



Promoting Effective Communication for Patients Receiving Mechanical Ventilation

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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. (*Critical Care Nurse*. 2011;31[3]:46-61)

Critical care staff who manage intubated patients often experience difficulties with one of the most basic human functions: communication. Patients with endotracheal or tracheostomy tubes are unable to communicate verbally because of the placement of the tube and inflation of the tube's

cuff, which prevents passage of air across the vocal cords. Despite the inability to produce speech, these patients can communicate effectively via other methods. Intubated patients communicate with nurses, other clinicians, and family members primarily through gestures, head nods, mouthing of words, and writing.¹

Other communication methods include letter/picture boards, lists of common words or phrases tailored to meet individual patients' needs,

and high-tech alternative communication devices. Various options for patients with a tracheostomy tube include partial or total cuff deflation and use of a speaking valve in certain patients who are in stable condition. Specially designed tracheostomy tubes are also available to allow speaking while the cuff of the tracheostomy tube is inflated.

Although communication with patients in the intensive care unit (ICU) is usually focused on basic needs related to physical comfort such as positioning or suctioning, communication is often an important component of end-of-life decision making. Patients may need to express their final wishes to family, friends, and providers.² The goal is to enhance a patient's ability to express their needs and wishes to staff and to their loved ones fully and effectively. Various sophisticated methods are available for complex cases. In this article, we review various strategies to promote effective communication between patients

receiving mechanical ventilation, health care staff, and patients' family members.

Challenge of Effective Communication With Nonvocal Patients Receiving Mechanical Ventilation

Determining an alternative, effective communication system requires collaboration between staff, a patient's family, and the patient. Difficulties with communication often cause anxiety, frustration, and fear in patients.^{3,4} Increased respiratory rate can create breathing discomfort and the need to make ventilator adjustments promptly to match the faster breathing pattern or provide optimal ventilation support.⁴ Directing the patient to calm down and breathe with the machine is inappropriate and usually ineffective.

Patients who have been emergently intubated may need initial reminders and short explanations such as "you have a tube in your throat to help you breathe" and "you cannot speak when the tube is in place." Other simple words of encouragement and support may include "you are doing well," "everything is OK—we are helping you get better," and "your breathing will feel better." The patient may be able to communicate

basic responses more effectively if staff ask one question at a time to elicit a yes/no response and give simple directions such as "nod your head" or "squeeze my hand." A calming reassuring voice, confident approach, and therapeutic touch may help alleviate this anxiety-producing situation.

More time is available to prepare electively intubated patients and their family members. These patients can be provided with detailed information about the location of the endotracheal or tracheostomy tube, why the patient will not be able to communicate verbally, and what methods to communicate can be used while receiving mechanical ventilation. An educational pamphlet about the endotracheal or tracheostomy tube, the ventilator, and how to communicate can be given to the patient's family and the patient as appropriate (Table 1).

Nursing staff can improve a patient's experience, frustration level, and outcome by using strategies to improve communication³ with nonvocal patients and by creating or customizing a plan that meets the patient's needs. The patient care plan and specific methods should be readily available for use by all members of the health care team

who interact with the patient. It is also essential to involve and educate the patient's family members so that they can communicate effectively. These efforts may help the patient and the patient's family feel less anxious and fearful.

Families want to be included as caregivers when patients are in an ICU. A familiar voice and touch can have a calming effect on a frightened or upset patient. Relatives have empathy for the patient and recognize the patient's nonverbal cues such as facial expressions of fear and restless physical movements. They have a deep understanding of the patient's needs, which can be helpful to the health care team.⁵ However, when relatives experience difficulties communicating with their loved one, they may feel a sense of loss because of the lack of response from the patient.⁶ Appropriate, warm physical touch may provide some benefit.⁷

Communication Strategies

Numerous strategies are available for improving communication with patients in the ICU. Many of these techniques are simple and/or involve very basic materials at the bedside. The following 6 strategies facilitate successful communication with patients receiving mechanical ventilator support: (1) Establish a communication-friendly environment. (2) Assess functional skills that affect communication. (3) Anticipate patients' needs. (4) Facilitate lipreading. (5) Use alternative and augmentative communication devices. (6) Educate the patient, the patient's family, and staff about communication strategies. These strategies are addressed in detail in the following sections.

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Table 1 Patient Education Pamphlet: Ventilator

Your doctor has ordered a ventilator for you. This booklet will help answer questions you and your family may have.

What is a ventilator?

A ventilator is a machine that helps your breathing. It is also called a respirator or a breathing machine. It is a large square machine that sits at your bedside. The ventilator gives you a certain number of breaths every minute. The machine does the work your lungs usually do.

Why do I need a ventilator?

You may need a ventilator if you do not have enough oxygen or if you have too much carbon dioxide in your bloodstream. It can help decrease your shortness of breath and work of breathing so you feel more comfortable. If you are having surgery, the anesthesia may prevent your breathing muscles from working. When the anesthesia wears off, normal breathing will return and you will not need the ventilator. People may need the help of a ventilator for a variety of problems, including pneumonia, emphysema, asthma, and diseases that cause breathing muscles to become weak or paralyzed. You need a ventilator because _____.

How does the ventilator work?

The doctor guides a tube into your main airway (trachea) through either your nose or mouth (Figure 1). This tube connects to the ventilator, which is set to give you the air and oxygen that you need to help your breathing. Your lungs fill with air similar to gently blowing up a balloon. A chest x-ray is done to make sure the tube is in the best position. Cloth ties or tape or special holders keep the tube in place.

Some people have a hole placed in their neck and a tracheostomy or "trach" tube is in place. In this case, the ventilator is connected to the tracheostomy tube (Figure 1).

How will you know if I am getting the right amount of air?

You may be hooked up to a monitor that measures your oxygen level in your blood or "O₂ saturation." A blood sample, called arterial blood gas or ABG, may be drawn from an artery to check your oxygen and carbon dioxide levels. Ventilator settings will be changed as needed to meet your breathing needs.

Will I be able to talk?

You can speak because air passes by and vibrates your vocal cords or voice box. When the breathing tube is in, you will not be able to talk because of the tube position. The tube passes through your vocal cords and a balloon is inflated so that no air can go past your vocal cords for speaking. You will be able to speak when the tube is removed. One of the major frustrations for you can be the decreased ability to talk. There are ways to help you and your family communicate.

- Write: Your nurse will keep a pencil, clipboard, and paper at the bedside for you.
- Nod your head up and down: Visitors should ask simple yes/no questions and only one question at a time. Avoid asking questions that require long answers, detailed conversation, or more than one answer.
- Use hand or facial gestures to convey what you need,
- Have people read your lips as you mouth words. This method does not work as well if the tube is in your mouth.
- Point to letters or pictures or common phrases on a letter, picture, or phrase board. The intensive care unit has a supply of these for you to use, if needed.
- Write down common needs (Suction me, Turn me, I am having pain, I am uncomfortable, I can't breathe, How am I doing? Please untie my hands, Where is my family? How long will the tube be in? When is the tube coming out?)
- If you know you may be on a ventilator after surgery, discuss ways to communicate with your family.
- Wear your glasses and hearing aid, if needed, for reading, writing, and hearing.

Your nurse will work with you to understand what you want to communicate. There are many other methods of communicating for people who need the ventilator for long periods of time.

Can I eat?

The position of the breathing tube may make it hard to swallow. You will not be able to eat solid food. You may be able to keep your mouth moist by having it swabbed with a small mouth sponge or ice chips, depending on your situation. How long you are on the ventilator will affect how you are fed. Most people are fed by liquids given through a needle in a vein or through a feeding tube placed in the stomach. If you have a tracheostomy, you may be evaluated to determine whether you can eat food and drink liquids.

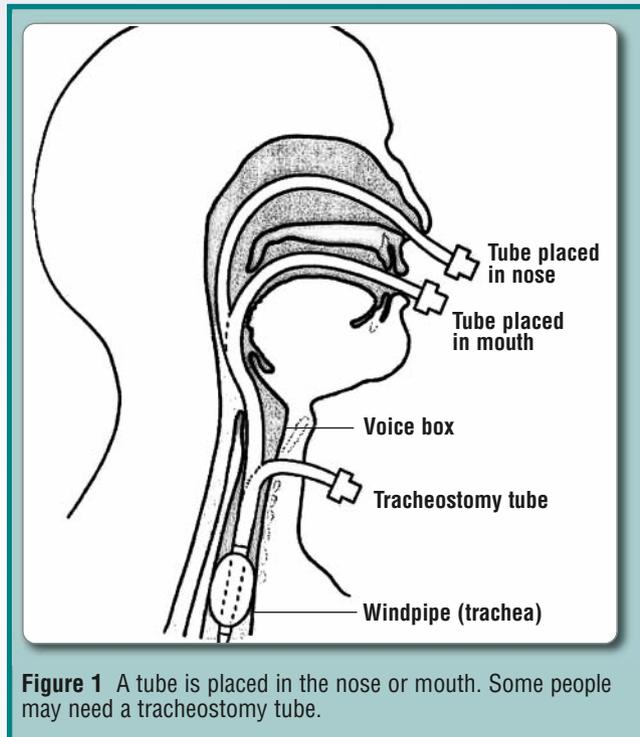


Figure 1 A tube is placed in the nose or mouth. Some people may need a tracheostomy tube.

Continued

Table 1 *Continued*

Will I feel pain?

Some people are given medication so they do not remember the tube being put in. Other people may be uncomfortable while the breathing tube is being put in. A medicated spray will numb your nose and mouth before the breathing tube is placed. This spray will help make you more comfortable. Your doctor may order a sedative or pain medication for you while you are on the ventilator.

Can I get out of bed?

You should stay in bed. Your position will be changed at least every 2 hours or more often if you desire. You may sit up in bed and turn from side to side. Sometimes people can get out of bed, stand, walk, and sit on a chair.

Will I be able to cough?

You will be able to cough but will need help clearing secretions. The nurse or respiratory therapist will put a catheter (a small flexible tube) into the breathing tube and suction out the secretions. This may need to be done often, depending on the amount of secretions in the tube.

Can I wear dentures?

If the breathing tube is in your mouth, you cannot wear your dentures. If the breathing tube is in your nose, you can wear your dentures if wearing them makes you feel better.

How long will I need the ventilator?

This depends on your condition. Some people need ventilator support for only a few hours, while other people need support for days or weeks or months. The nurses, respiratory therapists, and doctors will work to improve your condition so you spend as little time as possible on the ventilator. When your condition improves, a process of discontinuing the ventilator or “weaning” is done. The machine is set so you are doing the breathing on your own. If your breathing is comfortable and your arterial blood gas looks good, the breathing tube is removed.

Being on a ventilator may cause anxiety, fear, and discomfort. If needed, the doctor will order a sedative or pain medication for you.

Understanding why you are on the ventilator, what to expect when you are on the ventilator, and how to communicate your needs can be very helpful to calm and reassure you. Your nurses and doctors will try to make this a less frightening experience for you. Please share this booklet with your family. Feel free to ask your doctor or nurse any questions you may have.

Establish a Communication-Friendly Environment

Staff working in a critical care environment often become accustomed to the abundant sensory stimulation. Most critical care nurses have mastered the ability to focus attention on a specific task or interaction despite a multitude of distractions. Patients and their families may not be familiar with this environment, which can significantly affect communication. The following adaptations may be helpful.

Adjust your proximity and position so that you are visible to the patient. Staff often attempt communicating with patients when they are across the room or behind other equipment, such as ventilators.

Speak directly to the patient. It is often easy to look up and speak facing family members who are able to participate in conversations easily. Facing the patient directly may

require repositioning the patient if medically possible.

Ensure that the lighting is adequate for the patient to see the speaker and/or communication boards. Improve lipreading by making light fall on the patient’s face. Reduce background noise and activity, perhaps by turning off the television or radio, decreasing additional conversations occurring in the room, and closing the door.

Assess Functional Skills That Affect Communication

In addition to their current conditions, patients enter the ICU with personal characteristics and functional abilities that can affect their ability to communicate and interact in this challenging environment. Areas to assess include auditory and visual acuity, whether the person is right- or left-handed, muscle strength for writing, and language

for speaking and literacy. Table 2 presents a user-friendly and comprehensive communication assessment tool we developed for use with non-vocal patients.

Auditory Acuity. The acute care unit is a difficult environment for patients with any degree of hearing impairment because of the varied background noises emitted by equipment. Although necessary equipment cannot be eliminated, it is important to establish a communication-friendly environment. Determine if the hearing-impaired patient wears hearing aids and whether the hearing aids are at the hospital and working properly. Ensure that the hearing aid that is in place has no audible feedback, a common problem due to patients’ positioning. Hearing aid batteries and basic supplies for cleaning should be readily available. If the hearing loss is new and unexplained, the attending

Table 2 Communication Assessment Tool for nonvocal patients

Directions: Communication plan should be kept at the bedside and/or designated computer location so it is readily available to all health care team members and the patient's family. Update as needed.

Date assessed: _____ with patient _____ with family member _____ both _____

Mental status: alert, appropriate----lethargic, confused----comatose

Language: English: Yes No Other (List) _____

Hearing: Normal Impaired (R,L) Hearing aid: Yes No

Vision: Normal Impaired Needs glasses for reading: Yes No

Writing: Right Left

Grasps writing device: Yes No Unable due to hands: weak--- swollen---paralyzed

Literacy (reads, spells): Yes No

Aphasia: Yes No (If yes, consult speech therapy)

Neuromuscular weakness, paralysis: Yes (Explain) _____ No

Able to use standard call light system Yes No (Select adaptive system)

Effective communication system(s) for this patient:

____ Nods head up, down to yes/no questions

____ Clipboard, pad, pencil _____ hand

____ Lip-read

____ Picture board

____ Letter board

____ Word board

____ Regular call light system

____ Needs adaptive call light system. Proper placement for use _____

Severe weakness, paralysis

____ Blinks eyes 1 blink = yes, 2 blinks = no

____ Moves eyes toward head for yes, closes eyes for no

____ Needs advanced system; speech consult sent

Details of effective communication system for Mr/Ms _____

Example:

12/6/08 Mr L communicates by nodding head to yes/no questions, needs glasses for reading and writes with right hand—elevate HOB at least 40°, points to picture board—usual issues have been pain, needs frequent position change, likes ROM to legs and wants radio on (AM 1500 or FM 100)

12/10 Update—same communication system as 12/6 except patient unable to write because hands swollen, weak, can't grasp. Discontinue pad, pencil for now

12/13 Bilateral hearing loss—MD notified, no ear wax—use Pocketalker in room

12/15 No change

Abbreviations: HOB, head of bed; L, left; R, right; ROM, range of motion exercises.

physician and pharmacist should be notified to determine whether the patient is experiencing ototoxic effects from prescribed medications. The ear canal should be inspected and cleaned of wax.

Most hospitals have basic amplifier equipment, or assistive listening devices, to improve hearing. A common assistive listening device is the Pocketalker Personal Amplifier (Williams Sound Corp, Eden Prairie, Minnesota), which consists of headphones for the hearing-impaired

person to wear and a microphone device that can amplify the speech of the other talker (Figure 2).

Visual Acuity. Glasses may be essential to visualize items on a communication device. Evaluate whether the patient wears glasses for reading and if they are available. Clean and position properly, especially if a patient requires bifocal lenses. Screen patients for neurological deficits such as field cuts or visual neglect, which may interfere with their ability to communicate.

Handedness. Determine which hand is used for writing or use of a communication board. If the patient has a new hemiparesis affecting the dominant hand, it can affect the ability to point to items on some boards.

Assess Muscle Strength. Communication boards may need to be modified to accommodate these limitations, including locating the most common needs at an “easy-to-point-at” spot on the board. Use of restraints on a patient's dominant hand will hinder their ability to write,



Figure 2 Pocketalker Personal Amplifier.

Courtesy Williams Sound Corporation, Eden Prairie, Minnesota.

gesture, or point to items on a communication board.

Language. If a patient does not speak/understand English, a hospital interpreter can be extremely helpful for developing communication tools. Picture boards may work better than word/phrase/letter boards for non-native English speakers or aphasic patients because pictures do not rely on language skills.

Literacy. A patient's impaired ability to read/spell can be a complicating factor if staff members attempt to use a letter board or phrase lists. In these situations, use of pictures may be more appropriate to facilitate communication.

Anticipate Patients' Needs

Gestures have been identified as the communication method used most often by ventilator-dependent patients.² Gestures can be misinterpreted as anxiety⁸ when the patient is really just attempting to convey a message and be understood. A restless, diaphoretic, and grimacing patient with a high respiratory rate may be in pain. A frustrated patient trying to communicate becomes more anxious.

enable the patient to communicate effectively. The following strategies are helpful in resolving problems to ensure successful communication.

Use of Inquiry. When routinely assessing patients, anticipate basic care needs by asking simple questions related to personal care and comfort, such as: "Do you want to be turned?" "Do you need to be suctioned?" "Do you need to use the bedpan?" "Urinal?" "Do you have pain?"

Ask yes/no questions rather than open-ended questions. Instead of asking "Where are you having pain?" ask "Are you having pain in your chest?" "Do you have a headache?" or "Does your back hurt?" Staff can also use pictures of the body or have the patient point to the area of pain. Accurate assessment and pain management are essential to quality care. A nonverbal pain scale at the bedside or taped to the head of the bed reminds nurses of the rating scale and the policy for pain assessment.⁹

Ask only one question at a time. For example, do not ask "Are you having pain in your chest or in your hip?"

Implement a consistent method for yes/no responses and communi-

The nurse may administer a sedative and/or apply restraints when the more appropriate management would be to identify and implement communication strategies that meet the particular needs of that patient and

cate the plan to all staff. Consistency is particularly important for patients with neuromuscular impairment or paralysis, where eye blinks, head movements, and gestures are commonly their "lifeline" to communicate needs effectively. Identify the topic if the patient's communication is unclear. "Are you asking about the ventilator?" "Are you talking about your family?" Knowing a specific topic/context of the patient's message may significantly increase understanding of the message and improve questions that you ask in efforts to resolve the problem.

Identification and Validation of Nonverbal Responses. Identify and validate the meaning of facial expressions and other nonverbal communication. For example, you could verbalize to the patient your observation that he appears angry, upset, scared, sad, or happy. Empathize and attempt to identify possible causes for feelings and solutions.

Maintain eye contact, preferably at the patient's level. Be aware of cultural factors that may preclude eye contact.

Convey a calm, confident, reassuring manner. Maintain patience if the patient is angry or frustrated at not being able to communicate needs. Empathize with the patient and convey willingness to understand. Allow time for the patient to convey a message. Obtain additional assistance, if needed, in situations where time is limited.

Facilitate Lipreading

Reading lips is a specialized skill and may be difficult, particularly if the tube is orally placed. The tube, tube holder, and/or tape over the mouth limit lip movement and visu-

alization. Becoming skilled at lipreading takes practice, and some people are naturally better at deciphering mouthed words. Persons with hearing loss generally are expert lip-readers,⁹ and it is especially helpful if they are health care professionals, because they understand the health issues. Identify other methods to communicate needs effectively. A lip-reader translating service elicited positive responses from patients and allowed health care providers to spend more time providing patient-centered care and less time attempting to decipher patients' messages.¹⁰

Several steps can be taken to improve lipreading. Make sure the light falls on the patient's mouth, not in the patient's eyes. Look for key words, a pattern of words or phrases that give the sentence meaning and provides clues so you can ask focused questions. Allow the patient to mouth words in a full sentence to give them context; do not isolate words. Avoid interruptions that break the thought process and distract you from focusing on what the patient is saying. Obtain assistance from skilled colleagues to help translate mouthed words.¹¹

Use Alternative and Augmentative Communication Devices

Alternative and augmentative devices to aid communication range from the basic to the high-tech. Patients can have success with standard, generic tools, such as an alphabet board, but patients may further benefit from other assistive devices. Identifying and implementing alternative and augmentative communication requires collaboration among nurses, respiratory therapists, and speech pathology staff.

Table 3 Essentials to include in a communication kit

Communication supplies should be readily available for all ventilator-dependent patients. These supplies can be easily assembled and placed in clear plastic bags or plastic containers for individual use. Letter, word, and picture boards should be laminated for durability and trouble-free use. Adaptive call light systems and other aids for hearing impairment (eg, the Pocketalker) should be readily available in a designated location. Speech pathologists should be consulted as needed to assist in determining effective communication systems for patients with complex communication problems or for seemingly simple cases where the nurse is unable to establish an effective communication system.

Communication kit contents

Clipboard
 8½ x 11 writing pad
 Pencil (#2)
 Washable fine-tip marker
 Letter board
 Word board
 Picture board
 Pain rating scale
 Shortness of breath/dyspnea rating scale
 Anxiety rating scale
 Communication Assessment Tool (Table 2)

A Pocketalker for hearing impaired patients and a magnifying glass should be readily available for use.

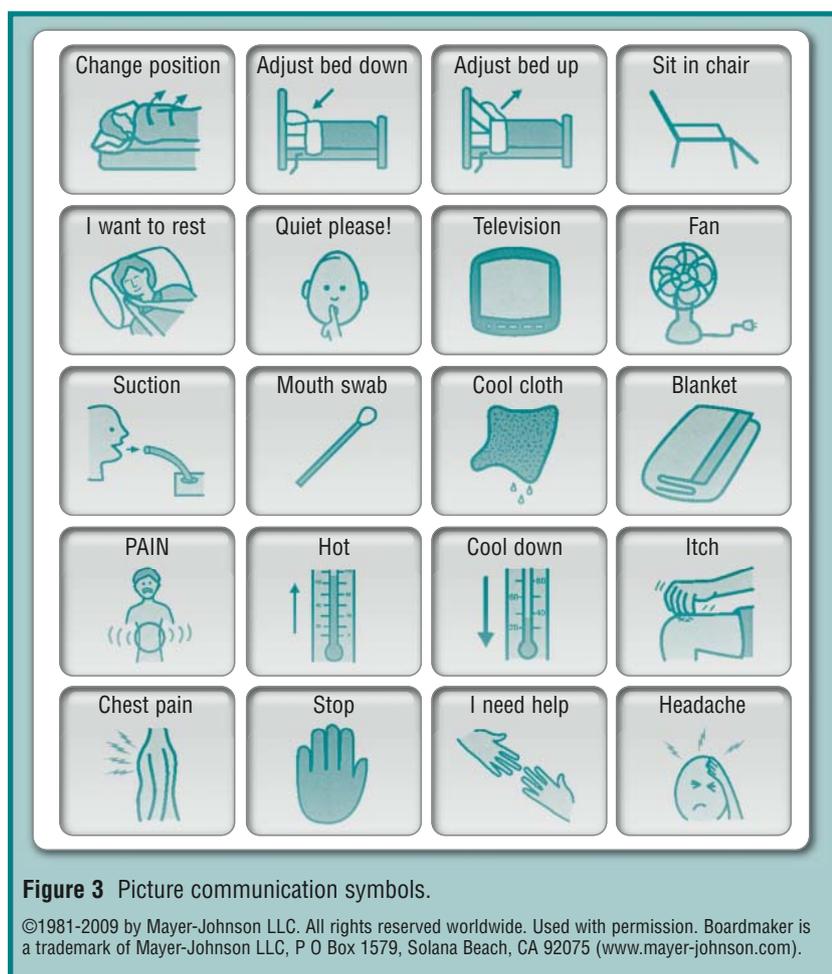
An effective communication system includes use of basic communication tools and consultation with staff from the speech-language pathology service as needed.

Basic Communication Tools. Provide each patient with basic supplies for note writing, including paper on a clipboard and a dark lead pencil for easy visualization. Remove restraints as needed for writing. Table 3 lists the essential contents for communication tool kits. Make tools and supplies easily accessible to all staff.

Provide basic communication boards. These may include a letter board, a picture board, and a list of common phrases/messages as shown in Figure 3. Involve the patient, as he or she is able, the patient's family, and staff in determining a list of patient-specific needs or messages and the best order of placement on the individualized board. Word/phrase boards can reduce

overall frustration with communication.³ Boards can be laminated for long-term use. Messages may vary depending on the clinical situation and the duration of intubation.

Messages for a patient with neuromuscular disease who is able only to blink eyes include the following: Suction, Urinal, Bedpan, Brush teeth, I am hot, I am cold, I can't hear you, I am biting my tongue, Mouth guard, Bend elbows, Do range of motion, Turn me, Raise my head, Change position of head, Reposition shoulders, Adjust my ear, There's a lump under me, Wash around eyes, Push eyelashes out of eyes, Readjust pillow, Lower my head, Reposition my arms, Need pills (Valium, Tylenol, sleeping pill), Tube feeding running too fast, Brush hair, Turn on TV, Turn off TV, Turn up volume, Turn down volume, Change channels, Turn on radio, Pull out earplug, Push in earplug, Favorite channel is ____, Gaze board.



Fowler et al¹² identified common messages for surgical patients experiencing short-term intubation: I am having pain, I am uncomfortable, I can't breathe, and How long will the tube be in? When is the tube coming out? Please untie my hands, Where is my family? How am I doing? Please suction me to remove secretions.

Pain rating scales provide a method for the patient to communicate pain level by pointing or gesturing. Patients who are unable to write may be able to trace with a finger the letters of a message on a sheet of paper or palm of a hand.

Try out eye gaze or specific eye movements for communication with a patient who has paresis that

prevents hand or head motion. Eye movements can be used for a reliable means of yes/no responses. Blinking eyes for responses can often be difficult to distinguish from reflexive blinking. Lateral or horizontal eye gaze can be used for basic messages such as "look up for yes, down for no", and so on. Eye gaze can also be used with simple communication boards to expand responses or used with advanced computerized communication devices that involve typing or manipulating of movement-sensitive switches.

Save messages that the patient writes (Figure 4), particularly notes expressing needs, wants, and feelings. Saving such notes allows the patient to communicate more effec-

tively, prevents frustration resulting from needing to rewrite common needs, and helps the health care team more effectively understand and meet the physical and psychological needs of the patient. A magic slate or dry erase board may not be the best choice because everything the patient writes is usually erased.

Collaborate with the patient on hand signaling to convey basic needs or information. Communicate this information in writing so that all staff can interpret hand signals.

Make sure the call light is in easy reach before leaving the room. Consult with the appropriate hospital department as needed for modified call light systems for weak or paralyzed patients. These include "easy-touch" switches and switches that patients can activate with mouth movement.

Consultation With the Speech-Language Pathology Service. Consult with the speech-language pathology service for more complex alternative communication systems. Voice output communication aids are small electronic, computerized devices that can be used by typing or manipulating movement-sensitive switches. The cost of these devices usually prohibits most facilities from having a supply for use in the ICU.

An electronic larynx (electrolarynx) can enhance communication for patients with temporary or permanent voice loss. This handheld device is easily operated by pressing the instrument to the neck to transmit sound into the pharynx, where the lips and tongue use it to form words. It is commonly used by people who have had a laryngectomy because it produces a "sound" that replaces the voice component of



Figure 4 One patient's written notes communicate his physical and psychological needs.

speech. Patients with a tracheostomy could be considered for use of the device if they are able to articulate or mouth words to produce intelligible speech. Patients with weak speech muscles are poor candidates.

Ewing¹³ reported that patients rate use of an electronic larynx more favorably than they rate use of pad and pencil, lip movement, and sign language, indicating that the electronic larynx was the least stressful method, the easiest to use, and the clearest for self-expression. Use of the electronic larynx with critically ill patients is often challenging because manual dexterity is required to place the electrolarynx against the neck and to coordinate the on/off modes with speech attempts. The nurse commonly manipulates the device in these situations. The speech-language pathologist should be consulted for instruction on correct use.

Consult with a speech-language pathologist and a respiratory therapist to determine if a stable patient with a tracheostomy is a candidate for speech. Procedures include partial or total cuff deflation, use of a 1-way speaking valve, and a specialized tracheostomy tube with talk attachments, as discussed in the next section.

Educate the Patient, the Patient's Family, and Staff in Communication Strategies

The patient, the patient's family, and staff must be educated on the communication strategies developed for that specific patient. Communication can be extremely frustrating, inefficient, and inaccurate if staff are each using different strategies. Such inconsistency can profoundly affect even simple movements for yes/no questions. A severely impaired patient may be cued by one staff to

“blink once for yes and blink twice for no,” whereas a second staff member may cue the patient in the opposite “blink once for no and blink twice for yes.”

Successful strategies include noting the patient-specific communication plan on the care plan and placing it in an easily recognized location for caregiver implementation. Keep the patient-specific communication system at the bedside on a clipboard for easy use. Be aware of patient privacy regulations that may limit postings. Assist and demonstrate to the patient's family how to communicate effectively with their loved one. Provide preoperative education on the causes of impaired verbal communication when a patient is intubated. Work with the patient and the patient's family members to identify effective communication methods and ensure that information is written on the

Table 4 Communication problem, causes, and management

Problem: Impaired ability to communicate verbally

Causes: Endotracheal tube, tracheostomy tube placement results in no air flowing past larynx when cuff is inflated, decreased ability to read lips if orally intubated, and tube-securing method occludes the patient's mouth.

Management

Initial evaluation/plan

1. Evaluate appropriate communication method(s) for client based on type and degree of physical disability and use of arms and hands, mental status, comprehension, language background, hearing, and vision. Refer to Table 2 (Communication Assessment Tool).
2. Communicate patient-specific plan on care plan and at bedside for easy implementation by caregivers.
3. Assist/Demonstrate effective communication methods to staff and patient's family.

Interventions

4. Maintain eye contact, preferably at patient's eye level. Provide adequate room light. Make sure patient has glasses and hearing aid if needed.
5. Ask yes/no questions one at a time, use pad/pencil, gestures, and word and alphabet board as appropriate.
6. Anticipate needs, ask questions related to personal care and comfort on a regular basis. Questions include the following: Do you want to be turned? Do you need to be suctioned? Do you need to use the bedpan? Urinal? Do you have pain?
7. Initiate use of word board/phrase board appropriate for patient and tailored to meet individualized needs. Place in bold print on communication board. Laminate if intended for long-term use.

Sample communication board for complex patient, total paralysis

Suction, Urinal, Bedpan, Brush teeth, I am hot, I am cold, I can't hear you, I am biting my tongue, Mouthguard, Bend elbows, Do range of motion, Turn me, Raise my head, Change position of head, Reposition shoulders, Adjust my ear, There's a lump under me, Wash around eyes, Push eyelashes out of eyes, Readjust pillow, Lower my head, Reposition my arms, Need pills (Valium, Tylenol, sleeping pill), Tube feeding running too fast, Brush hair, Turn on TV, Turn off TV, Turn up volume, Turn down volume, Change channels, Turn on radio, Pull out earplug, Put in earplug, Favorite channel is ____, Gaze board.

Common messages of surgical patients experiencing short-term ventilator support

I am having pain, I am uncomfortable, I can't breathe, How long will the tube be in?, When is the tube coming out?, Please untie my hands, Where is my family? How am I doing? Please suction me to remove secretions.

8. Convey calm, confident, reassuring approach. Maintain patience if patient gets frustrated or angry at not being able to communicate needs. Empathize with patient.
9. Seek assistance from other colleagues to help determine what the patient is trying to communicate. Avoid communicating your frustration or blaming the patient for the problem.
10. Identify, validate meaning of nonverbal communication. Empathize with patient.
11. Involve family/significant other in plan of care as much as possible.
12. Make sure call light is easy to reach before leaving room. Obtain modified call light system if patient is weak or paralyzed.
13. Provide preoperative education about what to expect regarding impaired verbal communication when intubated. Identify effective communication methods *with* patient/family and communicate specific information on care plan.
14. Consult with speech therapy as needed to assist in providing effective communication methods.

care plan. Table 4 summarizes the communication problem, causes, and management.

Speech With a Tracheostomy

Many patients with a tracheostomy, whether receiving mechanical ventilation support or breathing spontaneously, can achieve speech with the tracheostomy tube in place. Determining a patient's candidacy for speech should be a collaborative effort between members of the multidisciplinary team. Facilities vary in their practice, but

typically the physician orders an evaluation by the speech-language pathologist, the pulmonary clinical nurse specialist, and/or the respiratory therapist.

Several methods are available for achieving speech with a tracheostomy, and selection of the most effective, safe, efficient method should be based on the patient's clinical status. Five common methods are partial or complete cuff deflation, plugging or capping the tube, use of a 1-way speaking valve, use of a tracheostomy tube with a talk attachment, and use of a fenestrated tracheostomy tube.

Partial or Total Cuff Deflation

Partial or total deflation of the cuff is an option for clinically stable tracheostomy patients who are receiving mechanical ventilation. A tracheostomy with the cuff inflated prevents air from passing through the larynx for speech (Figure 5). If the tracheostomy cuff is deflated by only a few milliliters or completely, air leaks around the tube and passes through the larynx and out of the mouth (Figure 6). The speech produced with this technique is often referred to as "leak speech." Patients often need to work on coordination

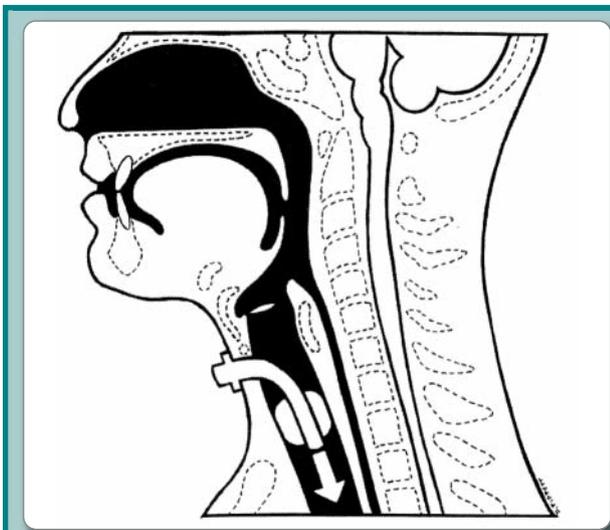


Figure 5 When the cuff of the tracheostomy tube is inflated, air cannot pass through the larynx to generate speech.

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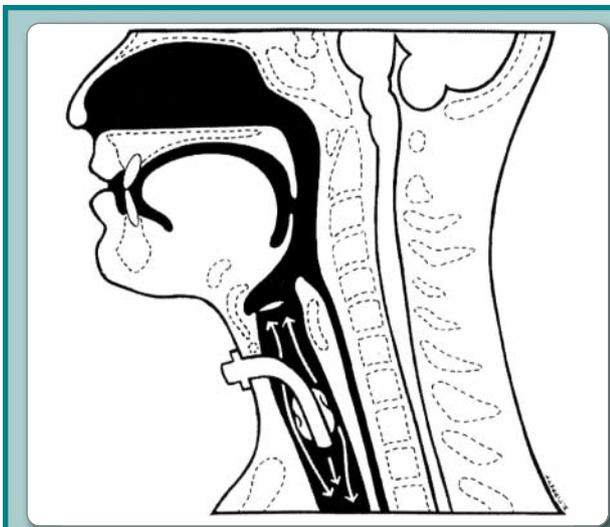


Figure 6 When the cuff of the tracheostomy tube is partially or completely deflated, air can pass around the cuff and through the larynx, so speech is possible.

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of verbalizations with the inhalation/exhalation timing of the ventilator in order to initiate speech/voice during the exhalation phase. They can learn how to control air leakage through the mouth by occluding the posterior pharynx area with the tongue and pharyngeal structure.

way problems. Increased airway resistance causes anxiety, respiratory distress, and potential cardiopulmonary deterioration.

Before the tube is plugged, the cuff must always be completely deflated. Larger tracheostomy tubes cannot be continuously

Plugging or Capping the Tube

Another option for patients with a tracheostomy who are in stable condition and do not require mechanical ventilation is plugging or capping the tube. Patients who are breathing spontaneously or require partial ventilator support can be evaluated to determine whether plugging the tube is appropriate. Because the tube takes up space in the trachea, plugging it creates various degrees of airway obstruction depending upon tube size, tracheal size, and other possible upper air-

plugged because of the increased airway resistance that results. Instead, the patient may tolerate intermittent plugging of the tube with a finger during the exhalation phase. Initiate plugging after the patient takes a breath, and discontinue plugging the tube if the patient cannot exhale, speak, or complains of shortness of breath and difficulty breathing. Teach capable patients how to finger occlude the tracheostomy tube for speaking. In order to plug the tube successfully and continuously, the tube must be changed to a smaller diameter to decrease airway resistance by allowing more space for airflow in the trachea. Changing to a tracheostomy tube with a cuff that tightly collapses to the shaft of the tube may also improve space for airflow in the trachea. Change to an uncuffed tube if a cuffed tube is no longer needed. A 1-way speaking valve may be attached to the tube opening for speech.

1-Way Speaking Valve

Use of a 1-way speaking valve is a common method for achieving speech with a clinically stable patient with a tracheostomy who is breathing spontaneously or receiving mechanical ventilatory support. Although they are available from several different manufacturers, 1-way valves have similar characteristics and functions. The Passy-Muir Speaking Valve (Passy-Muir Inc, Irvine, California) is an example of a 1-way valve that attaches to the 15-mm hub of the tracheostomy tube. The plastic valve opens on inspiration, allowing air to enter the lungs. On exhalation, the valve closes off and all air must

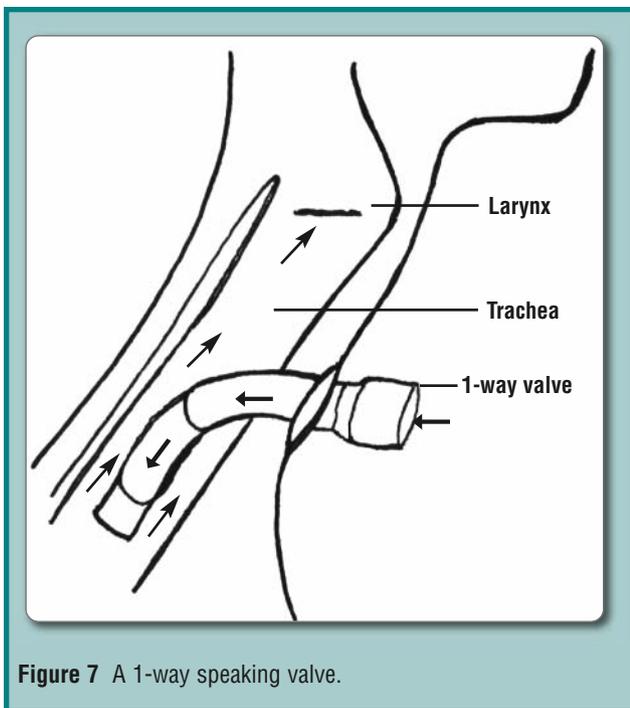


Figure 7 A 1-way speaking valve.

exit through the upper airway (Figure 7). As it exits, exhaled air passes between the vocal cords to produce the voice for speech.

The cuff of the tracheostomy tube must be completely deflated for all patients, regardless of whether they are receiving mechanical ventilation, before attachment of the 1-way valve. Placing a 1-way valve on a tracheostomy tube with an inflated cuff would allow a patient to inhale but not exhale, a major error that can immediately lead to acute respiratory distress,

typically involves the collaboration of a multidisciplinary team that includes the nurse, physician, speech-language pathologist, respiratory therapist, and patient. It is essential that the health care team thoroughly understand the indications, contraindications, correct procedure, and monitoring that are required with use of a 1-way valve. Table 5 summarizes contraindications to use of the 1-way speaking valve. Patients unable to use the Passy-Muir Speaking Valve may tolerate partial cuff deflation as discussed earlier.

barotrauma, and other life-threatening complications. Also, an improperly deflated cuff with 1-way valve placement can cause an immediate and undesirable increase in lung pressures and trauma due to difficulty exhaling air through the narrowed airway.

Use of the 1-way valve typi-

Procedure for Use of the Tracheostomy 1-Way Speaking Valve

Health care providers must possess the knowledge and skills to determine appropriate candidates for use of the 1-way speaking valve. They also must be able to make appropriate assessments and ventilator adjustments and to implement other strategies for successful use of this communication technique. Table 6 lists a specific procedure for successful and safe use of a Passy-Muir Speaking Valve.

Specialized Tracheostomy Tube With Feature Designed for Speaking

Many critically ill patients are not in stable enough condition to tolerate cuff leaks with tidal volume loss or tracheal occlusion. Several manufacturers of tracheostomy tubes have produced tubes with a feature to allow speaking (Figure 8). These tubes have dimensions similar to the dimensions of other cuffed tracheostomy tubes. The unique feature of these specialty tubes is that a small section of tubing with an opening for airflow is attached above the cuff. This tubing exits the stoma and can be attached to an additional source of airflow with the flow rate

Table 5 Contraindications to use of a 1-way speaking valve

- Patient in medically unstable condition and/or requiring significant ventilator support (high respiratory rate and minute ventilation requirements, high fraction of inspired oxygen, positive end-expiratory pressure greater than 5 cm H₂O, respiratory distress, frequent bronchospasm and air-trapping problems)
- Pneumothorax with air leak and without air leak if there is any potential for increase in lung pressures
- Larger diameter tracheostomy tube
- Tracheostomy tube with inflated cuff
- Tracheostomy tube with foam cuff
- Airway above tracheostomy not patent: obstruction can be caused by numerous factors including bilateral vocal cord paralysis, severe tracheal or laryngeal stenosis, tumor obstruction, or secretions
- Copious, excessive, or thick secretions
- Paralysis of lips, tongue, and other muscles involved in speech
- Laryngectomy

Table 6 Procedure for placement of a 1-way speaking valve

1. Evaluate the patient to determine whether the device is appropriate. The patient should be awake, attempting to communicate, and should not have contraindications to use. Collaborate with the physician, speech pathologist, and respiratory therapist.
2. Explain the plan to the patient. Gather the necessary clinicians at the bedside, often including the bedside nurse and respiratory therapist and/or speech pathologist.
3. Verify that all equipment is readily available, including suction catheter, suction, manual resuscitation bag.
4. Position patient for breathing comfort, usually with head of bed elevated.
5. Deflate cuff completely.
 - a. Suction oral cavity and tracheostomy tube if needed.
 - b. Completely deflate the cuff.
 - c. Be ready to **immediately** suction the trachea and mouth of any secretions that may have pooled above the cuff and are forced into the mouth with coughing or ventilator airflow.
6. Attach valve to tracheostomy tube. If patient is ventilator dependent, attach flex tube adapter or swivel valve adapter; reattach ventilator tubing.
7. Adjust, as needed, the ventilator tidal volume higher to compensate for leakage around tube, reset volume and pressure alarms, and make other ventilator adjustments including turning off PEEP to prevent machine self-cycling.
8. Monitor tolerance including breathing comfort and ability to exhale easily. **Immediately** remove the valve if the patient complains of respiratory distress, breathing discomfort, or shortness of breath or if observations show difficulty with air exchange, inadequate chest deflation indicating impaired exhalation, the appearance of “air trapping,” increased respiratory rate, increased respiratory muscle use, and various other signs of increased work of breathing. Readjust the ventilator to ensure adequate ventilation and reassess the patient for contraindications.
9. Caution: If the patient has difficulty exhaling, vocalizing will be difficult for the patient. The patient most likely is not a good candidate for the valve because of significant airway resistance from the tube or other problems. Avoid placing the patient in a situation of uncomfortable breathing, which may affect future communication interventions.
10. Instruct ventilator-dependent patient to “notice that air fills your lungs with air when the machine gives you the breath of air. Breathing out will be through your nose and mouth.” Coach the patient to “take a breath in first, then speak.” Initially try vocalizing with simple sounds like “Ahhhh....” or count “1,2,3,4....” Provide direction and reassurance as needed.
11. Provide adequate oxygenation and monitor oxygenation status with pulse oximetry. Maintain Sp_o₂ at 90% or greater or be alert to acute problems if Sp_o₂ starts decreasing from the patient’s baseline level while on the ventilator.
12. Remove the valve and suction as needed to maintain a patent airway. Provide ventilation support as needed. Note: Secretions can obstruct air passage outside the tube, causing respiratory distress and valve intolerance. Although a 1-way speaking valve can improve the strength of the cough, it may be difficult for the patient to cough secretions up to the mouth with the valve in place because of the small space between the tube and the trachea, thicker secretions, inability to take deep breaths, and the weak cough.
13. Provide an oral suction system for patients who can to suction the oral cavity.
14. Remove the valve before starting nebulizers/ aerosol treatments to prevent damage of the valve. Remove the valve when the patient is sleeping.
15. Readjust the ventilator to previous settings after valve removal, and recheck the patient/ventilator system to ensure optimal ventilation.
16. Spontaneously breathing patient: Provide ventilation assistance as needed with a manual resuscitation bag to assist with deep breaths and secretion clearance.

Abbreviations: PEEP, positive end-expiratory pressure; Sp_o₂, oxygen saturation as determined by pulse oximetry.

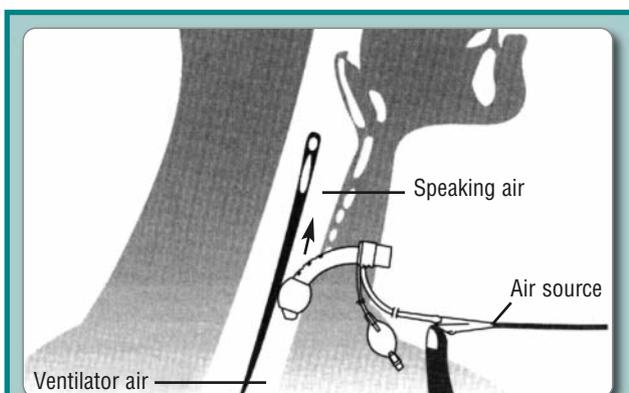


Figure 8 A tracheostomy tube with the feature that allows speaking while the cuff is inflated.

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regulated on a wall flowmeter according to the manufacturer’s recommendations. The patient or staff member occludes a port on the external airflow tubing so that the additional airflow is routed through the airflow tub-

ing and exits into the trachea just above the inflated tracheostomy cuff. This airflow can then pass through the vocal cords for speech. The air used for speaking is not the air being used for ventilation.

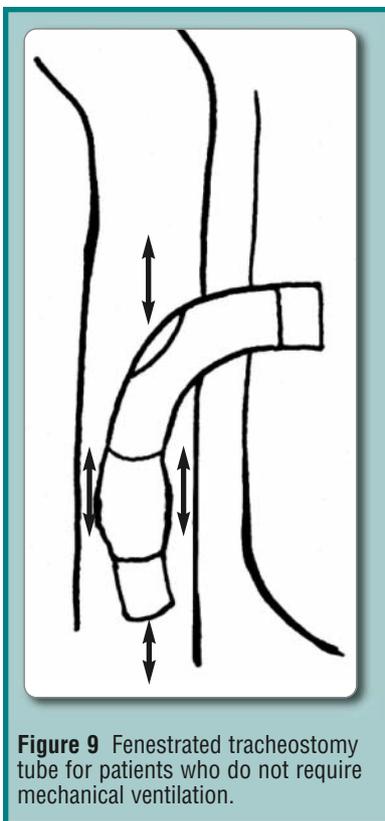
The main barrier to successful use of the speaking tube is obstruction of the small holes of the tubing with secretions, which blocks the airflow. The hole above the cuff is only several millimeters large and can easily be occluded by the copious secretions that accumulate above an inflated cuff. These secretions

should be removed by applying a suction source to the airflow tubing and suctioning out the secretions. The tube may also not fit properly in the patient's trachea, causing blockage of the airflow port and an ineffective tube for speaking. Patients with hand weakness or paralysis are unable to occlude the port for initiating voice and must rely on the nurse for assistance and adjustment of the wall airflow. This option should be considered for patients who have not had success with the more common techniques for speech and need the cuff to remain inflated for optimal ventilation.

Fenestrated Tracheostomy Tube for Patients Who Do Not Require Mechanical Ventilation

If the plan is to plug a tracheostomy tube for speaking, a fenestrated tracheostomy tube may be placed to allow more airflow through the trachea and thereby help decrease airway resistance. The fenestration is a hole located on the outside of the tube that allows air to travel through the tube *if* the inner cannula is removed and the fenestration is properly located in the trachea (Figure 9). Before the tube is plugged, the cuff must be completely deflated.

Some fenestrated tubes do not fit properly in certain patient's anatomies, and the hole may be blocked by the tracheal wall tissue. Such blockage can affect breathing and also place the patient at increased risk for granulation tissue formation at the site of the fenestration. The tube should always be evaluated for proper position of the fenestration by visual inspection with an endoscope by a specialist trained to evaluate the tube properly. Potential for this problem may



be evaluated simply by removing the inner cannula and looking with a flashlight into the tracheostomy tube to observe for an open hole versus a hole blocked by tracheal wall tissue. If the hole is against the tracheal wall, it can be a source of tracheal irritation or tissue growth into the fenestration and trachea. The tube should not be used if the fit is improper.

It may be difficult for some patients, even patients with strong coughs, to cough secretions through the narrow space in the trachea and through the fenestration, especially if secretions are thick and tenacious. The tracheostomy plug should be removed and secretions suctioned as needed if sounds of secretions are audible or the patient complains of needing suctioning, feels short of breath, or has respiratory distress. Reevaluate the patient's respiratory status after the tube is plugged. Close

monitoring throughout tube plugging is essential as most patients are unable to remove tracheostomy plugs on their own. When the patient needs to receive mechanical ventilation, the inner cannula is replaced, the cuff is inflated, and the ventilator adapter is reattached to the ventilator, which is properly set up and functioning.

Suggested Research Priorities for Effective Communication

Loss of speech is a frightening experience¹⁶ and can cause anxiety, agitation, and various other adverse physiological effects as well as adverse ventilator effects. Although ICU nurses commonly care for patients with complex communication needs, nurses may receive little or no training in facilitating or interpreting communication for ventilator-dependent patients or in using devices to improve the effectiveness of communication.^{15,16} Assistive and augmentative devices are available to improve communication; however, it is not surprising that they are rarely used.² It is essential to assess the patient's ability to communicate, establish an effective care plan with strategies customized for the patient's needs, and ensure that all staff can effectively interact with the patient to determine needs and concerns.^{17,18} The American Thoracic Society Statement on Research Priorities in Respiratory Nursing¹⁶ recommends the following:

Studies are needed to improve nurse-patient communication, including interpretation of non-vocal behaviors. In addition, studies are needed to determine ways of best assisting patients to use available

communication devices. Strategies need to be tested to improve health care provider communication skills.

Testing combinations of alternative augmentative technologies, consultation, and training of caregivers may create effective communication options for nonspeaking patients. Systematic research may assist in determining the differential effects of these treatments and profiles of successful users of alternative augmentative communication systems.¹⁹

It is common for neuropsychological and functional deficits to occur in ICU patients receiving mechanical ventilation because of the various sedative medications commonly used. Studies are needed to test the frequency, severity, and potential causes of these deficits with the goal of testing interventions to decrease the impact of the deficits.¹⁶ One example is a study of the effect of implementing effective communication strategies on decreasing the need for sedative medications and thereby minimizing adverse neuropsychological consequences.

Communication assessment tools should be evaluated to determine whether they are user-friendly and meet the desired outcome of determining and implementing effective communication strategies. The assessment tool (Table 2) developed and presented in this article requires clinical evaluation.

Various types and sizes of letter boards, word boards, and phrase

boards are available to enhance communication. Few descriptive or empirical studies have addressed the content and format of these tools or patients' perspectives on decreasing frustration with communication. Research is needed to test the effects of communication boards and various other methods used to facilitate communication on outcomes, including patients' anxiety and satisfaction, adequate pain management, and duration of mechanical ventilation.³ Research is also needed to determine the types of communication tools that are most effective for individual types or categories of patients.

Summary

Communicating effectively with ventilator-dependent patients is essential for the provision of quality care. Cases presented in Table 7 (available online only at www.ccnonline.org) summarize a variety of clinical situations and highlight useful communication strategies that effectively meet the needs of patients and their families. It is important for nurses to assess communication needs; identify appropriate alternative communication strategies; create a customized care plan with the patient, 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. Patients' family members also need to be educated and supported in their efforts to communicate and care for their loved ones. **CCN**

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Financial Disclosures
None reported.

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To learn more about patients receiving mechanical ventilation, read "Not-so-Trivial Pursuit: Mechanical Ventilation Risk Reduction" by Mary Jo Grap in the *American Journal of Critical Care*, 2009;18:299-309. Available at www.ajconline.org

Promoting Effective Communication for Patients Receiving Mechanical Ventilation

Facts

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 high-tech alternative communication devices. 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 (see Table); 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.

Table Communication Assessment Tool for nonvocal patients

Directions: Communication plan should be kept at the bedside and/or designated computer location so it is readily available to all health care team members and the patient's family. Update as needed.

Date assessed: _____ with patient _____ with family member _____ both _____

Mental status: alert, appropriate----lethargic, confused----comatose

Language: English: Yes No Other (List) _____

Hearing: Normal Impaired (R,L) Hearing aid: Yes No

Vision: Normal Impaired Needs glasses for reading: Yes No

Writing: Right Left

Grasps writing device: Yes No Unable due to hands: weak--- swollen---paralyzed

Literacy (reads, spells): Yes No

Aphasia: Yes No (If yes, consult speech therapy)

Neuromuscular weakness, paralysis: Yes (Explain) _____ No

Able to use standard call light system Yes No (Select adaptive system)

Effective communication system(s) for this patient:

____ Nods head up, down to yes/no questions

____ Clipboard, pad, pencil _____ hand

____ Lip-read

____ Picture board

____ Letter board

____ Word board

____ Regular call light system

____ Needs adaptive call light system. Proper placement for use _____

Severe weakness, paralysis

____ Blinks eyes 1 blink = yes, 2 blinks = no

____ Moves eyes toward head for yes, closes eyes for no

____ Needs advanced system; speech consult sent

Details of effective communication system for Mr/Ms _____

Example:

12/6/08 Mr L communicates by nodding head to yes/no ?, needs glasses for reading and writes with right hand-elevate HOB at least 40°, points to picture board—usual issues have been pain, needs frequent position change, likes ROM to legs and wants radio on (AM 1500 or FM 100)

Abbreviations: HOB, head of bed; L, left; R, right; ROM, range of motion exercises.

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