

# Vents, Trachs, Decannulation & Everything In Between



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# Financial Disclosure

- Non-financial – No relevant financial relationship exists
- Speech Language Pathologist, Inpatient Clinical Director at Madonna Rehabilitation Hospitals
- Speech Language Pathologist, Inpatient Therapy Director at Madonna Rehabilitation Hospitals
  - Clinical Consultant for Passy-Muir



# Objectives

- Review ventilator settings and clinical benefits of early intervention, including use of the Passy Muir Valve© for tracheostomized adult and pediatric patients
- Describe the assessment process for patients requiring mechanical ventilation
- Identify multidisciplinary issues associated with the tracheostomized and ventilator dependent patient
- Describe treatment techniques for improved outcomes with the tracheostomized and ventilator dependent patients



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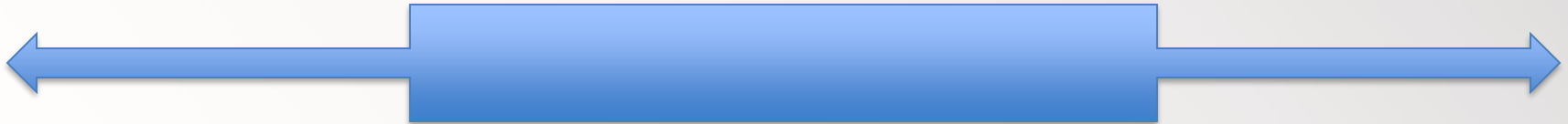
If you feel caught in between:  
YOU ARE NOT ALONE.



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# Audience Poll

- Clinical Years of Experience?



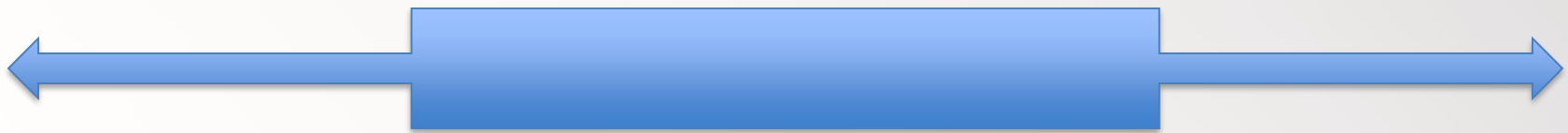
# Audience Poll

- Trach and Vent Experience?

Scary

Just Do It

Comfortable



# Audience Poll

- When do you treat trach and vent patients?



Immediately/Daily

When they are discharged to another facility

Wait until off the vent





# Ventilator Modes

1. Synchronized Intermittent Mechanical Vent with pressure support (SIMV w/ PS)
2. Assist Control (AC)
3. Pressure Regulated Volume Control (PRVC)
4. Continuous Positive Airway Pressure / Pressure Support (CPAP / PS)
5. Bi-level Positive Airway Pressure (BiPAP)
6. Pressure Support Mode (PS)





# Pressure and Volume Relationship

- Volume ventilation: ventilator delivers the pre-set Tidal Volume ( $V_T$ )
  - Volume is a constant
- Pressure Ventilation: ventilator delivers a pre-set pressure
  - volume can vary depending on lung compliance/resistance. Pressure is a constant, volume may be variable.
- The *higher* the pressure...the *sicker* the lung





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# Alarm Settings – Safe Practice

- Familiarize yourself with alarms
  - Patient safety
  - Team collaboration
- Low exhaled  $V_T$  and  $V_E$  alarms
- Low pressure alarm – Set 5 to 10cm below PIP
- High pressure alarm – Set 10cm above PIP
- High respiratory rate – 10 or 15 above baseline



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# WHY

*“If you do nothing, you will improve nothing.”*

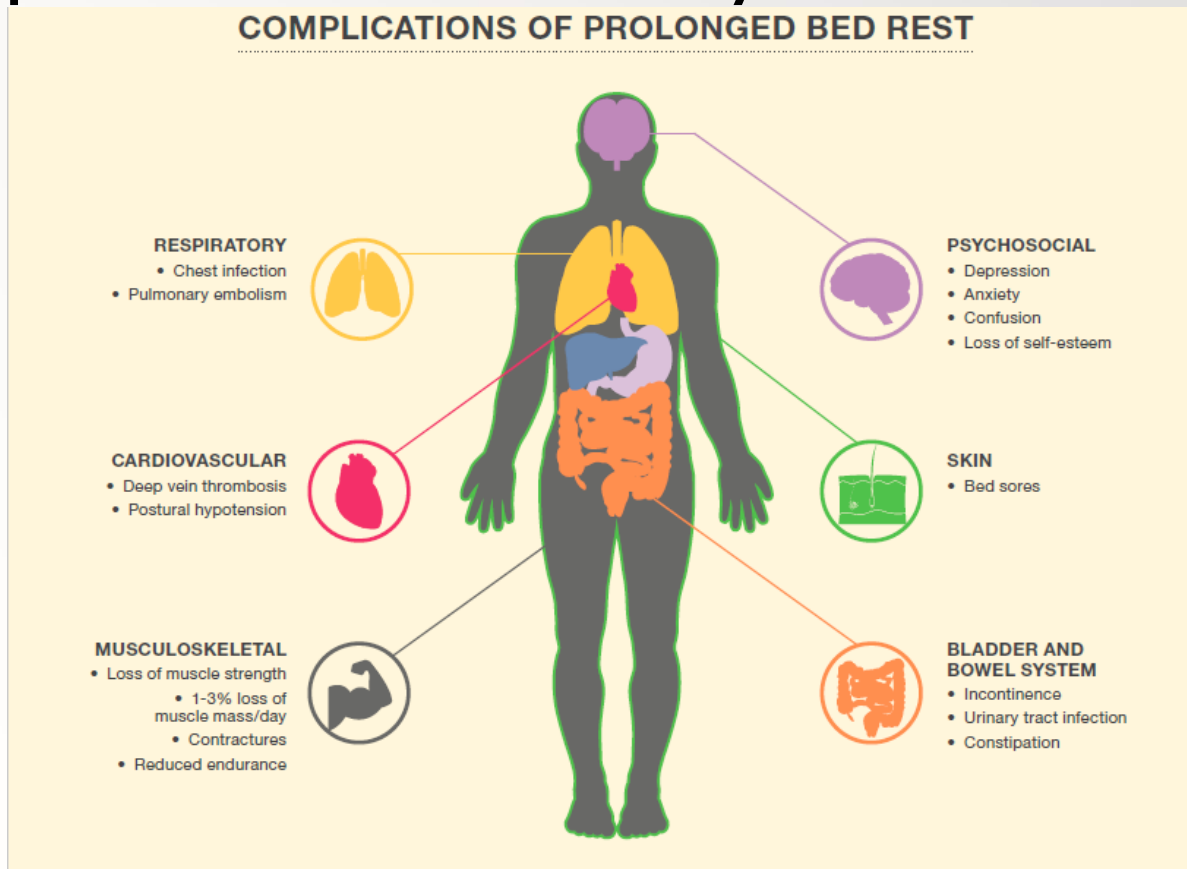
*“Things can get worse as you wait for the patient to get better.”*

Dr. Lori Burkhead-Morgan



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# Negative Effects of Bed Rest Importance for Early Intervention



<https://www.healthhub.sg/live-healthy/1365/why-bed-rest-often-isnt-best>

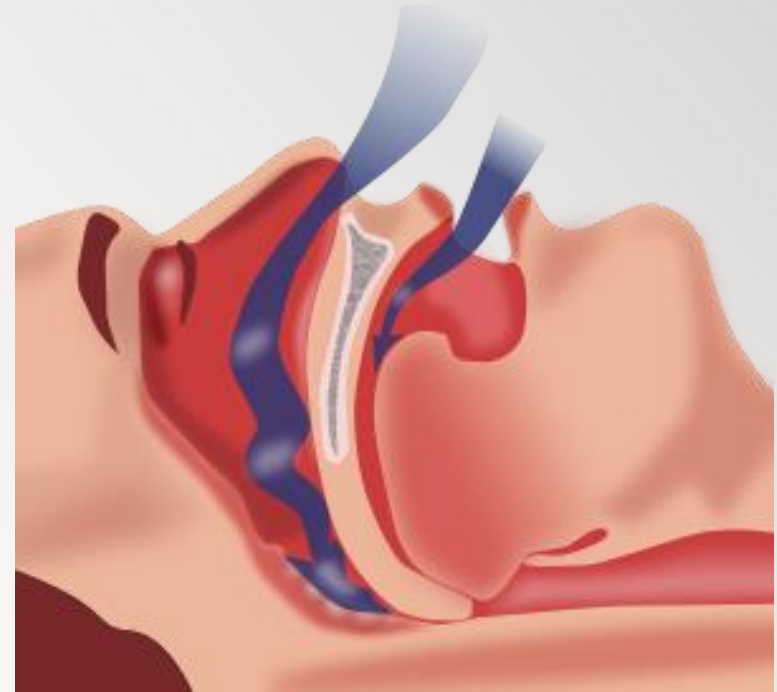
1. Griffiths et al. Nutrition 1995; 11:428-432
2. De Jonghe et al. CCM 2000; S309-315



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# Upper Airway Assessment

1. Decide Candidacy
2. Take note of initial Tidal volume ( $V_T$ ) and Exhaled  $V_T$
3. Take note of initial O<sub>2</sub> , HR levels
4. Deflate Cuff
5. Determine Airway Patency
6. Place one way valve (RT)
7. All tidal volume will come out of the mouth and nose now
8. Listen to vocal quality and intensity: Quiet or soft? Breathy, hoarse?
9. Observe and Monitor: Chest volume expansion, muscle use
10. Start Intervening



# “STOP” Criteria

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- Sustained HR  $\uparrow > 20$  beats/min above baseline or symptomatic bradycardia\*
- PEEP  $\geq 10$  cmwp
- Sustained RR  $> 35$  breaths/min
  - Peds sustained RR  $> 10$  breaths/min above baseline
- FiO<sub>2</sub>  $\geq 60\%$  to maintain SpO<sub>2</sub>  $> 90\%$ 
  - Peds FiO<sub>2</sub>  $> 50\%$  to maintain SpO<sub>2</sub>  $> 92\%$
- RPD  $> 6$  (Rating of Perceived Dyspnea)
- Discussion between RT/SLP regarding declining medical status



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# Assessment Tim

- Admitted following traumatic brain injury, car vs. bike
- Bilateral craniotomy
- Ventilator dependent
- NPO
- Deaf, non-verbal since birth
- Prior communication method Sign Language





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# Assessment Marlys

- 6 month old, born at 25 weeks gestation
- Required extensive resuscitative efforts at birth, intubated
- Partial resection of 5<sup>th</sup>-7<sup>th</sup> right ribs, fungal osteomyelitis
- Attempted extubation/CPAP trials, trach placed



# Assessment Marlys

- Trach type: Neonatal Bivona 3.5 cm
- Vent setting Spontaneous on admitNPO
- G-button, tolerating breast-milk feedings through tube
- Attempting nipping at breast once/day as tolerated



# Marlys

- Pulmonary team involved from Children's
- Multidisciplinary effort
- Vent setting changed to Average Volume-assured pressure support (AVAPS)
- SLP and RT highly collaborative
- Vent weaning impacted PMV tolerance
- PMV modification



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KEEP  
CALM  
AND  
SET NEW  
GOALS



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# Goals

- Treatment goals are established following the assessment the same as for a patient without ventilator or tracheostomy tube, addressing:
  - Language
  - Cognition
  - Motor Speech
  - Dysphagia



Goals are not established for placement of valve or tolerance of valve

- Do not require skilled SLP



# The “In Between” (Therapy)

- Traditional interventions
- Creative Interventions:
  - Co-treatments
  - Patient Positioning
  - Respiratory Strengthening
  - Kinesio tape
- Family Involvement
- Do Something
  - Sensory Stimulation
- Yes, you can eat on a vent!





# Angel Eating Birthday Cake

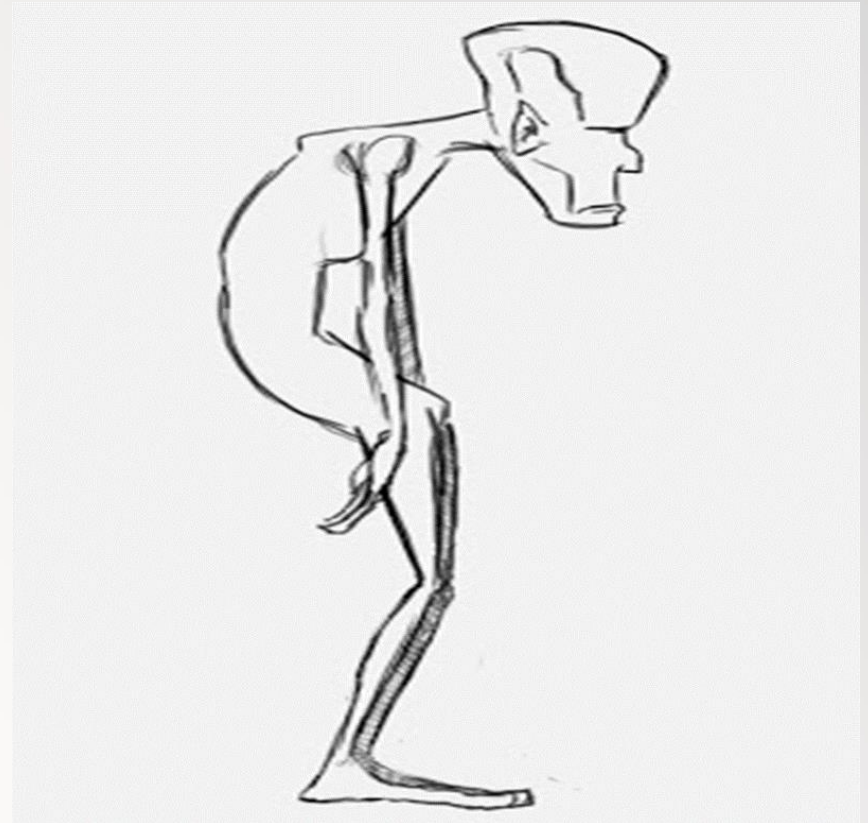
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# Putting it into practice

- Speech Pathologist and Positioning?
  - Respiration & posture are linked!
- Every muscle originating or inserting on the trunk is a respiratory AND a postural muscle



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# Positioning Variations

## Co-treatments with PT or OT



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# Inspiratory and Expiratory Muscle Trainers

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Threshold PEP



The Breather



Acapella



EMST



Train whistle



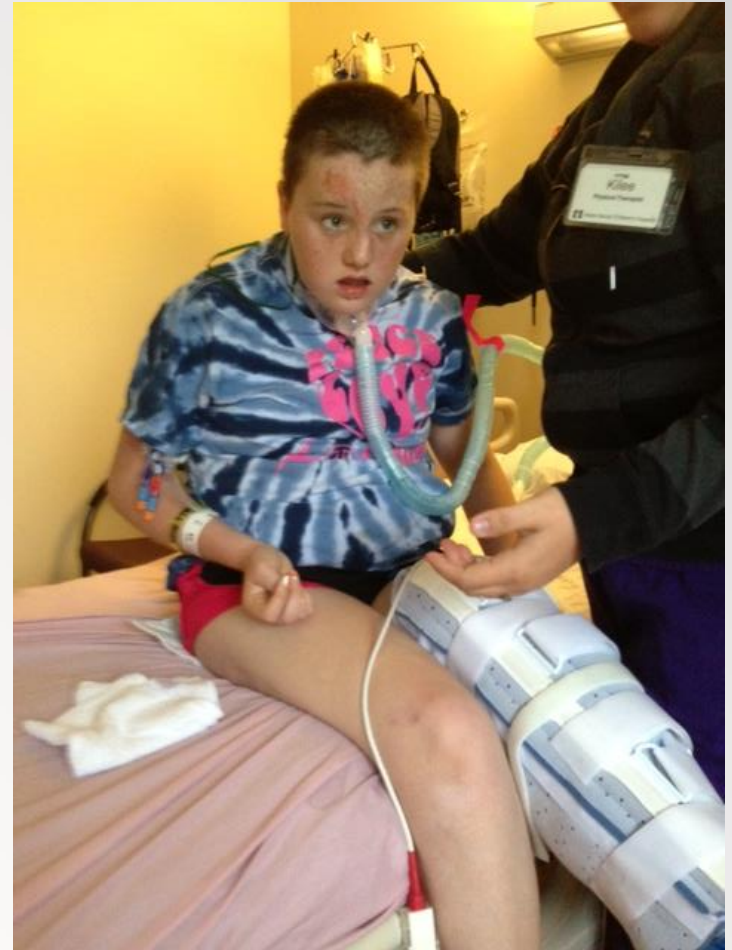
Mouth seal



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# Treatment Rylee

- 12 years old; Hit by car moving at Hwy speeds while on bicycle
- Closed head injury, intraventricular hemorrhage; left leg below the knee amputation
- Rancho Los Amigos level III-IV
- Trach placed on 5/13



# Treatment Rylee

- Tolerating PMV on evaluation day with RT and Speech
- Cognition/agitation
- Initial concerns with heart rate
- Decannulation on 6/18





# Treatment Yuki

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# Treatment Yuki

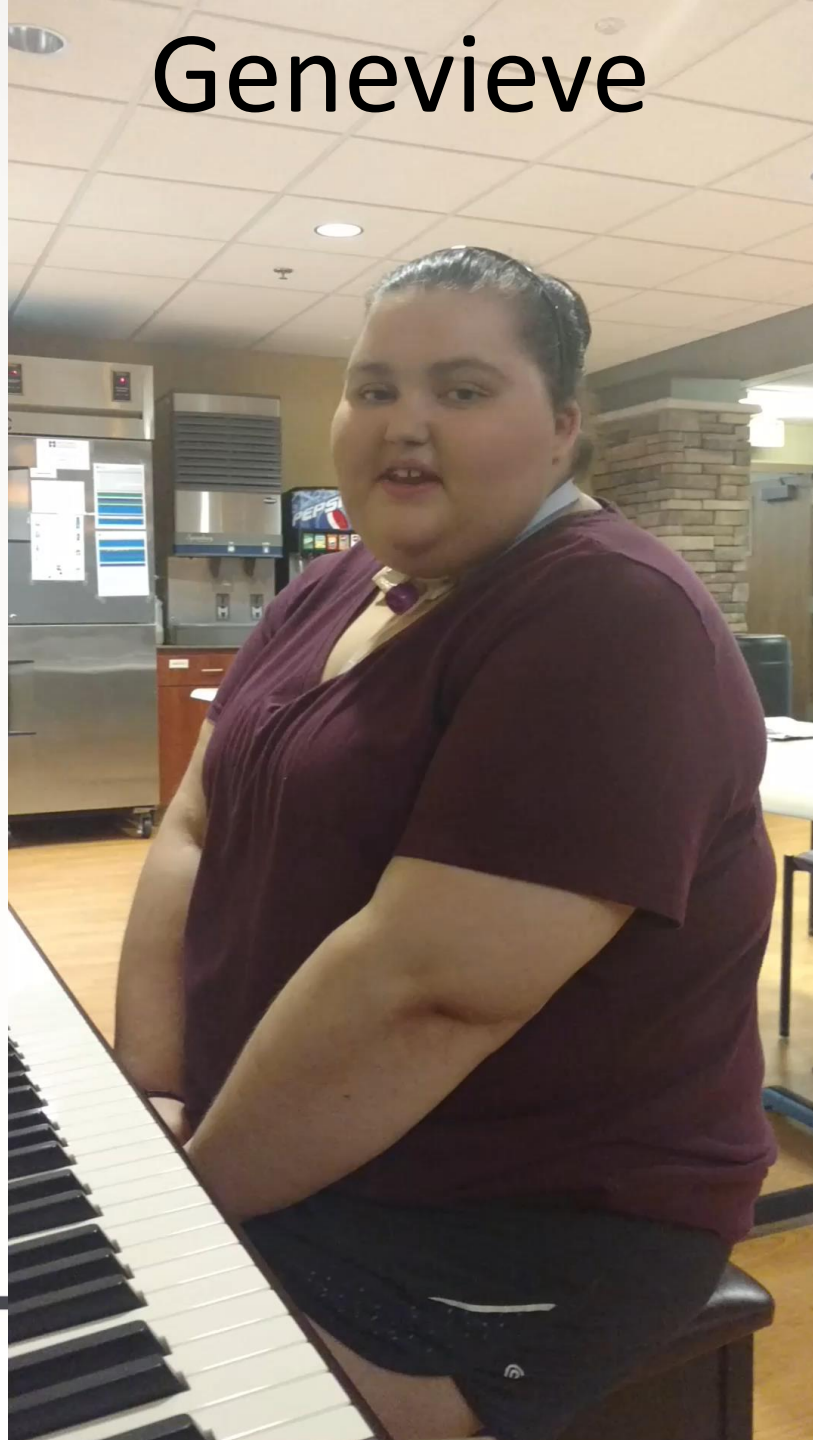
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# Genevieve

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# Genevieve Sings!



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# Questions??

- Different approaches??

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