Progression to Tracheostomy Decannulation: Role of the Speech-Language Pathologist

Suzanne E. Johnston, MA, CCC/SLP
Kristin A. King, PhD, CCC/SLP

Financial / Non-Financial Disclosures

- **Suzanne Johnston, MA, CCC-SLP**
- Financial: Part-time, clinical consultant for Passy Muir, Inc.
- No relevant non-financial disclosures

- **Kristin A. King, PhD, CCC-SLP**
- Financial: Full-time, Vice President of Clinical Education and Research for Passy Muir, Inc.
- No relevant non-financial disclosures

Disclosure: This presentation will focus primarily on the no-leak Passy-Muir® Valve and will include little to no information on other speaking valves.

Learning Objectives

- Identify indicators for tracheostomy
- Understand anatomical and physiological consequences of tracheostomy
- Understand unique and intersecting roles of tracheostomy team members
- Understand the Scope of Practice and role of the SLP in identification and management of patient needs regarding decannulation
- Identify criteria for decannulation

Indications for Tracheostomy

- Prolonged mechanical ventilation
- Inability to perform trans-laryngeal intubation
- Upper airway obstruction
- Secretion management
- Neuromuscular disease
- Respiratory compromise: ARDS, COPD

Reputed Benefits of Tracheostomy

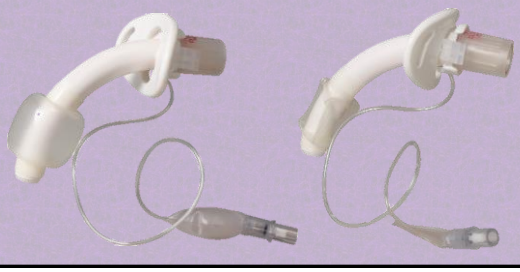
- Improved patient comfort/less need for sedation
- Lower WOB/faster weaning from MV
- Improved safety
- Improved oral hygiene and oral intake
- Less long term laryngeal damage
- Lower VAP rates
- Lower mortality
- Reduced ICU and overall LOS
- Earlier ability to speak/improved participation

Durbin, C., (2010). Tracheostomy: Why, when, and how? *Respiratory Care*, 55(8):1056.

Metal Tracheostomy

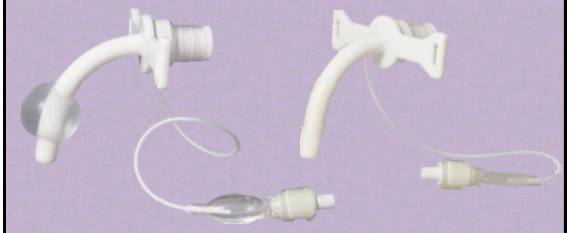
Air Filled Cuffs

- Cuff inflated
- Cuff deflated



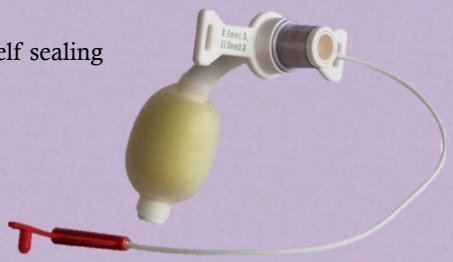
Water Filled Cuffs

- Cuff inflated
- Cuff deflated



FOME-Cuff®

Self sealing



CONTRAINDICATED For Passy-Muir Valve USE

Tracheostomy tubes (sizing)

BRAND	#	ID (MM)	OD (MM)	LENGTH (MM)
SHILEY	6	6.4	10.8	76
	8	7.6	12.2	81
PORTEX	6	6	8.3	55
	8	8	11	76
BIVONA	6	6	8.7	100
	8	8	11	120

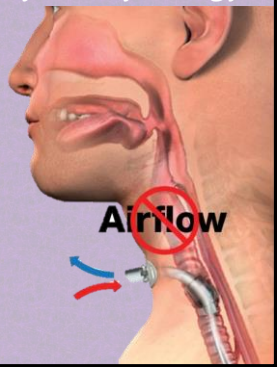
- Consensus: the trach tube should be no larger than 2/3 of the inner diameter of the tracheal lumen (*adult* standard)

Policies and Protocols

- Decannulation/weaning efforts begin *at time of intubation*
- Establish:
  - Effective humidification
  - Patency of airway
  - Appropriate cuff pressures and cuff deflation
  - Effective secretion management
  - Effective ventilation
  - Weaning plan and coordination of care in place for short term, as well as long term, needs

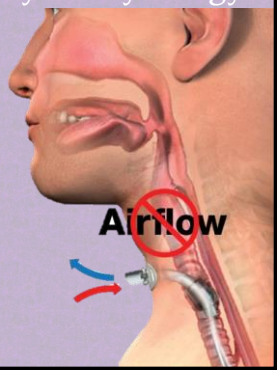
Impact on Anatomy & Physiology

- Airway/ventilation
  - Separation of upper & lower airway
  - Change in pressures
    - PEEP, affecting gas exchange
    - Subglottic pressure
    - Oral, pharyngeal, esophageal pressures
  - Disuse muscle wasting/ atrophy
  - Secretion management
  - Sensory changes
- Cuff complications



Impact on Anatomy & Physiology

- Communication
  - Little to no voicing
  - Poor breath support
- Swallowing changes
  - Reduced subglottic pressure
  - Potential laryngeal tethering
  - Sensory awareness



Trach Problems Identified by SLPs

- Lack of standardization for:
  - Sizing of the trach tube
  - Downsizing
  - Decannulation
  - Cuff deflation
- Trach care
- Use of Passy Muir Valves
- Referrals for swallowing assessments
- Limited patient/family education and discharge teaching

Challenges to Establishing Teams

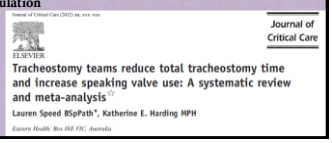
- No clinical consensus for decannulation protocols
- Members may vary per facility
- Defining team members' roles based on scope of practice and facility requirements
- Communication between members
- Establishing criteria for decannulation
- Coordination/timing of treatment of care

WHO? Team Management of Tracheostomized Patients

- Not All Teams are Created Equal!

Research: Supporting the Team

- Tobin, AE and Santamaria JD. (2008) An Intensivist-led Trach Review Team is Associated with Shorter Decannulation Time and Length of Stay: a prospective cohort study. *Critical Care. 12 (2):R48. doi: 10.1186/cc6864*
- Zaneta et al. (2014). Tracheal decannulation protocol in patients affected by Traumatic Brain Injury. *International Archives of Otorhinolaryngology, 18(2)*: 108–114.
  - **Faster decannulation, fewer weaning attempts**
  - Reduced LOS
  - Cost savings
- Garrubba et al. (2009). Multi-disciplinary care for the tracheostomy patients: a systematic review. *Critical Care. 13*:R177
  - **Reduction in time to decannulation**
  - Shorter LOS
  - Fewer adverse events


Journal of Critical Care

Tracheostomy teams reduce total tracheostomy time and increase speaking valve use: A systematic review and meta-analysis☆

Lauren Speed BSpPath*, Katherine E. Harding MPH

Eastern Health, Box Hill VIC, Australia

Defining SLP Role

- "The role of the SLTs [SLPs] is key, not only in assessing and managing swallowing and communication needs, but in contributing experience and expertise to all relevant tracheostomy-related decisions, as part of the MDT process."
  - McGrath (2014) The UK National Tracheostomy Safety Project

ASHA Scope of Practice

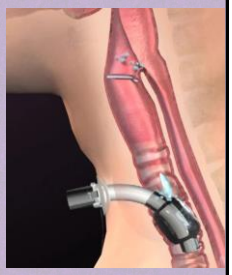
- "Each practitioner evaluates his or her own experiences with preservice education, practice, mentorship and supervision, and continuing professional development. As a whole, these experiences define the scope of competence for each individual. The SLP should engage in only those aspects of the profession that are within her or his professional competence."
  - ASHA Scope of Practice for Speech Language Pathology, 2016
- Responsible for:
  - Optimizing a patient's ability to communicate and swallow, thereby improving QOL
  - Decisions are based on best available evidence
  - Work collaboratively

WHAT? SLP Role in Decannulation

- Role in relationship to other team members
  - Create role-specific protocols for EACH member of the team
  - Consider establishing regular treatment times for streamlined scheduling
- Consistent education of all team members, on all shifts, who will be providing care

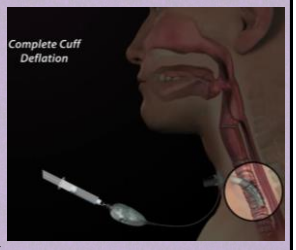
SLP Role with Patients with Tracheostomy

- Identify established decannulation indicators pertinent to SLP Scope of Practice:
  - Level of alertness/cognitive and emotional state
  - Assessing for patent upper airway
  - Tolerance of cuff deflation
  - Use of speaking valve
  - Evaluating swallowing and secretion management
  - Identify and define aspiration risk



Cuff Deflation Benefits

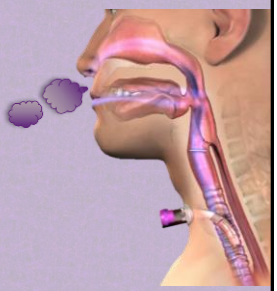
- Reduces aspiration[1, 2]
- Improves laryngeal elevation
- Weaning time shorter with cuff deflation -avg of 3 days vs 8 days[3]
- Fewer respiratory infections, including VAP in cuff deflated group (20% vs. 36%)[3]
- Swallowing better in cuff deflated group and improved more from baseline[3]



1. Davis, et al. (2002). Journal of Intensive Care Medicine. 17(3): 132-135.
2. Ding, R. & Logeman, J. (2005). Head & Neck. 27(9):809-13
3. Hernendez, et al. (2013). Intensive Care Medicine. 39(6):1063-70

How Does The Valve Work?

- Patented "no leak" design
- Opens only during active inspiration
- Closes at end inspiration
- Remains closed t/o expiratory cycle
- Air is re-directed thru the upper airway
- Offers a buffer to secretions



Passy Muir ®Valve Improves Weaning and Decannulation

- Improved scores on PAS[1]
- Restores expiratory airflow[2]
- Improves laryngeal clearance[2]
- Improved secretion rating scale[3]
- Maintains lung volumes[4]
- Restores subglottic pressure for cough[5]
- **Decreased Decannulation time**

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2. Prigent, Helene. Intensive Care Med. 2012 June38(1):85-90.
3. Blumenfeld, L. Oral Abstract Presented at DRS Annual Meeting 2012
4. Gross, R., et al. (2006). The Laryngoscope, 116:753-761
5. Eibling, D., & Gross, R. (1996). Annals of Otology, Rhinology, & Laryngology, 105(4):253-8.

WHEN? Predictors of Success

- Literature supports that there ARE established predictors of decannulation success:
  - Alert and responsive/level of consciousness
  - Resolution of tracheostomy indication
    - No acute respiratory compromise
    - Vent settings support weaning
  - Medically/hemodynamically stable

WHEN? Predictors of Success

- Patent upper airway
- Tolerates cuff deflation, speaking valve, capping or plugging
- Good secretion management
  - Effective expectoration
  - Protective reflexes: cough and throat clear
  - Improved swallow to prevent aspiration
- Supportive environment post-decannulation

SLPs and Treatment: RMST

Resistive flow device

Pressure Threshold Devices

Sebastian

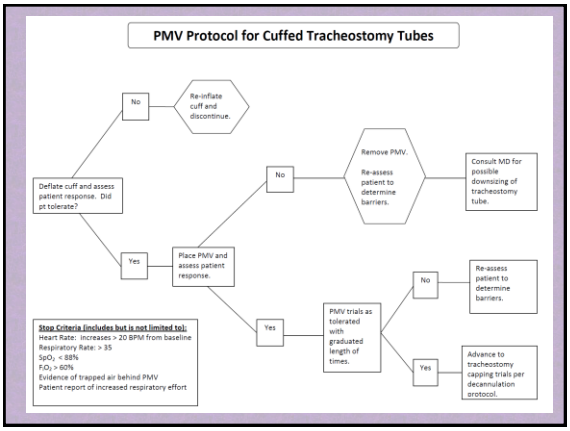
Evaluation for Decannulation

- Reason for tracheotomy has resolved
- Medically stable
- Patent upper airway
- Tolerates speaking valve
- Can manage oral and tracheal secretions
- Tolerates capping/plugging
- Risk of aspiration assessed

Candidates for Decannulation

- Consider original reason for the trach
- Weaned from mechanical ventilation, effective cough, no significant upper airway lesion[1]
- Absence of distress, stable arterial blood gases, hemodynamic stability, absent fever[1]
- A peak cough flow of 160 liters/minute[2]
- Survey: patient's level of consciousness, cough effectiveness, secretions, oxygenation[3]

1. Christopher, K.(2005). Respiratory Therapy. 50(4):538 –54.
2. Bach & Saporito, (1996). Chest. 110(6): 1566-71.
3. Stelfox, H. et al (2009). Respiratory Care. 54(12): 1658-68.



Outcome Measures by SLP

- Establish patient's ability to:
  - Tolerate cuff deflation
  - Use upper airway for respiration, cough, throat clear, and speech
  - Manage secretions
  - Exhibit voice: quality
  - Swallowing safely
  - Participate in care
  - Understand education

Factors for Decannulation Success

- Factors affecting weaning
  - Patient status
  - Tube size
  - Need and use of cuff
- For decannulation success
  - Sufficient air movement through upper airway when cuff is deflated or with uncuffed tracheostomy tube
  - Cuff must be *completely* deflated; open fenestration is insufficient for adequate air movement

Air Whoosh - Backpressure

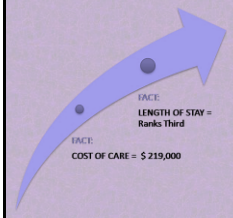
Input from Team Members for Decannulation

- RT- secretion status, cough ability, airway patency, respiratory condition
- SLP- secretion management, cough, airway patency, swallow status
- RN- secretion status, level of consciousness
- MD- medical stability, whole patient assessment, recommendations from team

All members communicate to each other regarding the patients readiness to decannulate

Decannulation: Removal of Tracheostomy Tube

Why a Trach Team: Summary



1. Communication
2. Patient Safety
3. Risk of Aspiration
4. Risk Associated with Trach Tube
5. Infection Control
6. Mechanical Ventilation
7. Long-Term Trach Placement
8. Education
9. Staff Confidence/Knowledge
10. Plan of Care and Continuity of Care
11. Quality of Care
12. Quality of Life

Questions/Comments?

- What are your experiences – successes and frustrations, solutions with Trach Team work?
- Advice that you would share regarding your work with tracheostomized/ventilated patients?
- Recent research/developments you might share regarding SLP role regarding decannulation?

References

- Available at: www.passymuir.com/ASHA2017