

# LET'S

# TALK

...FOR PEOPLE WITH SPECIAL COMMUNICATION NEEDS



## Speech for Patients With Tracheostomies or Ventilators

**Y**ou have to breathe to live. But what happens when a progressive disease like muscular dystrophy or amyotrophic lateral sclerosis (Lou Gehrig's disease) moves from attacking arms and legs to attacking breathing (respiratory) muscles? Or what happens when a car accident survivor is left with a head injury and swelling that slows down the response of the brain's respiratory center? And what about children born with lung disease or deformities of the chest wall or spine that interfere with breathing? These patients still have to breathe. How do they do it?

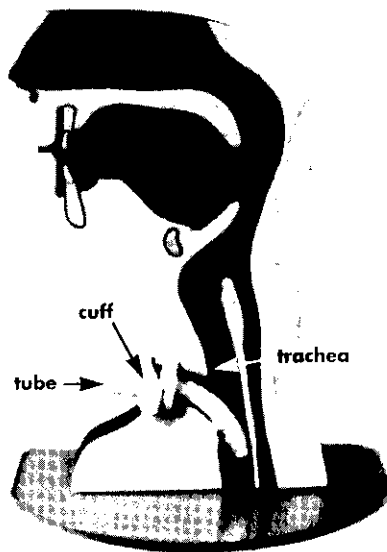
### Tracheostomy

A surgical opening is made in the windpipe (trachea) by cutting the neck below the Adam's apple, below the vocal cords. A tube is placed in the opening, and air is inhaled through the tube rather than through the mouth and nose. For some, a tracheostomy is a short-term measure. For others, it is long-lasting or permanent.

Such life support does have a price. As a result of tracheostomy and the new route of air travel, structures of the upper airway that warm and moisten air, filter air-borne debris, and facilitate coughing, sneezing, smelling, tasting, and swallowing play a reduced or non-existent role. The extra debris, without the normal means of clearing it, can cause a buildup of fluids and secretions in the body that need to be cleared by suctioning through the tracheostomy tube. Reduced smell, taste, and swallowing can reduce appetite and food intake to the point, in the most severe cases, of threatening life once again. Food and secretions can be misdirected (aspirated) into the lungs and potentially cause pneumonia and even asphyxiation.

### Lack of Speech

If these were not enough potential problems, air flow as a result of the tracheostomy bypasses the vocal cords that allow for the production of sound and speech. Air takes the path of least resistance, with most of it going out the tracheostomy tube. Some air may leak up to the vocal cords, but it may not be forceful enough to drive the vocal cords into vibration, or it may only allow enough force for very short utterances.



Caretakers and family members become frustrated because they do not know the needs and wants of the patient. The patient feels isolated and alone at a time when his or her life is undergoing dramatic change.

Young children are deprived of the vocal explorations and social interactions that are critical to the development of language skills. The situation is made worse because caretakers tend to talk less to children who cannot communicate. These children are

then robbed of the rich models they need to hear so they can figure out what language is all about. What can be done?

### Speech With Tracheostomy

There are a number of options for speaking with a tracheostomy. Tracheostomy tubes can consist of plain tubes or can come with inflatable cuffs that, when pumped up, provide a greater seal against the neck than plain tubes. This increased seal can provide greater air supply to the lungs and reduce aspiration but may not allow enough air leakage to power the vocal cords.

Patients with a cuffless tube or patients who may only need the cuff inflated at certain times, for example during eating or sleeping, may get enough air leakage for speech, or they may be able to produce speech by blocking or occluding the tube with their fingers or hand. Then the patient will breathe through the mouth and nose and vibrate the vocal cords as they did before surgery.

These methods do not work for all patients for a variety of reasons. Covering the tube may cause an increased resistance to breathing that is intolerable to some patients. Contaminants from the hand or fingers may introduce infection into the body, a particularly critical situation for patients with aspiration problems. Some patients may not get enough air for speech without blocking the tube but may not have the awareness, muscle movement, or muscle tone to make a good occlusion.

### Talking Valves

As an alternative, a variety of valves are available that can be attached to the tra-

cheostomy tube. These valves allow air to enter via the tube but leave by way of the mouth and nose. Use of these valves is also reported to have secondary benefits of reducing secretions, increasing the sense of smell, reducing aspiration, facilitating tube removal in patients for whom tracheostomy is not permanent, and perhaps even increasing oxygenation of blood in the arteries. Because all valves do not produce the same quality of speech or the same secondary benefits, a valve for a specific patient should be selected based on the scientific and clinical results that would predict maximum benefit for that patient.

## Ventilator Users

For some patients, a tracheostomy tube alone may not be enough. The tube may need to be connected to a breathing machine (ventilator) that provides a mixture of gases for life support. Patients on ventilators can speak as long as the tracheostomy tube allows flow through the larynx and vocal cords. However, the speech patterns of ventilator users present particular problems. Because of the design of the ventilator, speech occurs during much of the inspiratory cycle of the ventilator and into the early parts of expiration. Then there is a long silence until the next inspiratory cycle of the ventilator. During this silence, the patient may lose his or her turn to talk as conversation partners fill the silence with their own speech. Listeners may also find it hard to follow the patient's communication message because the normal rhythm of conversational give-and-take is disrupted.

Spoken phrases may have sudden bursts of loudness, reduced loudness at the end of phrases, and changes in voice quality because pressure in the trachea from the ventilator gases is not as stable as this pressure is in typical speech pro-

duction. Recent research has indicated that the speech of patients on ventilators may be improved by making simple adjustments to ventilator settings, particularly if no other problems exist besides breathing insufficiency. There is also at least one speaking valve available that can be used with a ventilator.

## Speech-Language Pathologist and the Rehabilitation Team

The multiple and interrelated decisions that need to be made for patients with tracheostomies or ventilators cannot be made by one professional. Physicians, nurses, respiratory therapists, dietitians, speech-language pathologists, and others must all work together to choose the options that best meet the patient's total

health needs. The speech-language pathologist assesses the patient's cognitive and language abilities to determine communication potential, evaluates oral-motor and swallowing functions, and assesses the patient's ability to produce voice in different situations that may include using a speaking valve. Whatever mode of communication is recommended for the patient in the context of his or her other needs, the speech-language pathologist plays a central role in ensuring that patients and caretakers know how maximum communication can be achieved. As indicated, speech-language pathologists also treat problems of swallowing as indicated.

Tracheostomy and ventilator use is life sustaining. Speech for patients with tracheostomies or ventilators is life enriching.

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