

A DIVIDE-AND-CONQUER APPROACH TO VAP PREVENTION

WOODHULL MEDICAL AND MENTAL HEALTH CENTER

- ◆ Brooklyn, NY
- ◆ 378 beds
- ◆ home2.nyc.gov/html/hhc/html/facilities/woodhull.shtml

Woodhull Medical and Mental Health Center is a municipal acute care hospital serving north Brooklyn. It is part of the New York City Health and Hospitals Corporation. It has an academic affiliation with the New York University School of Medicine.

STEEEP

Safe

VAP rates have decreased significantly.

Timely

Compliance with the IHI bundle, checked several times daily, means patients are taken off the ventilator as soon as possible.

THE PROBLEM

Pneumonia accounts for approximately 15 percent of all hospital-acquired infections and 27 percent of all infections acquired in the medical intensive care unit (ICU), according to the CDC. Mortality rates of 20 to 33 percent have been reported. The primary risk factor for hospital-acquired bacterial pneumonia is mechanical ventilation, with its requisite endotracheal intubation. Woodhull has focused on preventing ventilator-associated pneumonia (VAP) since 1999. Efforts, although successful, could be expanded using the latest guidelines.

THE SOLUTION

In 2005, Woodhull adopted the Institute for Healthcare Improvement (IHI) ventilator bundle. Because of Woodhull's earlier quality improvement initiatives, its VAP prevention program exceeds the IHI bundle by including such measures as performing oral care, using proper hand hygiene and checking patients for stomach over-distension.

RESULTS

In 2004, the year before implementation, the unit had three VAP cases, a rate of 0.56 per 1,000 ventilator days. In 2005, there were no cases. There was one case in 2006, a rate of 0.17, and one in 2007, a rate of 0.28. As of October 2008, the unit hadn't had a VAP case in 19 months. These rates all fall under the 10th percentile for a medical/surgical critical care unit in the National Nosocomial Infections Surveillance System.

BACKGROUND

In February 2005, the New York City Health and Hospitals Corporation launched the Critical Care Collaborative in its 11 hospitals, including Woodhull Medical and Mental Health Center. The multi-year effort involves setting aggressive, measurable goals to reduce such preventable events as hospital-associated infections. These 11 hospitals established expert teams focused on fighting central line infections, ventilator-associated pneumonia and sepsis. The VAP prevention component requires hospitals to implement the IHI ventilator bundle.

At Woodhull, the ICU staff has focused on using evidence-based measures to improve ventilator patient care since 1999. The unit folded the IHI bundle into its existing measure set.

A goal was not only to prevent VAP, but to get patients off the ventilator as soon as possible. "If we were not able to liberate the patient from mechanical ventilation within the first two to four weeks, we would have to take care of the patient on the regular medical/surgical ward," says Jose Mejia, MD, chief of the Department of Medicine. "The mortality for those patients on prolonged mechanical ventilation was more than 50 percent, and they die after two or three months on the medical/surgical ward due to sepsis secondary to such conditions as VAP or blood stream infections. It was very alarming. Something had to be done."

The critical care team decided each person would be responsible for one measure. For example, the pharmacist takes care of medication, making sure ventilator patients are receiving drugs to prevent blood clots and ulcers, while nurses handle head elevation, oral care and prevention of gastric distension.

TEAM MEMBERS

- » **Albert Ayvazyan**
Senior Clinical Pharmacist
- » **Diony Banez, RN**
ICU Nursing Supervisor
- » **Cheryl Cruz, RN**
Infection Control Officer
- » **Fritz Gardiner**
Case Manager
- » **Rosalie Giardina**
Director of Infection Control
- » **Roxanna Jimenez, MD**
Pulmonary Critical Care Physician,
ICU Attending
- » **Iris Jimenez-Hernandez**
Executive Director
- » **Gilberte Jolin**
Respiratory Therapist
- » **Maria Maritato**
Chair of Infection Control
- » **Jose Mejia, MD**
Chief of the Department of Medicine

These measures are all items of daily nursing goals. “Since then, there was a dramatic change in the outcomes,” Mejia says. “As everybody was championing one measure, it became ingrained in our practice and it was a culture change.”

Respiratory therapist Gilberte Jolin oversees the effort. Each morning she visits all of the ICU ventilator patients. She brings a checklist of measures that she marks and places in the patients’ charts. She tracks and collects them for data analysis. The nursing staff also checks twice a day to make sure the bundle is being followed, says Diony Banez, RN, ICU nursing supervisor.

The initiative has led to another major change: combining the medical and surgical ICUs and switching to the closed model. The combined unit, which is still two locations of 12 beds, is overseen by a critical care trained attending physician. All bundles and protocols are followed in all settings, as well as with both medical and surgical patients. The change has helped to further decrease VAP rates, says Roxanna Jimenez, MD, pulmonary critical care physician and ICU attending.

PRINCIPLES OF PERFORMANCE EXCELLENCE

Creation of High-Reliability Culture

Not only did the HHC embark on the system-wide critical care collaborative, it supports individual hospital’s efforts to change, even though finances are tight. “We definitely wouldn’t be able to do it without their support,” Mejia says. “One day we went to the Woodhull administration and said, ‘Listen, the pulmonologist alone cannot control ventilator-associated pneumonia, it needs to be a team. They were very gracious and assigned each one of the champions some time to dedicate to this program.’”

But resources are limited. We didn’t have a dedicated person for the data collection and tabulation, Jimenez says. “That we did ourselves. We gave our time because we want the best for our patients.” Today, there is a process supported by the hospital to collect, aggregate and analyze the information.

Changing the culture took some time and wasn’t always easy. Initially there was argument against those championing the measures. For example, the infectious disease officer took some heat for reminding people to wash their hands. But now staff members watch out for each other and keep one another on track. “We remind each other because it is teamwork,” Jimenez says. “We cannot do it one person alone.”

Eliminating Defects

The critical care team uses the hospital’s electronic medical record system to support its efforts. “I can review all the orders that the doctor put in,” says Albert Ayvazyan, senior clinical pharmacist. “Based upon all the clinical data presented to me in the computer, I can make a clinical assessment as far as optimum drug therapy.”

CONTINUAL IMPROVEMENT

Since the project began, team members have been flexible about adapting the way they do things to get the best results. “Everyone is ready to come up with suggestions,” Mejia says. Maintaining results requires constant education. All new personnel are taught the components of the bundle and the processes used. The team also has to keep up with the medical literature, Mejia notes. This is particularly important for stress ulcer and DVT prophylaxis as drugs and therapies change.