The Development of a Pressure Ulcer Prevention Protocol for Patients Requiring Non-Invasive Positive Pressure Ventilation (NIPPV)
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Introduction

- Non-invasive positive pressure ventilation (NIPPV) is being used with increasing frequency on patients in the acute care setting.
- NIPPV is an effective treatment modality to reduce the need for intubation in the respiratory failure patient.
- The prolonged use of NIPPV therapy has been associated with skin breakdown at the point of contact, especially the nasal bridge.
- Skin breakdown may occur at the site of mask contact even after only a few hours of ventilation. The longer the mask is worn the higher the risk for skin breakdown.
- Quarterly NDNQI prevalence studies over one year (2010-2011) revealed an increase in the occurrence of Stage 3 hospital-acquired pressure ulcers (HAPU) on the bridge of the nose on patients utilizing NIPPV.

Purpose

- A task force was convened that included nursing; Certified Wound, Ostomy, and Continence (WOC) nurses; respiratory therapist, and a quality improvement nurse to evaluate the causes of the identified hospital-acquired pressure ulcers on the nasal bridge in patients utilizing NIPPV. Factors associated with HAPU nasal bridge development included:
  - NIPPV used for prolonged periods of time (over 24 hours)
  - No skin barriers applied under the mask
  - Possible improper fit of the mask
  - No consistent skin assessments performed under the mask

Intervention

- Research and evaluate skin barriers for the nasal bridge. A silicone gel nasal pad was trialed and selected for use on all NIPPV patients.
- Research and evaluate current masks on the market and best practices for long term use of NIPPV.
- A full face mask was purchased to alternate with nasal mask when nasal bridge redness identified.
- Educational program for nurses and respiratory care practitioners:
  - Focusing on the proper application of masks
  - Assessment of the skin and,
  - NIPPV protocol to prevent the development of HAPU.

Implementation of NIPPV Protocol

- Respiratory Care Practitioner (RCP) properly sizes and selects the appropriate mask
- Apply no sting protective skin barrier prep to nasal bridge
- Correct sizing and application of silicone gel pad to nasal bridge
- Skin inspection of the nasal bridge prior to application of silicone gel pad and mask, and every 4-8 hours
- Rotation of types of masks to redistribute pressure if any redness on skin is identified
- Skin assessment including nasal bridge are part of nurse to nurse, and RCP to RCP hand off reports; and documented in the medical record

Results and Implications

- Since the implementation of the new protocol and skin barrier NO hospital-acquired nasal bridge pressures ulcers have occurred on any patients receiving NIPPV in 15 months (August 2011– November 2012).
- Collaboration between nursing and respiratory therapy resulted in reducing patient harm and improving patient outcomes.