NAVA® & EDI: A NEW CAPABILITY FOR A VITAL SIGN
Complications associated with Sedation

- Ventilator Associated Pneumonia
- Increased Length of Intubation (>LOI)
- Increased work of breathing (>WOB)
- Increased risk of pneumothorax
- Ventilator-induced diaphragm dysfunction (VIDD)
- Delirium

Diaphragm Atrophy/Dysfunction

Patient / Ventilator Asynchrony

Results:
ASYNCHRONY WITH CONVENTIONAL WAVEFORMS

- Flow or Pressure perturbances
  - Indicating patient effort

- Concerns with muscle fatigue?

Not practical for the bedside use in the 1960’s

NEW DIMENSION TO THE RESPIRATORY VITAL SIGN

- Confirmation of respiratory drive and sedation effects
- Evaluation of tonic activity – indicator of alveolar derecruitment
- Improved synchrony – trigger, breath delivery, breath termination
Definitions:

- **NAVA (Neurally Adjusted Ventilatory Assist)**: SERVO-i ventilation mode that uses an Edi catheter to conduct the diaphragm's electrical activity to the SERVO-i ventilator (requires software and hardware module).
EDI SIGNAL – A NEW PERSPECTIVE ON RESPIRATORY RATE

Components:

**Edi Peak**
- Maximum diaphragmatic load generated to inflate the lung (muscle contracted)

**Edi Min (Minimum)**
- Minimum diaphragmatic load with lung at rest (muscle relaxed)
- Indicator for alveolar derecruitment
Measuring Edi in the ICU:
Respiratory drive revealed:

- Edi trigger (cycle on)
- Edi peak (depth of inspiration)
- Breath Termination (cycle off)
- Edi min. (Indicator of derecruitment)
EDI

Monitor Edi during:

- Post-extubation
- NAVA ventilation
- Weaning evaluation
NAVA® PREVIEW

Asynchrony is now measurable:

- Practical bedside diagnosis of asynchrony

- NAVA Preview displays measurable asynchrony in any mode of ventilation
Tachypnea or Anxiety?

Actual RR = 102

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- Enhanced Synchrony
NAVA® Ventilation

- Synchrony
  - Triggering
  - Tidal Synchrony
  - Cycle off
- Quantitative Unloading

5.5ml/kg
- Understand patient contribution during weaning.
ISSUES WITH TRADITIONAL MECHANICAL VENTILATION

NAVA® — positive triad in mechanical ventilation:

Monitor sedative effects on Respiratory Drive

Variable Assist Based on Patient Demand

RESULT: Potentially Reduced Length of Intubation
EDI AND NAVA® – ENHANCED MONITORING AND SYNCHRONY

- Synchrony – Triggering, Tidal Synchrony, Expiratory Termination
  - Less PIP
  - Spontaneous breathing; V/Q matching
  - Improved sleep quality
- Benefits of spontaneous breathing
- Confirmation of respiratory drive and load
  - Sedative effects on respiratory drive
  - Minimize diaphragm atrophy/dysfunction
  - Continuous apnea monitoring
- Lung protective spontaneous mode
EDI, NAVA®, AND SERVO-i

SERVO-i ventilator:

- Known globally for performance, upgradability, and modularity
- When using NAVA mode Edi catheter sensors direct ventilator output in proportion to, and in synchrony with, patient Edi activity and neural impulse to breathe