

## Enhancing communication with the Passy-Muir valve

Jackson D, Albamonte S.

### **Abstract:**

The Passy-Muir Valve is a speaking valve. It is one alternative for enhancing communication skills in children with long-term tracheostomies. As this population of children continues to grow, nurses must have an awareness of interventions that can promote language development.

## Facilitating speech in the patient with a tracheostomy

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### **Abstract:**

A tracheostomy tube decreases the ability of the patient to communicate effectively. The ability to speak provides an important improvement in the quality of life for a patient with a tracheostomy. In mechanically ventilated patients, speech can be provided by the use of a talking tracheostomy tube, using a cuff-down technique with a speaking valve, and using a cuff-down technique without a speaking valve. Speech can be facilitated in patients with a tracheostomy tube who are breathing spontaneously by use of a talking tracheostomy tube, by using a cuff-down technique with finger occlusion of the proximal tracheostomy tube, and with the use of a cuff-down technique with a speaking valve. Teamwork between the patient and the patient care team (respiratory therapist, speech-language pathologist, nurse, and physician) can result in effective restoration of speech in many patients with a long-term tracheostomy.

## **Giving your patient a voice with a tracheostomy speaking valve**

Bier, Jacqueline APRN, MA; Hazarian, Leon RN, BSN; McCabe, Donna RN, GNP, MA; Perez, Yaquelin RN, BSN

**Abstract:**

A speaking valve can give a voice to a patient with a tracheostomy, enhancing his psychological well-being and encouraging him to participate in his care. In this article, we'll describe your role in helping a patient learn to use a speaking valve.

## Helping the Chronically Critically Ill To Communicate: Speaking Valve Pilot Trial

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### Rationale:

Prolonged mechanical ventilation (MV) is a hallmark of chronic critical illness (CCI) and a major source of distress for patients, who struggle to communicate even after tracheotomy. In this pilot study, we evaluated the use of a Passy–Muir (PM) speaking valve to assist communication by CCI patients during weaning from the ventilator.

### Methods:

We studied consecutive, consenting, ventilator–dependent, tracheotomized patients admitted from adult ICUs to our Respiratory Care Unit (RCU) for protocol–based weaning. Participation required ability to respond to English–language evaluative tools, tolerance of cuff deflation, no vocal cord dysfunction, and expected RCU stay  $\geq 10$  days. The PM valve was placed for up to 60 minutes, as tolerated. Before and after valve placement, research staff recorded physiologic parameters (blood pressure, pulse, respiratory rate, SaO<sub>2</sub>), and patients rated communication (none to maximum ability) and dyspnea (none to maximum shortness of breath) on 0–10 scales.

### Results:

We enrolled 10 of 13 (77%) eligible patients (5 men; mean $\pm$ SD age = 68 $\pm$ 17.1 yrs; MV duration = 22.4 $\pm$ 11.2 days). The 60–minute trial was completed by 5 patients without subjective or objective distress. PM valve removal was requested by 5 patients at a median of 2 minutes (range 1–30) after placement due to dyspnea. Staff noted accessory muscle use in 3 of these 5, but none had any physiologic deterioration. Mean communication ratings improved from 3.7 $\pm$ 3.8 to 6.7 $\pm$  3.2 with valve use. Patients who tolerated the 60–minute trial reported better communication and less dyspnea than those who did not (communication, 10 $\pm$ 0 vs. 4.4 $\pm$ 2.2; dyspnea, 4.3 $\pm$ 2.9 vs. 6.6 $\pm$ 3.9).

### Conclusions:

The PM speaking valve is tolerated by some CCI patients and may facilitate communication as perceived by patients and caregivers during weaning from MV. In a larger sample, factors predicting tolerance and effectiveness of the valve in enabling communication may be identified.

 [Critical Care Medicine 1993 Apr;21\(4\):483-4.](#)

## **Improved communication with the Passy-Muir valve: the aim of technology and the result of training**

Byrick RJ

### **Comment on**

Verbal communication of ventilator-dependent patients. [Crit Care Med. 1993]

## **Management of Adults With Tracheostomy Across the Continuum of Care**

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### **Abstract:**

In this article, intervention for adults with tracheostomy and ventilator dependency specific to acute inpatient, rehabilitation, and outpatient settings is described. During the acute hospitalization, restoration of communication is paramount. Candidacy for different communication options is explored. Patients and families are introduced to the role of the speech-language pathologist and begin to become informed about tracheostomy. Education is provided about the effects of tracheostomy on speaking, prognosis for improvement of speech, and the need for post acute therapy. The emphasis of speech-language pathology intervention in the post acute setting, particularly in the rehabilitation setting, is maximizing independence. Specific goals include restoring oral communication during all waking hours; refining ventilator-supported speech production; facilitating independence with cuff deflation/inflation; and fostering autonomous application and care of speaking valves. The goals of outpatient intervention are to promote carryover, monitor, and re-evaluate clinical status as needed and foster return to school and employment, resumption of recreational activities, and reintegration into home and family.

## **Managing Adults With Tracheostomies and Ventilator-Dependence: Current Concepts**

Karen J. Dikeman and Marta S. Kazandjian

The role of the SLP in the care of adults with tracheostomies and ventilator-dependence has evolved as the medical management of these complex patients has changed. Concurrent with changes in medical management is increased awareness of the special needs of this population, including quality-of-life issues of communication and oral intake. The speech-language pathology community is creating more literature and presentations on the topic of tracheostomy and ventilator dependence. ASHA has developed relevant position and guideline papers and SLPs are experiencing greatly increased caseloads in multiple settings. The role of the SLP on the treatment team has expanded, as have the issues that the treating clinician must handle on a daily basis. Some relevant references are provided on the ASHA Web site. See end of article.

## **Managing Voice and Communication for Tracheostomized and Ventilator Dependent Patients: Clinical Case Studies**

Karen J. Dikeman and Marta S. Kazandjian

Department of Speech Pathology, Silvercrest Center for Nursing and Rehabilitation and New York Hospital Queens, NY

### **Abstract:**

This tutorial provides a background to the history of tracheostomy and ventilator-dependence, as well as two clinical case studies that describe the management of voice and communication. The rationale for establishment of upper airway flow in the tracheostomized and ventilator-dependent patient is explained. Assessment and treatment paradigms are described for the clinician working with this complex population, in order to provide guidelines for daily clinical practice.



## **Passy-Muir speaking valve**

Kaut K, Turcott JC, Lavery M.

Fairfax Hospital, Falls Church, VA, USA.

### **Abstract:**

The Passy Muir speaking valve is a device that facilitates communication and airway maintenance for patients who require artificial airways. The critical care nurse's role includes collaboration with speech and respiratory therapy in identifying, preparing, and monitoring the patient who uses the Passy Muir valve.

## **Passy-Muir tracheostomy speaking valve**

Passy V.

### **Abstract:**

Communication for handicapped ventilator-dependent patients is a problem, not only for the patient but also for the healthcare personnel. The inability of these patients to vocalize is a paramount problem in their care. This study evaluates the efficacy of a one-way speaking valve on ventilator-dependent patients and evaluates the resulting effectiveness of their speech. Fifteen ventilator-dependent patients were fitted with the one-way Passy-Muir Tracheostomy Speaking Valve and their communicative skills and ease of vocalization were evaluated. This clinical evaluation was done by the patient, a speech pathologist, two nurses in charge of the patient, and the patient's private physician. No complications were observed in any of the patients. All 15 patients showed marked improvement, not only in speech intelligibility but in speech flow, the elimination of speech hesitancy, and speech time. This ability to communicate enhanced the care given by the healthcare personnel. In conclusion, use of the Passy-Muir Tracheostomy Speaking Valve restored verbal communicative skills of ventilator-dependent patients, facilitated care, and greatly enhanced the mental outlook of these patients without observed complications.

## **Passy-Muir tracheostomy speaking valve on ventilator-dependent patients**

Passy V, Baydur A, Prentice W, Darnell-Neal R.

Department of Otolaryngology-Head & Neck Surgery, University of California, Irvine-College of Medicine.

### **Abstract:**

Communication for handicapped ventilator-dependent patients is a problem, not only for the patient but also for the healthcare personnel. The inability of these patients to vocalize is a paramount problem in their care. This study evaluates the efficacy of a one-way speaking valve on ventilator-dependent patients and evaluates the resulting effectiveness of their speech. Fifteen ventilator-dependent patients were fitted with the one-way Passy-Muir Tracheostomy Speaking Valve and their communicative skills and ease of vocalization were evaluated. This clinical evaluation was done by the patient, a speech pathologist, two nurses in charge of the patient, and the patient's private physician. No complications were observed in any of the patients. All 15 patients showed marked improvement, not only in speech intelligibility but in speech flow, the elimination of speech hesitancy, and speech time. This ability to communicate enhanced the care given by the healthcare personnel. In conclusion, use of the Passy-Muir Tracheostomy Speaking Valve restored verbal communicative skills of ventilator-dependent patients, facilitated care, and greatly enhanced the mental outlook of these patients without observed complications.

## **Perceptual rankings of speech quality produced with one-way tracheostomy speaking valves**

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### **Abstract:**

Perceptual speech quality rankings, mechanical functioning, and maintenance of respiration as measured by oxygen saturation were determined for four different one-way tracheostomy speaking valves. Results indicated significant differences in speech quality rankings, with the Montgomery and Passy-Muir valves ranked significantly better than the Kistner and Olympic valves, and the Olympic valve ranked significantly better than the Kistner valve. The Passy-Muir valve was identified with the best speech quality most often by both listeners and subjects, and exhibited the fewest clinically relevant mechanical problems. Maintenance of respiration was not affected by use of any of the valves studied.

## **Promoting effective communication for patients receiving mechanical Ventilation**

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### **Abstract:**

Communicating effectively with ventilator-dependent patients is essential so that various basic physiological and psychological needs can be conveyed and decisions, wishes, and desires about the plan of care and end-of-life decision making can be expressed. Numerous methods can be used to communicate, including gestures, head nods, mouthing of words, writing, use of letter/picture boards and common words or phrases tailored to meet individualized patients' needs. High-tech alternative communication devices are available for more complex cases. Various options for patients with a tracheostomy tube include partial or total cuff deflation and use of a speaking valve. It is important for nurses to assess communication needs; identify appropriate alternative communication strategies; create a customized care plan with the patient, the patient's family, and other team members; ensure that the care plan is visible and accessible to all staff interacting with the patient; and continue to collaborate with colleagues from all disciplines to promote effective communication with nonvocal patients.

## **Providing the nurse with a guide to tracheostomy care and management**

Russell C.

Addenbrooke's Hospital, Cambridge University Hospital NHS Foundation Trust.

### **Abstract:**

To care for a patient with a tracheostomy requires a clear understanding of each patient's need for the tracheostomy and the type of tube that is required. The impact of a tracheostomy on the respiratory system includes thorough knowledge of respiration, methods of humidification and also suctioning techniques. In addition to this a tracheostomy may impact on swallowing, communication and body image. Appreciation of these effects will guide the nurse and the wider multidisciplinary team in future needs and care. Tracheostomy care and management is more and more necessary in both the intensive care setting and the general ward. It is, therefore, ever more important that trained nurses are equipped with the appropriate skills, knowledge and support to meet the unique needs of each patient safely and competently. This article aims to discuss the indications for a tracheostomy and also the care and management commonly carried out, with the purpose of increasing knowledge and interest of the care of a patient with a tracheostomy.

## **Speech effects of a speaking valve versus external PEEP in tracheostomized ventilator-dependent neuromuscular patients.**

Prigent H, Garguilo M, Pascal S, Pouplin S, Bouteille J, Lejaille M, Orlikowski D, Lofaso F.

### **Purpose:**

Many patients with respiratory failure related to neuromuscular disease receive chronic invasive ventilation through a tracheostomy. Improving quality of life, of which speech is an important component, is a major goal in these patients. We compared the effects on breathing and speech of low-level positive end-expiratory pressure (PEEP, 5 cmH<sub>2</sub>O) and of a Passy-Muir speaking valve (PMV) during assist-control ventilation.

### **Methods:**

We studied ten patients with neuromuscular disorders, between December 2008 and April 2009. Flow was measured using a pneumotachograph. Microphone speech recordings were subjected to both quantitative measurements and qualitative assessments; the latter consisted of both an intelligibility score (using a French adaptation of the Frenchay Dysarthria Assessment) and a perceptual score determined by two speech therapists.

### **Results:**

Text reading time, perceptive score, intelligibility score, speech comfort, and respiratory comfort were similar with PEEP and PMV. During speech with 5 cmH<sub>2</sub>O PEEP, six of the ten patients had no return of expiratory gas to the expiratory line and, therefore, had the entire insufflated volume available for speech, a condition met during PMV use in all patients. During speech, the respiratory rate increased by at least 3 cycles/min above the backup rate in seven patients with PEEP and in none of the patients with PMV.

### **Conclusions:**

Low-level PEEP is as effective as PMV in ensuring good speech quality, which might be explained by sealed expiratory line with low-level PEEP and/or respiratory rate increase during speech with PEEP observed in most of the patients.

## **Use of Passy-Muir tracheostomy speaking valve in mechanically ventilated neurological patients**

Bell SD.

### **Abstract:**

Expressing one's wishes and desires is an integral part of daily life. Neurological diseases and injuries can rob a person of the normal ways to communicate. Without the power to share knowledge, thoughts, ideas, and feelings, people can become isolated. Being unable to communicate deprives a conscious person on a ventilator of meaningful participation in the healthcare plan. This article describes the use of a Passy-Muir Tracheostomy Speaking Valve in a ventilated patient with multiple sclerosis.



## Verbal communication of ventilator-dependent patients

Manzano JL, Lubillo S, Henríquez D, Martín JC, Pérez MC, Wilson DJ.

Hospital Nuestra Señora del Pino, Las Palmas de Gran Canaria, Canary Islands, Spain.

### OBJECTIVE:

To assess whether communication capabilities of ventilator-dependent patients are improved by the use of the Passy-Muir unidirectional valve.

### DESIGN:

Prospective study.

### SETTING:

An 18-bed multidisciplinary intensive care unit (ICU) at the University Hospital, Las Palmas, Spain.

### PATIENTS:

Ten chronic ventilator-dependent patients who had undergone tracheostomy and met the following criteria: ability to eliminate tracheobronchial secretions in order to maintain a patent and unobstructed airway, adequate gas exchange while ventilated with an FIO<sub>2</sub> of < or = 0.4 (Pao<sub>2</sub> > 60 torr [8 kPa]), Paco<sub>2</sub> of < 55 torr (7.3 kPa), normal hemodynamics without the need for administration of vasopressors, and normal mental state. Eight patients presented with pulmonary disease, and two presented with neuromuscular disease. INTERVENTIONS AND METHODS: Before attaching the Passy-Muir valve, the following procedures were performed: a) suction of tracheal and pharyngeal secretions; b) deflation of the tracheostomy tube cuff; c) increase in the ventilator's tidal volume setting to maintain the inspiratory pressure before cuff's deflation; d) set peak inspiratory pressure alarm and disconnect expiratory volume alarm. The valve was then connected between the tracheostomy tube and the Y-shaped piece of the ventilator's circuit. Respiratory movements, arterial blood gases, peak inspiratory pressure, respiratory rate, quantity of secretions, and changes in sense of smell were monitored during the study. The valve's efficacy was evaluated according to the patient's ability to talk and be understood during the entire respiratory cycle.

### RESULTS:

The Passy-Muir valve was effective in improving communication in eight of ten patients who, during its use, presented insignificant cardiorespiratory changes, decreased secretions, and effected considerable improvement in well-being. Its use was impossible in two patients: one with severe pulmonary disease because cuff deflation prevented adequate ventilation, and one patient with neuromuscular disease and laryngopharyngeal dysfunction.

## **CONCLUSIONS:**

The Passy-Muir unidirectional valve allows ventilator-dependent patients to talk and communicate without assistance. Patients felt better and were motivated to participate in their own care.