The Use of Continuous Bedside Pressure Mapping* in the Management of Intensive Care Patients with Excessive Head-of-Bed Elevation Due to Medical Necessity

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Purpose/Problem
National pressure ulcer prevention guidelines call for avoiding head-of-bed elevation that places pressure on the sacrum/coccyx. However, there is also clinical evidence that a sustained supine position increases the probability of aspiration pneumonia and, therefore, patients should remain with the head of bed at 45 degrees. These two evidenced-based guidelines conflict in bedside practice, leaving healthcare providers puzzled over how to manage patients who are at-risk for aspiration pneumonia as well as pressure ulcers.

Methods
The patient positions and support surfaces used both influence the amount of pressure exerted on patients’ skin. ICU patients with aspiration precautions had continuous bedside pressure mapping (CBPM) units placed on their beds. The CBPM image was utilized by bedside caregivers to position patients to achieve reduced pressure over high pressure points. If high pressure persisted under the sacral/coccyx area, then a higher level support surface was ordered for that patient. The CBPM was utilized with the higher support surface to adjust the settings for maximum pressure redistribution, to position the patient with lower pressures, and to continually monitor the functionality of the support surface and the pressure beneath the sacrum.

Interventions without Lowering Head of Bed
- Repositioning interventions:
  - Micro-shifting
  - Adjusting air settings on air beds
  - Identifying heel, elbows, areas that were unbalanced and off-loading accordingly
- CBPM-assisted interventions
  - Reds/yellows present and unable to reposition to obtain greens and blues
  - Higher level support surface ordered with CBPM
  - Reds/yellows present but able to reposition to greens and blues
  - Continue to use CBPM to reposition without reds/yellows

Outcomes
Bedside caregivers were able to micro-shift patients, choose appropriate support surfaces and adjust airbed settings to gain more favorable pressure redistributions using CBPM. Cost-effective support surface decisions were made, as only patients who displayed higher pressures were upgraded to higher cost support surfaces. Inter-professional collaboration resulted in physician’s who were more willing to reduce the head-of-bed elevation orders on lower risk aspiration patients to avoid hospital-acquired pressure ulcers.

Conclusions
Head-of-bed elevation is indicated and contra-indicated for different clinical diagnoses. The key is to be able to assess and manage conditions at the bedside to achieve the best possible outcomes for the patient. CBPM assists in making key pressure assessments and intervention decisions to aid in pressure ulcer prevention.

References