Cuff Management: Existing Problems and Solutions

Two major problems associated with cuff management practice – which must be addressed.

1. Cuff Pressure (CP) that is too low cannot protect against secretion aspiration and VAP.¹
2. CP that is too high does not protect against tracheal damage. ²
   - American Thoracic Society, Infectious Diseases Society,³ CDC, and JCAHO recommend maintaining Cuff Pressure (CP) > 20 cm H₂O as a VAP prevention strategy.
   - Even with manual intervention, CP does not remain stable.
   - Patients with normal blood pressure: after 15 minutes of CP exceeding 30 cm H₂O, tracheal damage begins.

Current practices using intermittent cuff checks contribute to these problems:

- MOV or MLT – ⁴
  - Initial action is to deflate the cuff. Secretions above the cuff contaminate the lower airways – the primary cause of VAP.
  - When re-inflating safe CP (20-30 cm H₂O) is a skill that cannot be estimated without measurement⁵

- Posey Cuff Inflator or standard pressure gauge for intermittent cuff checks:
  - When attaching to pilot balloon, about 10 cm H₂O of CP is lost.
  - CP falls below 20 cm H₂O and this loss in CP breaks the seal of the cuff and trachea. This allows secretions above the cuff to flow below it - which contaminates the lower airways.
  - Use of Posey Cuff Inflator or similar device on multiple patients contributes to cross contamination concerns for infection control and risk management.

- Syringe inflation with pilot balloon palpation to estimate CP ⁶,⁷
  - Highly unreliable and most often CP exceeds recommended 30 cm H₂O maximum⁸,⁹

- Pressure Easy™
  - Unreliable indicator of CP
  - According to manufacturer, each Pressure Easy™ device applies 20, 25, or 30 cm H₂O; it is not predictable.
  - Peak airway pressure requirements higher than 30 cm H₂O is outside of the operational range of Pressure Easy™.
  - Pressure Easy™ does not protect the patient’s trachea when the cuff is compressed (e.g. when the patient is turned on their side)

- CuffSentry™ ¹⁰
  - Eliminates intermittent cuff checks!
  - Cuff Pressure remains at the same value that the clinician has set.
    - If the cuff is compressed, CuffSentry™ compensates to maintain the same set CP.
    - CuffSentry™ automatically adjusts to the patient’s activity to maintain the same CP.
  - Accurate CP display
  - Continuously displays applied CP which increases clinician awareness.
  - Eliminates unintentional CP that is too high or too low when used by a trained clinician.
Bibliography of References/Papers


10. Howard WR. Bench study of a new device to display and maintain stable artificial airway cuff pressure. 2011; Respir Care: 56(10).

References assembled by William Howard MBA, RRT

Those with interest to continue this dialogue from a clinical perspective can contact Bill at (508) 930-7679 Cell or BillHoward@CuffSentry.com. We welcome your input.