Positive End Expiratory Pressure (PEEP)</p>		<p><u>SPECIAL CONSIDERATIONS</u></p> <p>There should be a 40-50% loss of Tidal Volume (Vt) and significant drop in the PIP after cuff deflation. This indicates a patent airway. If not, consider the size of the tracheostomy tube, downsizing may be necessary.</p> <p>It is not recommended to add more than 400 cc of Vt.</p>
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- C. Note the Peak Inspiratory Pressure (PIP) with the tracheal cuff up (pre-cuff PIP).
- D. Slowly deflate the cuff. Additional oral and tracheal suctioning may be required once cuff is fully deflated. For patients with increased secretions, consider suctioning while deflating the cuff.
- E. Note PIP with cuff deflated (post-cuff deflation PIP).
- F. Compare pre-cuff deflation PIP and post-cuff deflation PIP.
- G. RCP or SLP will place speaking valve with 15 mm x 22 mm adapter between suction T and flex connector.
- H. Adjust Spontaneous Inspiratory Time (Ti) to avoid prolonged inhalation time (not available with A/C).
- I. Adjust sensitivity setting to avoid autocycling.
- J. Increase Vt incrementally to equal pre PIP. If patient is on CPAP or SIMV, pressure support may need to be adjusted to maintain adequate spontaneous tidal volume or pt comfort.
- K. Set Low Pressure alarm to 5-10cm H2O below the peak airway pressure (at least 10cmH2O)
- L. Set Apnea Ventilation setting equal to above parameters.
- M. After PMV trial, RCP or SLP to remove speaking valve and the RCP to return ventilator settings to pre-trial settings.

C. PROCEDURE FOLLOWING SUCCESSFUL PMV USE

1. If the patient tolerates the initial trial, a wear schedule will be developed. The RCP will be informed of the patient's status so that valve use may be incorporated into daily respiratory care.
2. Documentation of PMV trial and evaluation should be documented in the Electronic Medical Record (EMR) with recommendations for PMV use, or if patient does not tolerate initial trial for next attempt.
3. The MD will be notified of results of the evaluation and recommendations for use.
4. SLP will educate patient/family how to place, remove and clean PMV if appropriate.

- 5. **To Clean:** Swish PMV in pure, fragrance free soap and warm water. Rinse PMV thoroughly in warm running water and allow to air dry. Do not apply heat to dry PMV.

ADDITIONAL CONSIDERATIONS:

- One way speaking valve/PMV may be trialed 48-72 hours after insertion of a tracheostomy tube providing tracheal secretions are minimal and a speech evaluation has been completed.
- **Pt may use PMV when sleeping/napping with an MD order.**
- Humidification and oxygen can be supplied through a mask or trach collar with speaking valve.
- Take valve off before aerosolization of medication.
- Other causes of increased work of breathing associated with valve use may include tracheal stenosis or malacia, or vocal cord dysfunction, or trach tube being too big. Additional possibility; temporary edema after trach change. **If any difficulty in breathing develops, valve should be removed.**
- **Downsizing of the tracheostomy tube may be necessary if a patient cannot tolerate the speaking valve during spontaneous breathing trials.**
- Do not use HME with the valve.
- “Honking” through the valve indicates that the valve needs to be replaced if >2months old; if <2 months old, clean in water, rinse and thoroughly air dry.

DOCUMENTATION:

The Respiratory Care Practitioner should monitor the patient and be aware that the valve can increase the work of breathing. Thus, document the valve being in use, the patient’s ability to talk, that the cuff is fully deflated, and a statement that the work of breathing is appropriate. RCP and SLP will document the following on appropriate forms in the EMR:

- Baseline Vital Signs
- Vital Signs during procedure
- Cuff pressure after procedure
- O₂ saturation
- Tolerance of procedure
- Patient/Family education and training
- PMV use parameter, level of supervision, hand off communication to appropriate health care providers

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