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Freedom to Speak: Hands-Free Speech after Laryngectomy

offered in partnership with ATOS Medical

Yumi Sumida, MFA, MS, CCC-SLP

Moderated by:
Amy Natho, MA, CCC-SLP, Managing Editor, SpeechPathology.com

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How to earn CEUs

- Must be logged in for full time requirement
- Log in to your account and go to Pending Courses
- Must pass 10-question multiple-choice exam with a score of **80%** or higher
  - Within **7 days** for live webinar; within **30 days** of registration for recorded/text/podcast formats
- Two opportunities to pass the exam

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Freedom to Speak: Hands-Free Speech after Laryngectomy

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Yumi Sumida, MFA, MS, CCC-SLP

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- Julie Bishop-Leone, Director of Clinical Education
- Deanna Cohen-Mardekian, Clinical Educator
- Bridget Guenther, Senior Clinical Educator
- Samantha Jones, Clinical Educator
- Meaghan Kane-Benjamin, Senior Clinical Educator
- Yumi Sumida, Clinical Educator

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Learning Outcomes

After this course, participants will be able to:

- Describe findings from existing literature relevant to hands-free device feasibility, utilization, and candidacy.
- Describe the purpose and mechanics of hands-free speech devices.
- Identify factors to consider when fitting a patient with a hands-free speech device.
- Identify problems and solutions related to hands-free device use and misuse.

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"Head and neck cancer strikes at the most basic human functions- the ability to communicate, eat and interact socially"

Assessing quality of life in head and neck cancer. Gotay CC, Moore TD. Qual Life Res. 1992 Feb;1(1):5-17

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Impact of Voice on Identity

- Change in communication modality can significantly impact a person's identity (Bickford, Coveney, Baker and Hersh, 2013)
- Patients may have difficulty expressing humor and convey aspects of their personality (Sharpe et al., 2018)



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Link Between Mental Health and Communication Ability

Patients who have undergone a laryngectomy:

- Often feel stigmatized (Tisch et al., 2003)
- Experience mental health issues correlated to their level of successful voice rehabilitation
- Encounter changes in socialization such as:
  - Fewer social contacts
  - More isolation
- In one study of 171 patients one year after surgery, 80% of patients who had not acquired voice were alcohol dependent (Keszte et al., 2013)

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Link Between Mental Health and Communication Ability

- Overall mental health seems related to successful voice restoration (Keszte et al., 2013)
- Patients who do not have a tracheoesophageal (TE) voice prosthesis have fewer social contacts than those who do use TE speech (Brook et al., 2013)
- Greater social interaction can facilitate recovery and decrease social isolation (Lydiatt and Moran, 2009)
- Patients who use a hands-free device have more social contacts (Brook et al., 2013)

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Q4

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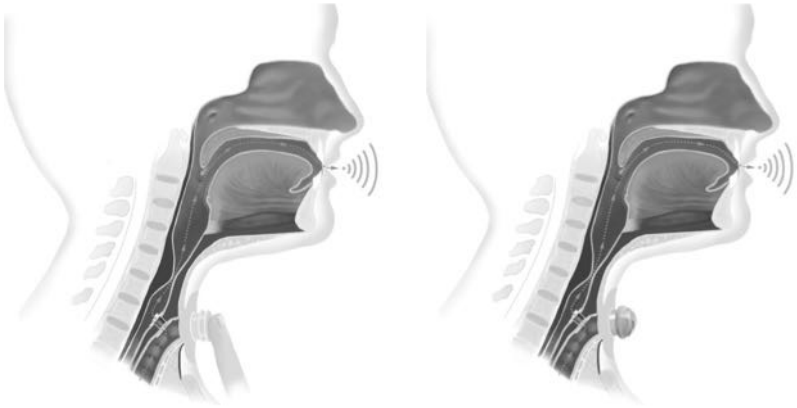
What is a Hands-free Speaking Valve?



Q1 & Q2

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Earliest Study on Hands-free Speech

- Blom, Singer and Hamaker, 1982 - 1st generation BS Tracheostoma Valve
- n=50, study interval = 10 weeks
- Problems
- Unintended valve closure with airflow changes
- Difficult to maintain airtight seal due to intratracheal backpressure
- Intratracheal back pressure is a reflection of vocal tract resistance
- Two sources of tracheoesophageal vocal tract resistance:
  - Pharyngo-esophageal segment
  - Voice prosthesis
- Related investigation to reduce back pressure ► development of larger diameter prosthesis with hinged valve!

Feasibility and Utilization of Hands-free Speech

- Op de Coul et al., 2005 - Multicenter study prospective study examining 6 months of hands-free (HF) valve use
- N = 79
- Assessed feasibility, compliance, utilization patterns with HF device
- Results: At 6 month mark, 76% (60/79) were using the HF device
- 19% were using on a daily basis for at least 5 hours
- 66% would continue to use a hands-free device in the future
- Biggest barriers were:
  - Fixation/Attachment of the HF device
  - Intratracheal back pressure
  - Inadvertent spontaneous closure of the device during physical exertion

Q3

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More about Utilization and Subjective Patient Impressions …

- van den Hoogen, Meeuwis, Oudes, Janssen and Manni, 1996 – case series
- N=30; Usage interval = avg 6 months, range 3-14 months
- 31% wore it all the time
- Situational use: Visits – 34%, Work – 17%, Recreational activities – 14%
- 83% felt less handicapped when using the valve
- Lorenz et al, 2007 surveyed laryngectomees at 1 and 6-month mark after being fit with a hands-free device
- N = 24;
  - 7 dropped out due to issues with attachment/fixation or cancer recurrence
  - Of the remaining 18 patients, 88% felt there was an advantage to speaking hands-free
  - 74% reported speaking hands-free decreased their level of disability

Q3

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Lessons Learned from the Literature

- Feasibility – Achievable for many patients
- Utilization – High utilization for situational use, moderate for daily use
- Barriers to utilization
- Difficult to maintain airtight peristomal seal
  - Peristomal topography
  - Intratracheal back pressure
- Unintended valve closure during changes in pulmonary airflow

Q3

Current Data

- In research done by ReD Associates in 2015, they found that all of the 50 patients they interviewed had hands-free speech as their primary goal.
- But…estimates show that only a small percentage of laryngectomees actually use a hands free device:
- US: 5%; UK: 15%; Europe: 10%

Why Aren't More Patients Hands-free?

Current Challenges

- Complex reconstructions may cause difficulty achieving seal with adhesives and attachments
  - Some patients have difficult, deep, moving stomas or backpressure issues
  - May require multiple office visits to achieve adequate seal
- Clinicians may not involve the patients in the decision to pursue handsfree speech
- Patients are uneducated about hands-free speech
- Cost

What Does Hands-free Speech Mean to Patients

Benefits to Hands-free Speech

- Free to gesture while speaking
- Can more easily participate in ADLs
  - Work with both hands and communicate
  - Talk and hold telephone while writing a message
  - Drive and talk to spouse
  - Talk while cleaning up after dinner
- Improved social acceptance and contact
- More hygienic

Nuts and Bolts

The mechanics of hands-free speech devices

CONTINUED

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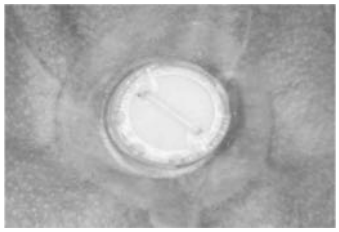
Principle of Hands-Free Speech for Laryngectomees

- Two-way valve = bias open valve
- Inhalation and exhalation through the stoma
- Pressure sensitive valve
- Open while breathing
- Closed when talking due to increased pressure
- Application of "forced exhalation" closes the valve and allows for airflow through the voice prosthesis



Q5

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Blom-Singer Adjustable Tracheostoma Speaking Valve (ATSV II)

- Originally designed in 1980
- Consists of two pieces: a diaphragm and faceplate body
- Assembled two-piece valve inserts into the tracheostoma adhesive housing
- Replacement foam filters only fit the ATSV II HumidiFilter Cap
- ATSV II HumidiFilter Cap is a twist-on plastic filter cap that fits over the ATSV II
- Prescription required

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Provox® FreeHands Device

- Older style hands-free device; predecessor to the Provox® FreeHands FlexiVoice™
- No longer in production
- Some patients still have this device
- May achieve improved voice with newer version – FlexiVoice
- Easier for patient and SLP to troubleshoot the newer version

CONTINUED

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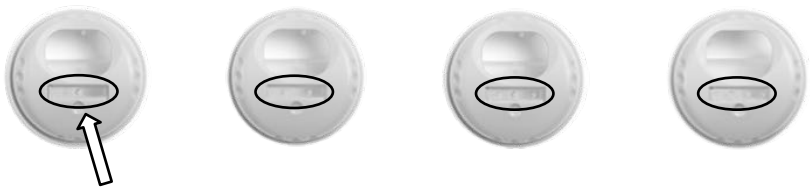
Features of Provox® FreeHands FlexiVoice™

- 4 different speaking valves with 4 distinct membranes
- Option to speak hands-free or with manual occlusion
- Locked mode prevents membrane from closing during strenuous activity (i.e. exercise, brisk walking, etc.)
- Allows for speaking with manual occlusion



Light = 1 dot **Medium = 2 dots** **Strong = 3 dots** **XtraStrong = 4 dots**

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Provox® FreeHands FlexiVoice™ Locked Mode

- The hook latches onto the loop
- Prevents membrane from closing
- Voicing still possible with manual occlusion
- Beneficial during exercise or energetic physical activity (e.g., walking up the stairs)

Locked mode

Speaking mode

Remember: When turning to locked mode, patient should inhale or hold their breath as they turn. Otherwise, the hook may miss the loop

CONTINUED

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Provox® FreeHands FlexiVoice™ Automatic vs Manual Occlusion

- Speaking with manual occlusion possible in both automatic speaking mode and locked mode
- Gently place finger or thumb over the opening and apply only light pressure

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Provox® FreeHands FlexiVoice™ Accessories

- Arch
- Prevents fabrics from occluding the valve opening
- Placed horizontally above the membrane
- Removal Aid
- Means of easily cracking and removing HME
- Place on the HME and squeeze slightly

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HMEs Used with Provox® FreeHands FlexiVoice™

- Two types of HMEs
- Provox® FreeHands HME® Flow
- Provox® FreeHands HME® Moist
- Select HME based on humidification needs and tolerance to breathing resistance

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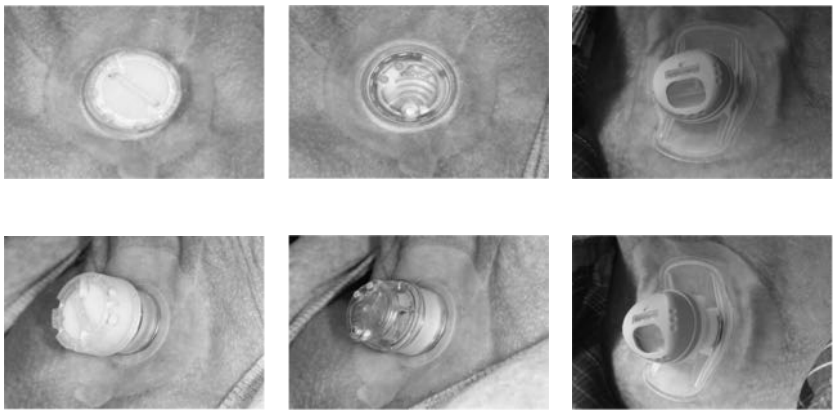
Hands-free Device Profiles



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Who is a candidate for a Hands-free Device?

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Candidacy Requirements Prior to Fitting a Hands-free Valve

- Fluent speaker = able to speak 10-15 syllables without interruption (fluid, easy voice)
- Ability to take care of TEP independently
- Must use HME 24/7 for at least 30 days
- Good attachment (at least 8+hrs)
- If using a peristomal attachment, intratracheal back pressure should be <40cm H20

Q6 & Q8

What is Intratracheal Back Pressure?

- Intratracheal back pressure is a reflection of vocal tract resistance
- Two sources of tracheoesophageal vocal tract resistance (Blom et al., 1982)
  - Pharyngoesophageal Segment (PES)
  - Voice prosthesis
- What can we manipulate to CHANGE backpressure?
  - PES
  - Voice prosthesis characteristics – inner diameter, valve type
  - Speaker effort

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Assessing Intratracheal Back Pressure

- Use manometer to test intra-tracheal back pressure during speech
  - If >40cmH2O, then try and extinguish ↑ back pressure by use of "easy onset"
  - Go to a larger diameter prosthesis (17 → 20Fr) or prosthesis that same diameter with easier airflow (i.e. Provox® Vega™)
  - Re-assess for intraluminal device

Q7

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CONTINUED

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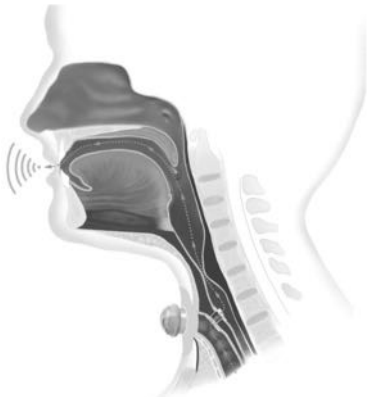
Considerations for Successful Hands-free Speech

- Appropriate HME attachment
- Correct application of HME and attachment
- Peristomal stability
- Intratracheal back pressure
  - PES resistance
  - VP resistance
  - Speaking pressure



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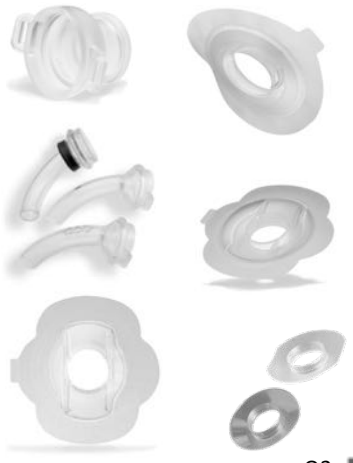
Selecting Attachments for Hands-free Speech

Attachments should typically be:

- More durable than attachments used for manual occlusion
- Able to sustain some anterior stomal movement
- A tight seal to allow for appropriate closure of hands-free device

Selecting Attachments for Hands-free Speech

- Intraluminal
- Provox® LaryButton™
- Peristomal
- Provox® XtraBase®
- Provox® StabiliBase™
- Provox® FlexiDerm™ with Tracho-Foam™
- Provox® StabiliBase™ OptiDerm ™
- InHealth® Reusable Valve Housings
- Peristomal +Intraluminal
- Provox® LaryTube™ with Ring



Q2

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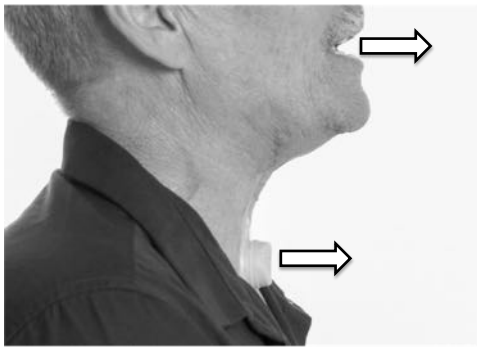
Tips for Teaching Patients to Use Hands-free Device



- Good coordination of breathing and speaking is important
- Membrane closed by forced exhalation airflow used for speaking
- Coordination of breathing and speaking helps to mask closing sound

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Removing the Hands-free Device to Cough

- Remove Provox® FreeHands FlexiVoice™ before coughing, pressure can reduce sealing time
- If membrane pops through the front opening, push back with finger

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Provox® FreeHands FlexiVoice™ Assessment Protocol

- Determine appropriate attachment
- Place FlexiVoice with Medium membrane (2 dots)
- Instruct patient to push air forward and say "aaaaaaaaaa" to initiate valve closure
- Try other membranes to determine which is easiest to use while talking and walking
- Have patient cough and demonstrate ability to push membrane back in place
- Turn valve to locked mode and have the patient manually occlude.

Patient Education for the Hands-free Device

- Review attachments and steps to follow to get a good seal
- Attaching HME to Provox® FreeHands FlexiVoiceTM hands-free device
- Hands-free vs locked mode; Practice rotating between automatic speaking mode and locked/open mode by twisting the top
- What to do when coughing?
- HME removal from hands-free device
- Alternatives for continued HME use at night
- Cleaning

CONTINUED

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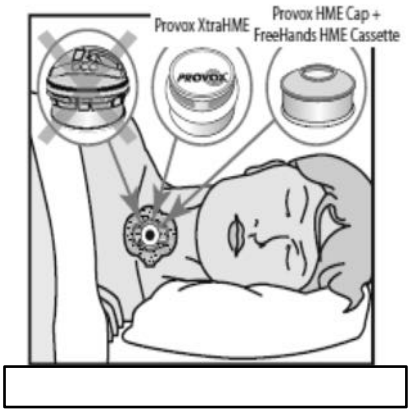
Additional Patient Education

- Alternative HME Use at Night
- Continued HME use is imperative to maintain tracheal climate and pulmonary health
- Provox® FreeHands FlexiVoice™ is NOT to be used while sleeping
- Use Provox® Luna®, Provox® XtraHME® or Provox® HME Cap™ with Provox® FreeHands HME



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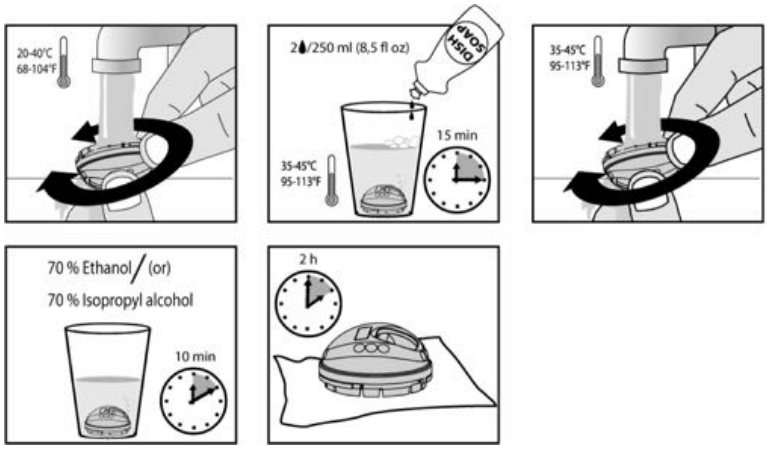
Caring for the Provox® FreeHands FlexiVoiceTM



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Provox® FreeHands Support™

- Before

- After

Videos used with permission from M. Kelley

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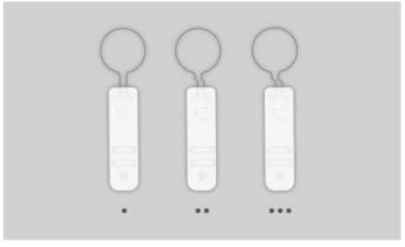
What is the Provox® FreeHands Support™?

- Discreet ring and transparent base
- Supports the adhesive and help prevent the stoma from moving
- Flat/Medium/Deep
- Reusable
- Fixation adhesive
- Attaches the base to the chest
- Disposable



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How It Works

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Case 1

- Mr. Jones had his laryngectomy 1 year ago would like to use a hands-free speech device. He is wearing an HME 24/7 and is very motivated. He is able to get 2-3 days with his current baseplate and his TE speech is fluent and clear with his 8mm 20Fr VP. During your assessment with a manometer, his intratracheal back pressure during connected speech is measured at 50cm H20. Which of the following might be your next step?

- Improve the seal of Mr. Jones' attachment
- Change his voice prosthesis
- Assess stimulability for connected TE speech at 25-40cm H20
- Take his device away from him

Q7

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Case 2

- Mrs. Smith had a laryngectomy 1 year ago and is eager to go hands-free. She is very motivated. Her TE speech is fluent and clear but she isn't wearing an HME. She has problems with excess mucus production and coughs more than before her laryngectomy. Which of the following is a first step towards hands-free speech?

- Mrs. Smith will produce hands-free TE speech at the phrase level in 8 out of 10 trials in the clinic setting
- Mrs. Smith will utilize an HME 24/7 for 30 days
- Mrs. Smith will demonstrate secure application of her HME attachment such that her seal will last 8 hours

Q6

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Candidacy Requirements Prior to Fitting a Hands-free Valve

- Fluent speaker = able to speak 10-15 syllables without interruption (fluid, easy voice)
- Ability to take care of TEP independently
- Must use HME 24/7 for at least 30 days
- Good attachment (at least 8+hrs)
- If using a peristomal attachment, intratracheal back pressure should be <40cm H20

Q6 & Q8

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Let's Give More People the Freedom to Speak Hands-free!

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