Ventilator care bundles and their effectiveness in reducing the incidence of ventilator-associated pneumonia in intensive care units

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Introduction

The purpose of this retrospective study was to identify the effectiveness of ventilator-associated pneumonia (VAP) bundles in the intensive care unit (ICU) setting. VAP bundles were developed in efforts to reduce the occurrence of pneumonia in ventilated patients. Evidence-based practice (EBP) protocols require the VAP bundles to be implemented by performing the following tasks: elevating the head of the bed 30 degrees, providing oral care every two hours, turning the patient every two hours, providing sedation vacations, administration of peptic ulcer prophylaxis, and DVT prophylaxis. We examined the frequency of pneumonia acquired by patients before VAP bundles were implemented, and then compared those results to patients who acquired pneumonia after the implementation of VAP bundles.

Literature Review

A vast amount of patients in the critical care setting are placed on ventilators; frequently, these patients acquire pneumonia secondary to ventilator therapy. The AACN states, “Ventilator-associated pneumonia (VAP) is a major contributor to morbidity and mortality in the intensive care unit (ICU)” (Munro, et. al., 2014). Research completed by the European Prevalence of Infection in Intensive Care declares, ventilator-associated pneumonia accounts for forty-five percent of infections in European Intensive Care Units, and of that number twenty to thirty percent of these patients die as a result of a infection (Ruffell & Adamcova, 2008). To prevent this adverse outcome, the Institute of Healthcare Improvement crafted a ventilator associated pneumonia prevention bundle in 2001. The checklist includes: elevating the head of the bed 30 degrees, providing oral care every two hours, turning the patient every two hours, providing scheduled sedation vacations, and administration of peptic ulcer prophylaxis, and DVT prophylaxis (Resar, et al., 2012). VAP bundles have proven to decrease length of hospital stay, decrease length of ventilator therapy, and decrease rate of ventilator associated pneumonia. VAP prevention has been proven effective, yet numerous hospitals do not have proper policies, staffing, and/or educated nurses to provide the proper care to ventilated patients. The American Journal of Critical Care found that thirty-minute education sessions alone boosted nurse’s knowledge of the care of ventilated patients, and therefore positively influenced patient care (Tolentino-Delosreyes et. al., 2007). If educated properly and adhered to strictly, VAP bundles will reduce mortality (Gallagher, 2012).

Methods

A retrospective study was performed to assess the effectiveness of VAP bundles on ventilated patients in the intensive care unit (ICU) at a central Kentucky hospital. The information collected was analyzed with a specific focus on the rate of ventilated patients that acquired VAP before bundles were implemented, as well as, assess the rate of ventilated patients that acquire VAP after the guidelines of the bundle are properly enforced.

Evidence Hierarchy

Clinical Observations

Through clinical observation we concluded that the occurrence of ventilator-associated pneumonia is greatly reduced when guidelines of VAP bundles are appropriately and properly enforced. Health care providers working on the ICU verbalized that the morbidity rate has decreased significantly after implementation of VAP bundles.

Clinical Implications

Correct implementation of VAP bundles will be achieved by educating medical ICU staff that are involved in the direct care of patients on the ventilator on the proper guidelines of use. The education will focus on the importance of correct implementation of VAP bundles and how it is beneficial to patients on the unit. ICU staff will then be encouraged to distribute the information to other personnel who may be in contact with ventilated patients. This information will allow those in charge of care for ventilated patients to be more competent of the reasons and necessity of VAP bundles so that, as a result, patient outcomes will continue to improve.

Conclusion

Through comparison of rates of ventilator-associated pneumonia before and after the implementation of VAP Bundles, it’s clear that the implementation has greatly reduced the numbers of this nosocomial infection in critical care settings. However, the effectiveness of VAP bundles rely heavily on the strict adherence to the guidelines by health care providers and, therefore, rates of ventilator-associated pneumonia reduction will vary from hospital to hospital.

References