Creative Change Management and Educational Strategies Ensure Compliance with VAP-Prevention Bundle and Adherence to NPSG #13 and Significantly Decreased VAP Rates in 2 Adult ICUs

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Abstract

Title: Innovative change management and enhanced compliance results in successful and consistent implementation of ventilator bundle and care pathway protocol, VAP for over 60 days, and substantial economic savings

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Background: Ventilator-associated pneumonia (VAP) is calculated per 1,000 ventilator-days, and ranges from 2 to 10 per ICU, making it the most frequently reported healthcare-acquired infection in mechanically ventilated patients. Patient indicators vary from 7.2 hour VAP incidence rates of 30% to prevalence rates of 10% to 50%. The 2014 hospital care costs (HCAHPS) survey noted that if implementation of the ventilation bundle and care pathway protocol was left to the discretion of the individual nurse, the potential financial impact of VAP was significant on patient outcomes and increased costs of care. The Joint Commission National Patient Safety Goal 13 (NPSG #13) was published in January 2005, which strongly encourages that facilities empower patients’ active involvement in their own care as a patient safety strategy and defines and communicates the means for patients and their families to report concerns about safety and encourages them to do so. This was viewed as an excellent opportunity to partner with patient families on VAP prevention and a comprehensive plan was implemented to ensure compliance with the prevention bundle and to empower staff and patient families to participate in bundle compliance.

Introduction

Ventricular-associated pneumonia (VAP) is a hospital-acquired infection occurring in high-risk patients, and the most recent national report estimates that VAP rates range between 21 and 37.7 infections per 1,000 ventilator days. VAP is associated with increased mortality and morbidity, and an extended length stay in the intensive care unit (ICU), and increased economic expenditures. Preventive bundles of care have been recommended by many associations, including, but not limited to, the Institute for Healthcare Improvement (IHI) and the Society for Healthcare Epidemiology of America (SHEA). In addition to standard clinical prevention measures for VAP, our facility implemented the H4 VAP prevention bundle of care in May 2007 which included elevation of the head of the bed to between 30 and 45 degrees, daily “relative” interruption and assessment of readiness to extubate; peptic ulcer disease prophylaxis; and deep venous thrombosis prophylaxis unless otherwise indicated. We also instituted oral care as part of the VAP prevention bundle. We continued to note incidents of VAP, and a quality improvement initiative was started in 2007 to incorporate appropriate change management and educational strategies into our preventive bundle of care.

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Results

A statistical analysis was conducted to compare VAP rates before and after intervention. Our hypothesis was that VAP rates would decrease as compliance with the VAP prevention bundle increased between pre- and post-intervention time periods.

The time period for comparison was July 2006 through March 2007 for the pre-intervention period, April 2007 was a “wash out” month due to full utilization of change management practices; and May 2007 through July 2009 was the post-intervention period. With over 13,000 ventilator days, there was adequate statistical power to detect an absolute difference as small as 12.5% (i.e., VAP rate per 1,000 ventilator-days) as being statistically significant with an alpha level of 5% and a beta level of 20%.

Figure 3. VAP Rate - July 2006 through July 2009

Pre-intervention (March 2006 to May 2007)

Post-intervention (July 2009 to July 2009) 

Average VAP rate = 1.68

Average VAP rate = 0.28

85% relative reduction in VAP rate

Materials & Methods

A clinical practice specialist from the Department of Respiratory Care of two 16-bed ICUs conducted an extensive literature review to determine best practices for prevention of VAP, change management, and educational strategies for ensuring successful prevention efforts. The results of this literature review revealed the need for the following:

1. Increased tracking of compliance with the VAP prevention bundle
2. Additional compliance tracking to ensure oral care compliance
3. Intensive change-management strategies, including evidence-based care-giver bundle and oral care protocol education using a multidisciplinary approach
4. Staff empowerment and awards for protocol compliance
5. Family education and involvement posters
6. Ongoing qualitative metrics to understand the need for additional education and change management interventions to identify knowledge gaps that should be addressed

7. Quantitative metrics that demonstrate compliance and VAP rates and the need to visually share this information with staff on an ongoing basis

Comprehensive education

The clinical practice specialist leading this quality improvement initiative instituted comprehensive and mandated education for all respiratory therapists. Reinforcing re-emphasized the importance of the VAP prevention bundle and appropriate oral care oral care and, the preventable nature of the VAP. The facility concurrently featured hourly rounds, and respiratory staff and nurses met frequently to update patients and clinical care, and communicated the need of each patient on an individual basis. A best-practices award program was also initiated, whereby clinicians who adhered to VAP-prevention protocols and bundles were awarded with a gift certificate valid at the hospital gift shops. The clinical practice specialist ensured that staff had access to the results of their preventive efforts and the number of patients with VAP prevented and lives saved.

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