

Communication & The Mechanically Ventilated Patient



DukeMedicine

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Why is communication important?

“We had a young adult patient who sustained a spinal cord injury resulting in quadriplegia, respiratory failure, and ventilator dependence. As the patient mouthed words, the ICU team and family interpreted that the patient was mouthing, “Kill me”. Discussions began regarding the patient’s plan of care, including consideration of taking the patient off of the ventilator if that was the patient’s wish...Once the patient was able to verbally communicate [via inline PMV], it was immediately clear that the patient was really saying, “My shoulder is killing me,” which was also injured during the accident and was the one extremity that was partially regaining movement.”



Why is communication important? **Research Shows...**

Patients with access to communication:

- Receive less sedation
- Are transitioned quicker
- Have increased satisfaction with healthcare
- Feel more in control

People with communication impairment are at:

- High risk for preventable adverse effects

Happ et al., 2004; Patak, Gawlinski, Fung, Doering, Berg, & Henneman, 2006; *Bartlett G. et al: Impact of patient communication problems on the risk of preventable adverse events in acute care settings. CMAJ 178(12):1555-1562, Jun. 3, 2008.*



Why is communication important?

It is a TJC Requirement

- “The hospital respects the patient’s right to and need for effective communication” (RI.01.01.01EP5)
- “The hospital respects the patient’s right to receive information in a manner he or she understands” (RI.01.01.03)
- “The hospital involves the patient in making decisions about his or her care, treatment, and services (RI.01.02.01EP1)



Why is communication important?

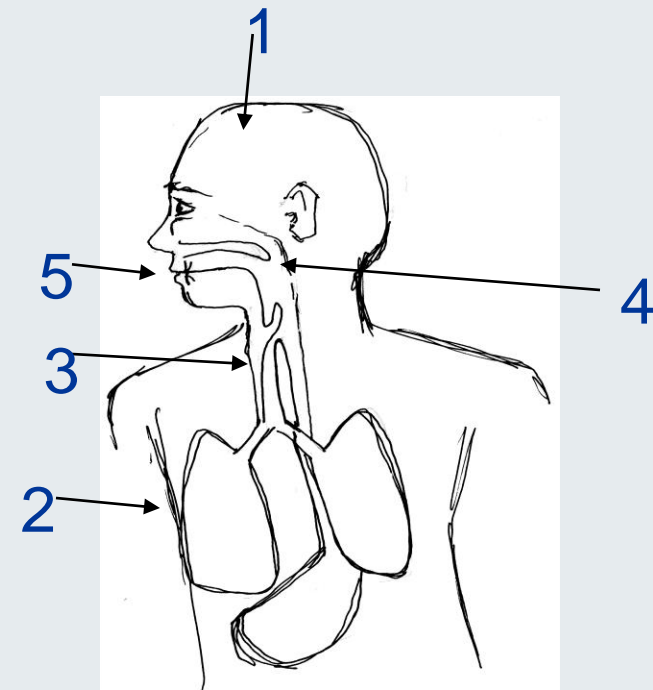
Patient perspective

- S/P bilateral lung transplant
- Diaphragm paralysis due to phrenic nerve impairment
- Poor prognosis, told several times he wouldn't make it
- Was able to talk to his 2 daughters who live out of state



Speech Production

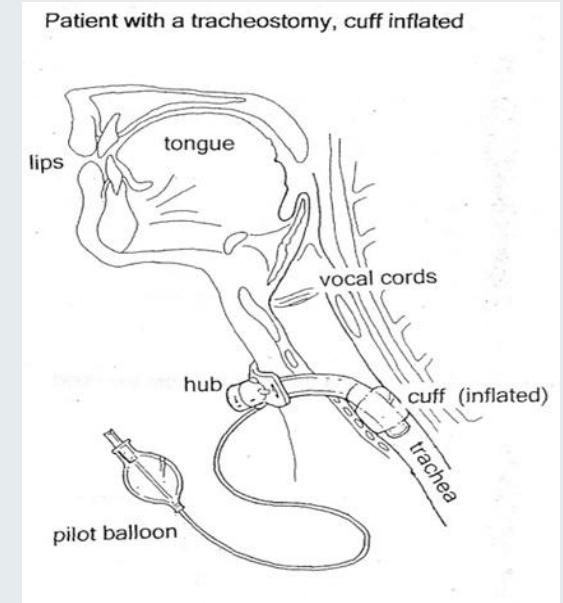
1. **Cognition** - Form a thought to say
2. **Respiration**- Air from the lungs travel up the windpipe to the larynx (or voicebox)
3. **Phonation** - The force of the air causes the vocal cords to vibrate, creating a buzzing sound
4. **Resonance** - The palate moves to close the nasal cavity for all sounds except /m, n, ng/ so that voice doesn't nasal
5. **Articulation** - The sound travels through the throat and mouth and is shaped into words by moving the lips and tongue
6. **Prosody** - Using all of these structures together, sounds can be stressed and pitch can be changed





How does trach/vent impact communication?

- No airflow to vocal cords
- Reduced respiratory drive
- Comorbid conditions may further impact communication
 - **Meds:** confusion, delirium
 - **Aphasia:** impaired expressive/receptive language
 - **Dysarthria:** impairment of subcomponents of speech
 - **Apraxia:** impaired motor planning
 - **Weakness/inability to use hands**



(Passy Muir Resource Guide, 2003)



Communication Options

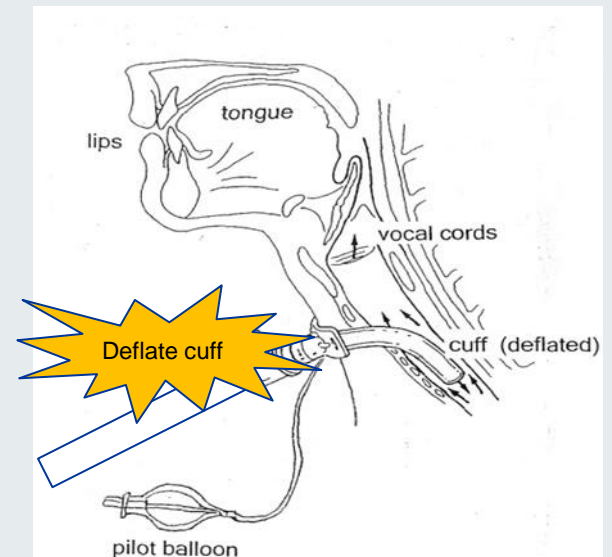
- Verbal communication
 - Leak speech
 - Inline PMV
 - Talking trach
 - Blom Trach system
- Nonverbal communication
 - Lip reading & electrolarynx
 - Gestures
 - Communication boards
 - Writing
 - Alerting system





Verbal Communication: Leak Speech

- How to:
 - Suction
 - Partially or fully deflate cuff
 - Reinflate cuff
- Troubleshooting Tips:
 - Slow cuff deflation (1 cc/min)
 - Coach patient (“It may make you cough...Breathing will feel different.”)
 - Give patient syringe for control (“Put the air back in when you are ready.”)



(Passy Muir Resource Guide, 2003)



Verbal Communication: Leak Speech

- **Pros:**
 - **Easy, quick**
 - **RNs, patients, families can do (with training and when patient is stable)**
- **Cons:**
 - **Short phrases rather than full sentences**
 - **Cough may not be as strong**

Patient quote: “I like it [talking]. It makes me feel human.”



Verbal Communication: Inline PMV



- Candidates:
 - Awake, alert, attempting to communicate
 - Medically stable
 - Able to tolerate cuff deflation and manage secretions
 - Able to pass air around trach tube
 - Can be placed 48-72 hours after tracheotomy
 - Vent settings:
 - $FiO_2 < 60\%$
 - $PEEP < 10 \text{ cm H}_2\text{O}$
 - $PIP < 40 \text{ cm H}_2\text{O}$ (for volume based)



Verbal Communication: Inline PMV

- How to:
 - **Pressure based ventilation**
 - Prior to trial, note exhaled tidal volume and peak airway pressure
 - Suction, slowly deflate cuff (at least 5 minutes), suction
 - Look for 40% or more loss of exhaled tidal volume
 - If no significant loss of pressure and there is loss of exhaled tidal volume, place inline PMV
 - **Volume based ventilation**
 - Prior to trial, note exhaled tidal volume and peak inspiratory pressure (PIP)
 - Suction, slowly deflate cuff (at least 5 minutes), suction
 - Look for 40% or more loss of exhaled tidal volume
 - Look for significant drop in PIP, increase tidal volume until baseline PIP obtained, then place inline PMV



Verbal Communication: Inline PMV



Verbal Communication: Inline PMV

- Troubleshooting Tips:

- **If no loss of exhaled tidal volume, the patient is unlikely to be able to exhale around the trach tube, consider**
 - Repositioning the patient (upright, head straight, chin up; use towels)
 - Trach downsize
 - ENT consult (r/o vocal cord paralysis, tracheomalasia, obstruction, etc)
- **If patient feels continuous flow, consider**
 - Reducing PEEP by 5
 - Time limit PS breaths
 - Use pressure trigger rather than flow trigger
 - Teach phonation upon exhalation
- **If voice is weak, consider**
 - Increasing flow rate, inspiratory time, or PEEP
 - Giving rest periods
 - Evaluating vocal cord function



Verbal Communication: Inline PMV

- **Pros:**
 - **Speaking, coughing, blowing nose, swallowing, tasting, smelling**
- **Cons:**
 - **Time and encouragement needed for successful use**
 - **Vent alarms**



Verbal Communication: Talking Trach

- What it is:
 - Cuffed trach with additional air flow tube that connects compressed air source from wall unit or tank to fenestration above trach cuff
 - Occlude air flow port to direct air through tubing and up to vocal folds

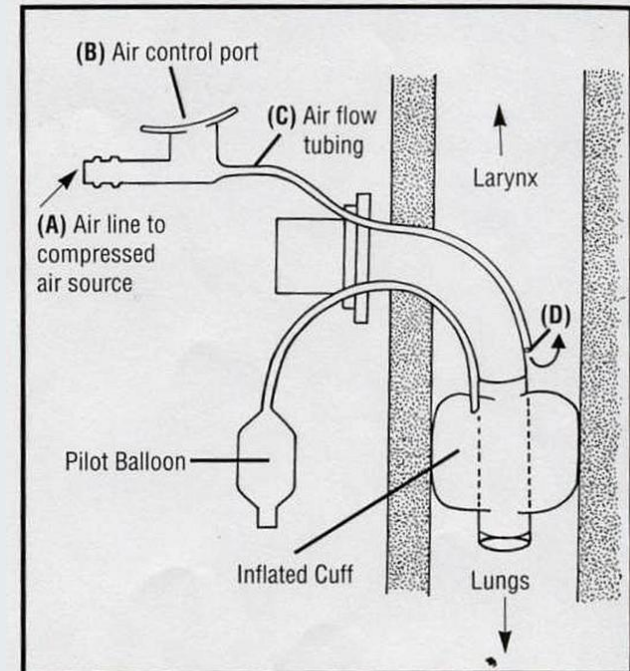


Figure 4-11: Talking tracheostomy tube. Air for speech is provided by independent air source (A). Upon occluding the air control port (B), air travels through the airflow tubing (C) and exits through a fenestration (D) located above the cuff.



Verbal Communication: Talking Trach

Specifics may vary by brand, but concepts generally the same

- Candidates:
 - Patent upper airway, functional oropharynx/larynx
- How to:
 - Connect tubes
 - Start gas supply at flow of 5L/min
 - Increase until adequate speaking volume obtained
 - Generally need flow of >8L/min
 - Do NOT exceed 15L/min
 - Occlude port only when speaking

Releases
air to vocal
folds



Portex Talking Trach

Connects
to O₂



Bivona Trach with talk attachment



Verbal Communication: Talking Trach

- Troubleshooting Tips:
 - **Discomfort**
 - Reduce air flow
 - Consult ENT (r/o contact ulcers, edema)
 - **No voice or reduced speaking volume**
 - Reposition patient
 - Increase flow (don't exceed 15L/min)
 - Consult Speech/ENT (vocal fold function, adduction exercises)
 - Give period of rest



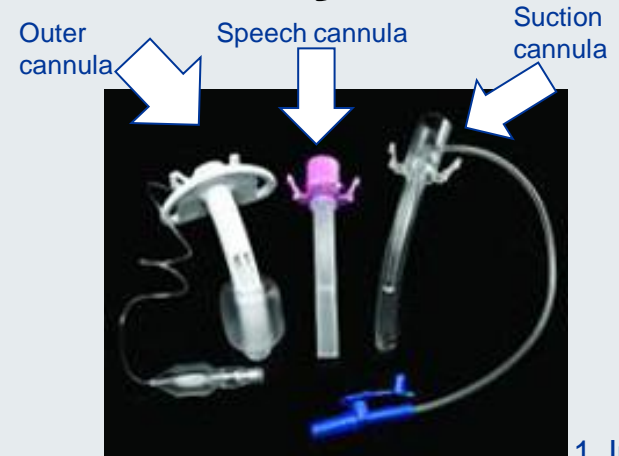
Verbal Communication: Talking Trach

- Pros:
 - **No cuff deflation required for verbalization**
- Cons:
 - **Need dexterity to occlude port**
 - **External air can irritate vocal folds**
 - **Upper airway secretions can interfere with function; including clogging air port**
 - **Expense of tube and air supply**



Verbal Communication: Blom Trach System

- Candidates:
 - Have Blom trach tube system
 - $FiO_2 \leq 60\%$
 - $PEEP \leq 10$
 - Does not need to be breathing spontaneously or be able to tolerate cuff deflation
- How to:
 - Place Exhaled Volume Reservoir
 - Suction
 - Change inner cannula





Verbal Communication: Blom Trach System

- Troubleshooting:
 - ??? (new technology)
- Pros:
 - Talk with cuff inflated
 - Suction cannula allows suction above cuff
 - ? less vent alarms with Exhaled Volume Reservoir attachment
- Cons:
 - Fenestrated trach (however, designed to reduce risk of granulation)



Communication Options

- Verbal communication
 - Leak speech
 - Inline PMV
 - Talking trach
 - Blom Trach system
- Nonverbal communication
 - Lip reading
 - Gestures
 - Communication boards
 - Alerting system





Can the patient....

- Answer simple questions?
- Express basic wants/needs?
- Express novel thoughts?
- Express complex thoughts?
- Get help when needed?
- Communicate without frustration?

Is communication as fast, efficient, and accurate as possible?



Lip Reading... Who is good at it?

- [Lip Reading Example](#)



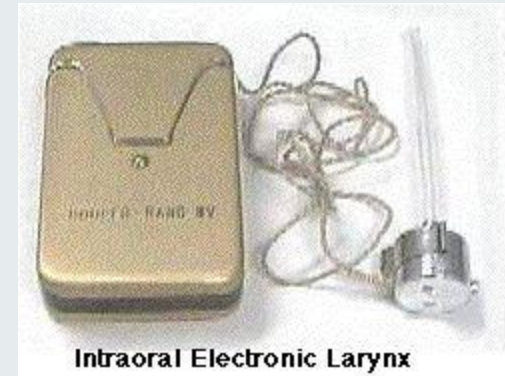
Lip Reading

- Often misinterpreted
- Patients often prefer it
- Key messages:
 - 1. Offer other options when possible**
 - 2. At very least, verify accuracy of message!**
 - Repeat what you think the patient said
 - Did you say, “You are in pain?”
 - When cognition is questionable, ask paired questions: “Are you in pain? Are you ok?”



Electrolarynx

- Tone generator, use articulators to shape tone into meaningful sounds/words
- Placement
 - Intraoral
 - Check
 - Neck



[Video clip](#)



Communication Boards

Range from no tech → low tech → high tech

- No tech
 - Writing
 - Alphabet board
 - Picture board
 - Communication book
- Low tech
 - Go Talk
 - Bic Mac
 - Lite writer
- High tech
 - Dynavox
 - Tobii
 - Apps

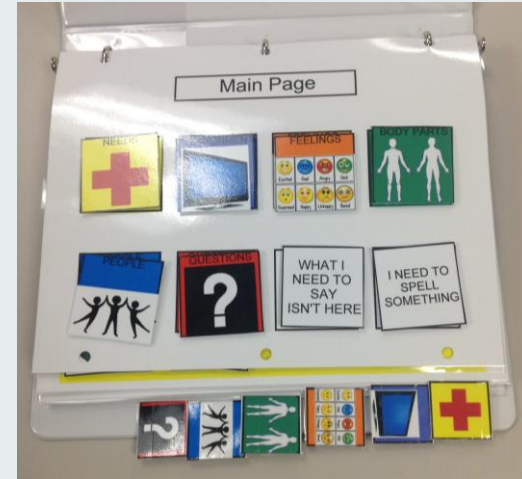




Communication Boards

Communication Book Sample:

- Many uses based on patient need
 - Direct selection
 - Velcro pictures on cover
 - Consistent yes/no questions (start broad questions, then ask more specific questions)





Communication Boards

Access

[video clip](#)

- Direct selection
 - Patient points to letter/word/picture
- Row column scanning
 - Communication partner scans each row, then each column
- Auditory scanning
 - Communication partner says each letter



A	B	C	D	End of word	
E	F	G	H	End of sentence	
I	J	K	L	M	N
O	P	Q	R	S	T
U	V	W	X	Y	Z



Communication Boards

Access: Eyelink

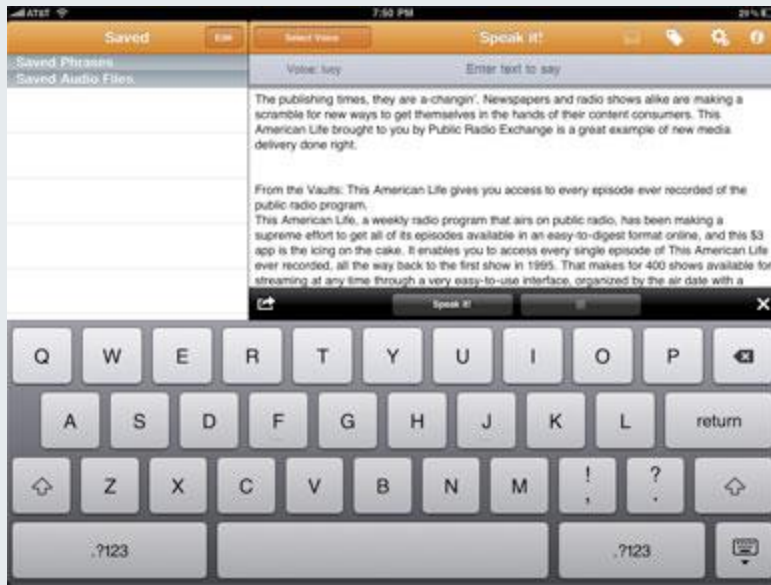
- Clear board
- Make eye contact through board
- Move eyes to spell words
- Can be very fast

A	B	C	D	BACK SPACE (MISTAKE)	SPACE
E	F	G	H	NUMBERS #	START OVER
I 0	J 1	K 2	L 3	M 4	N 5
O 6	P 7	Q 8	R 9	S 10	T ()00
U 11	V 12	W :00	X :15	Y :30	Z :45

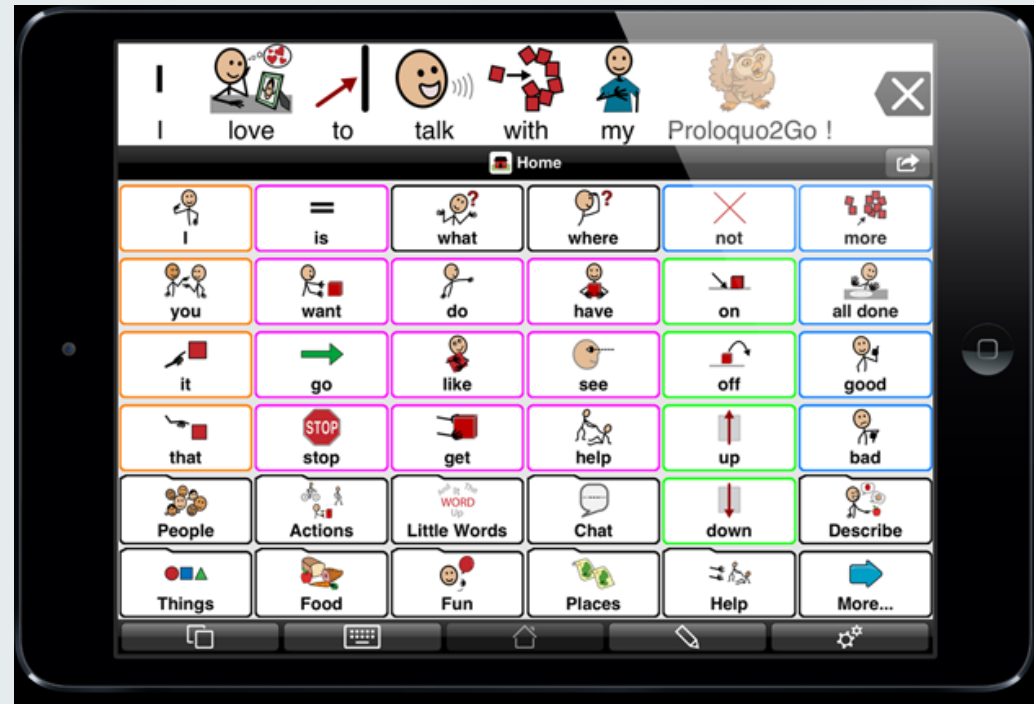


Communication Boards

There's an app for that!



Speak It



Proloquo2Go



Alerting system

- Access to call bell
 - Standard
 - Pancake switch
 - Sip and puff
- Placement of device (e.g, access with head turn)
- Pair with Speech Generating Device
- Ensure access throughout day
- If no access, tell the patient when you'll return (“I'll check on you in 30 minutes. Is that okay?”)





Low tech
before
high tech

How RTs can help:

- Help patients talk... verbally and/or nonverbally
 - Even if you don't have devices, try simple yes/no questions, write down letters/pictures/words
 - Ask paired yes/no questions
 - Verify that you are understanding your patients
 - Recognize coexisting communication impairment (cognitive, aphasia, dysarthria, etc)
- Ensure access to call bell
 - If patient cannot use, tell the patient when you will be back
- Collaborate with SLPs
 - Refer patients to SLPs
 - Ask for help if you don't understand the recommendations



Questions?



Thank you



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