Trauma Surgeon Develops Protocol To Eliminate VAP

Team members use a multi-step 'bundle' approach to reduce infection rates in hospital trauma unit.

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Critically ill patients on a breathing tube are at risk not only from their injuries or diseases, but also from infections they can contract in the hospital. One of the most common infections is pneumonia from breathing tubes. A study of a new multidisciplinary protocol that has all but eliminated such infections at one hospital was reported last week at the 2010 Annual Clinical Congress of the American College of Surgeons.

Some estimates have put the incidence of ventilator-associated pneumonia, or VAP, at 250,000 to 300,000 cases a year in the United States, approximately five to 10 cases per 1,000 hospital admissions. Riad Cachecho, MD, MBA, FACS, studied the use of what is called a VAP bundle at Crozer-Chester Medical Center (CCMC) in Chester, PA, that led to elimination of VAP by the end of a four-year study period. "It is not impossible to eradicate ventilator-associated pneumonia from a trauma unit," reported Dr. Cachecho, medical director of the Crozer Regional Trauma Center.

VAP is defined as a lower airway infection that occurs more than 48 hours after a patient has been placed on a breathing tube. VAP has been linked in some studies to longer patient stays in intensive care units and up to $40,000 in increased costs per individual patient, according to Dr. Cachecho. The VAP bundle that was devised at CCMC consists of several steps in the care of the trauma unit patient, including elevating the patient's head. Nurses also clean the patient's mouth every two hours, rinsing the mouth with a germicidal mouthwash every six hours.

Dr. Cachecho analyzed data on 2,290 trauma patients brought to his institution's shock trauma unit from 2005 to 2009, 1,006 of whom were on mechanical ventilation for more than 24 hours. His study was divided into two periods: 2005-2006 when education of the VAP bundle was taking place and 2007-2009 when the VAP bundle was fully implemented.

The pneumonia rate dropped to 1.5 per 1,000 ventilator days in 2007-2009 compared with 7.9 during the education period. The study showed no cases in the last eight months of 2009. Additionally, no cases of VAP occurred in the first three months of 2010, according to Dr. Cachecho.

The VAP bundle is part of a broader strategy the Crozer-Chester trauma unit employs that includes daily multidisciplinary patient rounds involving all members

of the care team, including the primary nurse, the trauma surgeon, a pharmacist, respiratory therapist, social worker, and the trauma unit manager or the shift manager along with residents and students. The team uses a check list to review every item of the VAP bundle and all other bundles used in the trauma unit.

“Part of our improved culture of safety in the ICU is empowering nurses to question physicians, whether senior or junior, when they see things they don’t like,” Dr. Cachecho said. Other parts of the VAP bundle include blood-glucose control and preventative measures against gastrointestinal bleeding and blood clots in the legs. Recently, the trauma team added a new initiative to limit the amount of blood drawn for routine daily labs, limiting the blood loss caused by the unnecessary blood tests.

“Society today expects that when patients come to the hospital that they will not get an infection,” Dr. Cachecho explained. “One of the goals of the health care team should be to prevent any complications or side effects, whether it’s a hospital-acquired infection or an injury. Hospital care should be looked at as a zero-defect system, just like going on an airplane,” he concluded.

Dr. Cachecho was the sole investigator in this study.

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