



## Instructions/Procedure for Use of the Speaking Valve

### Notes on the use of the speaking valve for ventilator-dependent and non-ventilator dependent patients

The speaking valve is a one-way valve that allows air entry via the tracheotomy tube on inspiration. The Passy-Muir valve opens with minimum effort and closes once inspiration is complete. Airflow is redirected around the tracheostomy tube and through the larynx, pharynx, mouth and nose. In the case of a fenestrated tracheostomy tube, air is also exhaled through the fenestrations to the upper airway. This allows the patient to voice, speak, cough and clear their throat. The speaking valve functions in the same way for ventilator-dependent and non-ventilator dependent patients.

The Passy-Muir Valve 007 can be used in the case of invasive ventilation: PMV® 007 (Aqua Color™)

The Passy-Muir Valve 2001 is used for non-ventilator dependent patients: PMV® 2001 (Purple Color™)

#### Purpose:

Speaking valves will be provided to tracheotomised patients for the purpose of the restoration of upper airway usage, oral communication and/or weaning from the tracheotomy.

#### Patient selection criteria / indications:

Candidates for speaking valves should meet the following criteria:

- Patency of the upper airways, sufficient space for exhalation next to the tracheotomy tube (digital manometry)
- Generally stable medical status and vital signs
- Alert, responsive patient. In somnolent patients, the speaking valve can be used to improve alertness. Important: close monitoring and permanent presence are necessary.

#### Patient exclusion criteria / contraindications:

- Unstable respiratory/cardiac status, high therapeutic PEEP
- History of tracheal stenosis, obstructing lesions or anatomical abnormalities, which may impact upon upper airway patency. These patients should consult otolaryngology.

#### Criteria for stopping use of the speaking valve:

- Significant drop in O<sub>2</sub> saturation
- Peaks in blood pressure (thresholds are defined on an individual basis)
- Bradycardia
- Risk of vomiting

#### Special considerations:

- The cuff must be completely deflated before using the speaking valve.
- The patient must be able to exhale via the upper airway. It may be necessary to replace the tracheotomy tube:
  - a) to a tube with a smaller external diameter or
  - b) to a tube with a cuff that tightens more effectively,
  - c) to a tube without an inner cannula (smaller external diameter but the same internal diameter)
  - d) to a fenestrated cannula (endoscopic checks for fenestration!)-> If the patient cannot exhale despite the smaller tube, they may need to consult otolaryngology.

If it gradually becomes more difficult for the patient to exhale after placement of the speaking valve, it should be removed and the patient should be re-assessed for upper airway obstruction, breath stacking or need for retraining and/or relaxation.

For assessing upper airway patency in non-ventilated patients we use pressure manometry with a digital manometer as recommended in the article of Johnson, 2009:

*Tracheostomy tube manometry: evaluation of speaking valves, capping and need for downsizing*  
Douglas Clark Johnson, Stacy Lynn Campbell and Judith Dawn Rabkin, *The Clinical Respiratory Journal* 2009; 3: 8–14.

## 1. Initial use of the speaking valve

The speaking valve is generally used for the first time after a written prescription has been provided for the speech pathologist, and in consultation with the relevant practitioner. On the first attempt, the speech pathologist gives the patient precise instructions on how to proceed (with pictures or using the Tracheotomy Observation Model TOM). The purpose of the speaking valve is also explained. The patient is positioned as vertically as possible. It is helpful for the patient to adopt an upright position when using the speaking valve and undergoing swallowing therapy.

The first attempt at using the speaking valve should take place approximately 48h after the tracheotomy if there are no contraindications.

Initial use is made of the speaking valve in the intensive care unit, in the presence of nursing staff and the speech pathologist, whilst monitoring the patient.

The digital manometer is used for non-ventilator dependent patients in order to measure expiratory pressure (is there sufficient room for the patient to exhale next to the tracheotomy tube?).

When used by ventilated patients, the PMV007 can be removed briefly after exhalation in order to observe whether a drop in pressure occurs.

After the first attempt, the speech pathologist reports back to the practitioner in order to evaluate the use of the speaking valve and make suggestions regarding the wear time and frequency of the speaking valve.

In most cases, the speaking valve is initially only used for a few minutes.

If the patient tolerates the speaking valve well, and provided that there is a low risk of aspiration of secretions, the wear time can be increased.

### **Role of different professionals:**

In the intensive care unit:

The role of the speech pathologist is to position the speaking valve, to observe the patient, to evaluate upper airway patency and to determine whether the patient can make use of protective reflexes (coughing, clearing his throat) and swallow saliva.

The role of the nursing staff in the intensive care unit is to monitor the patients, use the speaking valve on an everyday basis and to make adjustments to the ventilation mode if necessary.

The following vital signs are usually monitored for patients in the intensive care unit: O<sub>2</sub> saturation, pulse, blood pressure, heart rate.

In a normal ward:

The respiratory care team is responsible for adjusting the ventilator and for setting up a second profile on the ventilator where applicable for the use of the speaking valve.

The nursing staff is responsible for the use of the speaking valve on an everyday basis.

The role of the speech pathologist is to initially position the speaking valve, to observe the patient, to evaluate upper airway patency and to determine whether the patient can make use of protective reflexes (coughing, clearing his throat) and swallow saliva. A dysphagia diagnosis takes place at a later stage. The procedure for the management of the tracheotomy tube is evaluated with the respiratory care team.

### **Troubleshooting / Problem solving:**

- When measuring oxygen saturation, it is important to ensure that the clip is attached to the finger properly.
- If oxygen saturation drops, this can be an indication of excess pulmonary secretions, in which case sterile suction is required before checking saturation levels again.

When setting up the speaking valve, care must be taken to observe hygiene requirements and to use clean gloves. Patients are usually monitored, at least on a pulse oximeter. It is advisable for two members of staff to work together, particularly the first few times.

## 2. Setting up the speaking valve

### A) Establishing a speech situation with the purple Passy-Muir Valve (PMV 2001 Purple Color)

- Prepare the PMV 2001, a syringe and a cuff manometer
- Provide monitoring if necessary: O<sub>2</sub> saturation, pulse, blood pressure, CO<sub>2</sub>
- Put the patient in a vertical position (in the event of extensive secretion, the patient can also be positioned vertically after suctioning)
- Apply suction in the mouth if necessary
- Remove the cuff during tracheal suctioning
- Check that the cuff and the pilot balloon have been completely deflated
- *Test the patency of the upper airways; is the patient able to exhale through the nose and the mouth?*
- Position the PMV 2001
- Connect oxygen to the adapter if necessary
- Observe the patient carefully, they must be able to exhale
- Encourage the patient to phonate
- Make a note in the suction protocol (documentation on suctioning)

### Removal of the speaking valve

- Remove the PMV 2001
- Cuff the cannula with the syringe and/or cuff manometer
- If necessary, suction tracheal secretions (sterile procedure)
- Check the cuff pressure again after a few minutes
- If available: enter the wear time of the speaking valve on the "Spontaneous breathing with speaking valve" form
- Documentation in Imeso – ICU

## **B) Establishing a speech situation with the Passy-Muir Valve (PMV 007 Aqua Color) on a home ventilator (for example Vivo)**

- Prepare the PMV 007 Aqua Color, a syringe and a cuff manometer
- Provide monitoring if necessary: O<sub>2</sub> saturation, pulse, blood pressure, CO<sub>2</sub>
- Put the patient in a vertical position (in the event of extensive secretion, the patient can also be positioned vertically after suctioning)
- Apply suction in the mouth if necessary
- Disconnect the ventilator and carry out sterile tracheal suctioning on the patient (disconnection is not required if a closed suction system is used)
- Remove the cuff during tracheal suctioning
- Check that the cuff and the pilot balloon have been completely deflated
- Test the patency of the upper airways; is the patient able to exhale through the nose and the mouth?
- Place the PMV 007 as seen in the picture below, reconnect the ventilator
- Position the ventilator tube in such a way that it does not pull on the tracheotomy tube
- Change the profile on the ventilator to ventilation with the PMV, if necessary and available
- Observe the patient carefully, they must be able to exhale. The readings on the ventilator must also be checked
- Encourage the patient to phonate
- Make a note in the suction protocol (documentation on suctioning)

### **Ventilator adjustment options:**

- Increase tidal volume if needed to achieve pre-cuff deflation PIP (Peak Inspiratory Pressure)
- Increase of the PIP if needed
- The PEEP can be reduced to 0 cm H<sub>2</sub>O

### **Adjustments to the alarm thresholds on a home ventilator when using the PMV 007:**

- Adjust the pressure threshold
- Adjust the inspiratory volume threshold (volumes per minute and volumes per exhalation)

### **Removal of the speaking valve**

- Remove the PMV 007 and reconnect the ventilator to the cannula
- Change the profile back to ventilation with a cuffed cannula
- Cuff the cannula with the syringe and/or cuff manometer
- If necessary, suction tracheal secretions (sterile procedure)
- Check the cuff pressure again after a few minutes

### 3. General information

- Apply suction of – 400 mbar; suction can be adjusted by occluding the tube with a finger tip
- Place warning signs in the room: "Cuff removal when using speaking valve", "Alarm cable connected?"



Speech situation with ventilation

2-part mount catheter with Passy-Muir Valve 007



- Storage of the 2-part mount catheter with PMV 007 in the storage box provided with a replacement set in the box
- Daily cleaning of the speaking valve by nursing staff: wash with warm water and gentle soap, and allow to air dry
- Replace the speaking valve every two months (see leaflet on artificial nose and speaking valves)
  - **Please note:** The use of an HME filter for passive humidification is not effective with the speaking valve since air is exhaled through the mouth and nose and not to an HME. Alternate means of humidification should be considered.

#### Storage box



Open box with 2-part mount catheter + PMV007 and spare material

Source:

- <http://www.passy-muir.com/>