

Peggy Cox, RRT, RN Frazier Rehab Institute Pulmonary Rehab

September 2019 Contract Saint Joseph Hospital Saint Joseph Jessamine Sain Jospital VNA Nazareth Home Care Flaget Memorial Hospital Frazier Rehab Institute Jospital Jewish Hospital Outpatient Centers Jewish Hospital Shelbyville Jewish Phys Joseph Jessamine Saint Joseph London Saint Joseph Martin Saint Joseph Hosp ts. Mary & Elizabeth Hospital VNA Nazareth Home Care Flaget Memorial Hospital Jemorial Hospital Frazier Rehab Institute Jewish Hospital Jewish Hospital Outpatie Jemorial Hospital Frazier Rehab Institute Jewish Hospital Jewish Hospital Outpatie Seph Berea Saint Joseph London Saint Joseph Martin Saint Joseph Mount S Jemorial Hospital Frazier Rehab Institute Jewish Hospital Jewish Hospital Outpatie Seph Berea Saint Joseph London Saint Joseph Mount Sterling Sts. Mary & Elizab Jemorial Hospital Shelbyville Jewish Physician Group Our Lady of Peace Sair Joseph Berea Saint Joseph Martin Saint Joseph Hospital Saint Joseph Jessamine Sair Joseph London Saint Joseph Martin Saint Joseph Mount Sterling Sts. Mary & Elizab Joseph London Saint Joseph Martin Saint Joseph Mount Sterling Sts. Mary & Elizab Joseph London Saint Joseph Martin Saint Joseph Mount Sterling Sts. Mary & Elizab Joseph London Saint Joseph Martin Saint Joseph Mount Sterling Sts. Mary & Elizab Joseph London Saint Joseph Martin Saint Joseph Mount Sterling Sts. Mary & Elizab Joseph London Saint Joseph Martin Saint Joseph Mount Sterling Sts. Mary & Elizab Joseph Hospital VNA Nazareth Home Care Flaget Memorial Hospital Shelbyville Jewish Physican Joseph Berea Saint Joseph Hospital Shelbyville Jewish Physican Hospital Sh

Interdisciplinary Care of the Patient with Amyotrophic Lateral Sclerosis – Respiratory Therapy Care

Disclosure

- I have the following relevant financial relationship(s) in the products or services described, reviewed, evaluated or compared in this presentation.
- University of Louisville Office of Continuing Medical Education and Professional Development
 - Financial compensation for speaking
- Frazier Rehab Institute
 - Employee
- I have **no relevant nonfinancial relationship(s)** to disclose.

Objectives

- Basic understanding of breathing tests which qualify patients for NIV (noninvasive ventilation)
- Basic understanding of NIV
- Acquire knowledge of various ventilation options in regards to the patient with ALS

Respiratory Assessment

- Objective data
 - Oxygen saturation & respiratory rate
 - Breathing tests FVC, MIP, MEP, SNIP
 - Auscultation (listen to breath sounds)
 - Accessory muscle use
 - Swelling
- Subjective data
 - c/o shortness of air (SOA)
 - c/o cough, congestion & choking

Respiratory Assessment

- Screening for sleep apnea hours asleep, awaken SOA, morning headache, snoring, orthopnea (SOA that occurs when lying flat)
- Pulmonary hygiene use of Cough assist device
- Assistive coughing (Abdominal thrust maneuver) use when choking or foreign body or aide in clearing congestion
- Breathing retraining techniques
- Signs & symptoms of pulmonary infections
- Smoking cessation
- Use of respiratory medications and oxygen use
- Flu and Pneumovax vaccines
- End of life issues wishes regarding trach tube with invasive ventilation & prolonged use of mechanical ventilation

Breathing Tests

- FVC (Forced Vital Capacity)
 - maximal amount of air exhaled after maximal inspiration
 - volume test Liters
 - compared to % of predicted
 - 50% or < of predicted indication for noninvasive ventilation (NIV)
- Decline guides ongoing treatment
- Is a significant predictor of survival (Miller et al., 2009, p. 1221)



Breathing Tests

- MIP (Maximal Inspiratory Pressure
- MEP (Maximal Expiratory Pressure)
- Pressure tests *cm H20*
- Reflects strength of breathing muscles
- Effort dependent & technician dependent
- MIP <60 cmH20 with orthopnea indication for NIV (Miller et al., 2009, p. 1223).



Breathing Tests

- SNIP test sniff-nasalinspiratory pressure
 - <30 cmH20 median survival was months
 - More reliable in later stages than FVC & MIP (Miller et al., 2009, p. 1221).
- Conventional PFT-Pulmonary Function Test

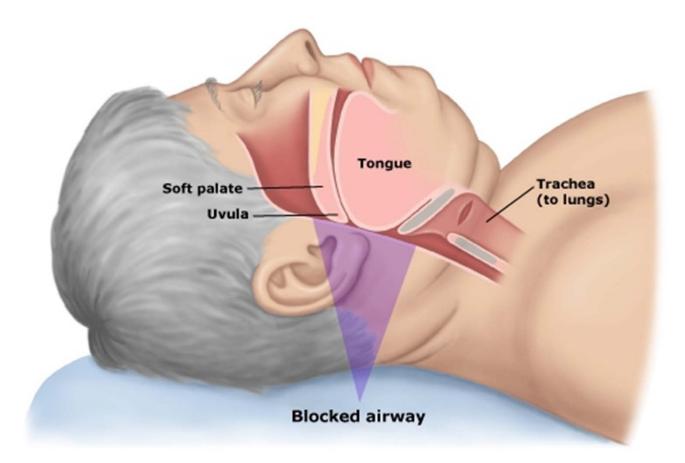


Evaluation of Sleep

- Polysomnography sleep study
- Diagnosis:
 - obstructive sleep apnea
 - central sleep apnea



Obstructive Sleep Apnea



Noninvasive Ventilation









Noninvasive Ventilation



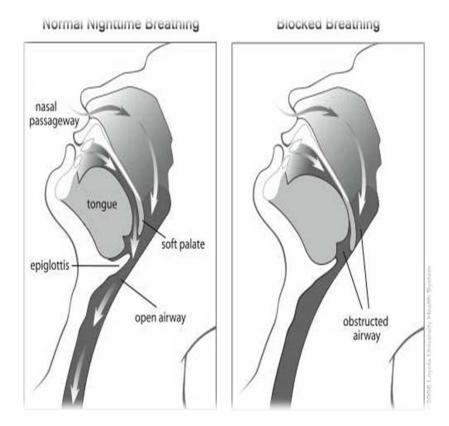






Noninvasive Ventilation

- Cpap (Continuous Positive Airway Pressure) – first line treatment for sleep apnea
- Bipap (Bilevel Positive Airway Pressure)
 - Treatment if noncompliant with Cpap
 - Treatment with
 hypoventilation (typical reason for ALS patient)



Ventilator Brands – Trilogy & Astral

- Ventilator needed as disease progresses
- Can use invasive or noninvasive ventilation
- Advanced modes of ventilation
- More comfortable than Bipap
- Internal & external battery available
- More expensive
- Unavailable for hospice patients





Noninvasive Ventilation Benefits

IS Katz, MD

- Positive impact of quality of life
- Improvement in energy and vitality
- Improvement in shortness of air
- Improvement in daytime somnolence

(Miller et al., 2009, p. 1223)

SPECIAL ARTICLE	Practice Parameter update: The care of the patient with amyotrophic lateral sclerosis: Drug, nutritional, and respiratory therapies (an evidence-based review) Report of the Quality Standards Subcommittee of the American Academy of Neurology © 12
R.G. Miller, MD, FAAN C.E. Jackson, MD, FAAN E.J. Kasarskis, MD, PhD, FAAN J.D. England, MD, FAAN D. Forshew, RN W. Johnston, MD S. Kalra, MD	ABSTRACT Objective: To systematically review evidence bearing on the management of patients with amyotrophic lateral sclerosis (ALS). Methods: The authors analyzed studies from 1998 to 2007 to update the 1999 practice parameter. Topics covered in this section include slowing disease progression, nutrition, and respiratory management for patients with ALS. Results: The authors identified 8 Class I studies, 5 Class II studies, and 43 Class III studies in ALS. Important treatments are available for patients with ALS that are underutilized. Noninvasive ventilation (NIV), percutaneous endoscopic gastrostomy (PEG), and riluzole are particularly important tilation (NIV), percutaneous endoscopic gastrostomy (PEG), and riluzole are particularly important.

the best evidence. More studies are needed to examine the

Mouthpiece & Invasive Trach Tube Ventilation

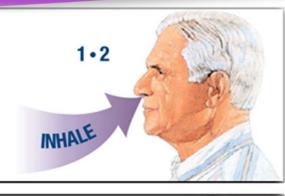


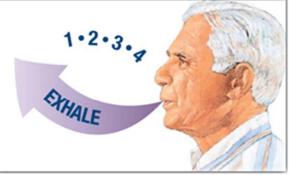




Breathing Retraining Exercises

- Pursed lip breathing may help anyone who feels shortness of air
- Deep breathing/breath stacking – Incentive spirometer-intermittent use throughout the day
- Diaphragmatic breathing & relaxation exercises







Conclusion

- Most deaths from ALS are due to respiratory failure (inadequate gas exchange)
- NIV (Noninvasive ventilation) should be considered:
 - FVC <50% predicted (based on height & gender)
 - MIP <-60 cm H20
 - SNIP <40 cm H20
 - Abnormal nocturnal oximetry
 - c/o orthopnea
- NIV prolongs survival & slows the rate of decline in FVC (Miller et al., 2009, p. 1218)

Thank you!!!!

References

 Miller, R.G., Jackson, C.E, Kasarskis, E.J., England, J.D., Forshew, D., Johnston, et al. (2009). Practice parameter update: The care of the patient with amyotrophic lateral sclerosis: Drug, nutritional, and respiratory therapies (an evidence-based review). *American Academy of Neurology, 73, 1218-1226.*