

HOSPITAL CHARACTERISTICS

**BAYLOR REGIONAL  
MEDICAL CENTER AT  
PLANO (BRMCP)**

- ▶ Plano, TX
- ▶ 112 beds
- ▶ [www.BaylorHealth.com/Plano](http://www.BaylorHealth.com/Plano)

**S . T . E . E . E . P .**



**EFFECTIVE**

BRMCP has eliminated VAP cases since March 2007.



**EFFICIENT**

Average direct cost savings are estimated at \$150,000 per case at BRMCP.

# ZERO TOLERANCE: THE VAP PREVENTION INITIATIVE

## The Problem

Pneumonia accounts for 15 percent of all hospital-associated infections. It is the second most common hospital-associated infection after urinary tract infections. The primary risk factor for the development of hospital-associated bacterial pneumonia is mechanical venti-

lation. Fatality rates for hospital-associated pneumonia of 20 to 33 percent have been reported; in one study, VAP accounted for 60 percent of all deaths due to hospital-associated infections, according to the Centers for Disease Control and Prevention.

## The Solution

Baylor Regional Medical Center at Plano (BRMCP) developed a proactive, multidisciplinary approach to eliminate VAP. This approach included using the ventilator bundle, a package of evidence-based interventions introduced by the Institute for Healthcare Improvement. The interventions call for:

- » Elevation of the patient's head between 30–45 degrees;
- » Daily awakening of the patient, also called sedation vacation and daily assessment of the patient's readiness for weaning from the ventilator;
- » Peptic ulcer disease prophylaxis; and
- » DVT (deep vein thrombosis) prophylaxis, unless contraindicated

## Results

Since March 2007, BRMCP has had no cases of VAP. Estimated direct cost savings at BRMCP are \$150,000 per patient or \$3,333,375 total for average direct costs from March 2007 through April 2009.

## Background

In March 2006 BRMCP put together a multi-

disciplinary team to eliminate VAP at its hospital. The rationale was national data that indicated 15 percent of hospital patients develop pneumonia. The IHI's 100,000 Lives Campaign introduced a ventilator bundle with evidence-based interventions that have shown an impact in preventing VAP. BRMCP adopted the IHI protocol but also added interventions and improved steps in the process.

Identifying documentation and staff engagement as possible barriers to VAP prevention, BRMCP worked to revise documentation as its first intervention. In May 2006 nursing staff revised the flow sheet to provide prompts and document steps, such as "sedation vacation" when patients are awakened daily. In October 2006 the BRMCP respiratory therapy staff began using software for computerized medical records to create a task list with prompts that ensure therapists are completing oral care and head-of-bed elevation and coordinating with nurses to complete sedation vacation.

In June 2006 the hospital started using a different brand of endotracheal tubes on a trial basis to remove secretions that can contaminate the lower respiratory tract and cause pneumonia. "Other institutions had used the equipment and shown promising results," says Tyler Clifton, respiratory therapy manager. "We were looking at every-

**TEAM MEMBERS**

**Todd Bailey, RN**

ICU Manager

**Tyler Clifton**

Respiratory Therapy Manager

**Sara Comport**

Data Outcomes Analyst, Healthcare Improvement

**Pat Cooper**

Director of Healthcare Improvement

**Lyn Hendrex**

Respiratory Therapist

**Alice Kern-Kirby, RN**

Director of Critical Care

**Kim Newman, RN**

Infection Control Practitioner

**Ellen Pitcher, RN**

Chief Nursing Officer; Chief Operating Officer, Executive Sponsor

**Jeff Taylor, MD**

Intensivist

thing possible to reduce infections.” During the trial period, there was no VAP for patients using the ET tubes, and costs were minimal. The hospital fully implemented the new tubes for all intensive care unit patients in July 2006.

Oral care was not part of the IHI ventilator bundle, but staff “looked to the literature” for effective, evidence-based practices, according to Kim Newman, RN, infection control practitioner. By November 2006, the oral care protocol was in place: respiratory therapists and nurses developed a schedule to alternate a patient’s oral care—which includes cleaning teeth and removing mucus—every four hours.

BRMCP also needed to engage the ICU staff. This involved educating and discussing the definition and rationale for ventilator bundles. ICU staff then began attending VAP team meetings. “We turned the corner when we engaged staff nurses and they took ownership,” says Pat Cooper, director of health care improvement at BRMCP. As a result, ventilator bundle compliance increased from 85.7 percent to 98.8 percent. According to Newman, “We [nurses and respiratory therapists] had worked well together as a team. Once the program was implemented, we took ownership.”

Senior leadership at the hospital has helped drive the improvement process. “Our leadership is very quality-driven—and very supportive,” says Cooper. Their philosophy: Baylor is a patient-centered organization. Leadership was supportive of allowing time off for staff education and attending IHI conferences. They supported the trial use and purchase of new ET tubes. Oral kits were an added expense, but Ellen Pitcher, RN, chief nursing officer, chief operating officer

and the team’s executive sponsor, supported whatever tools were needed to prevent HAIs, adds Cooper. “The key is incremental process improvement,” says Cooper. “Test change and see if it works or doesn’t. Make the change and test the next intervention.”

**Principles of  
Performance  
Excellence**

**Reducing Process Variation**

Focusing on educating staff and integrating technology to improve documentation ensured consistent, high-quality care at BRMCP. “We focused on the importance of individuals providing direct patient care, according to Clifton. “They really made our success possible.” Adds Todd Bailey, RN, ICU manager, “Each person is a facilitator in the process.” The protocol with the computerized task lists allows for delivering care that is “seamless,” says Lynn Hendrex, respiratory therapist. “Now nurses jump right in,” she adds. “It’s like brushing your teeth.”

Though there has been some staff turnover, the quality of work has not changed. VAP prevention is a key priority for ICU and respiratory therapy in new hire orientation. “We’re working to hard-wire best practices,” says Cooper. All nursing documentation is on paper and reviewed daily. Respiratory therapy is recorded electronically and the entire system is moving toward an electronic model.

**Creation of a High-Reliability Culture**

A high level of collaboration and teamwork, as well as vigilant, ongoing monitoring have helped make the BRMCP’s VAP prevention program a success and created a high-reliability culture. “The collaborative effort was very important,” says Jeff

Taylor, MD, intensivist. At BRMCP the intensivist model was already in place. Dr. Taylor emphasized the importance of and the focus on standardizing approach, documentation and outcome.

The infection control practitioners attended ICU staff meetings to discuss VAP prevention strategies. They identified a knowledge deficit regarding VAP definition and rationale for the ventilator bundle.

Ultimately a shift occurred in monitoring and ownership of VAP prevention, from management to staff responsibility.

Teaching and education were important as the staff consistently carried out the protocol and increased their level of compliance. Daily ventilator assessment was

also consistent, says Bailey. “If we find something done inconsistently or if something is missed, such as ulcer prevention, it is reevaluated every single day.” Sara Comport, data outcomes analyst, checks for compliance: “If documentation is non-compliant, I evaluate it every day,” she says. The entire team began meeting monthly and now meets every other month. VAP bundle and infection rates are tracked and reported monthly as part of unit-specific and organizational quality improvement goals.

Newman says the VAP prevention work resulted in a huge mindset shift. “We all believed that we could do evidence-based medicine, but that we could not eliminate

VAP. Now we know...yes we can. We can prevent all VAPs.” Clifton said the biggest lesson they learned is that to be successful, an interdisciplinary approach must be used. “If we don’t have the players in the room to accomplish a goal, we won’t be successful.” According to Bailey, “Teaming cannot be underestimated. Physicians have the same goal—it’s easy to move them to the goal of patient-centered care. We did this together, that is the best result of all.”

### **Continual Improvement**

BRMCP is spreading the VAP prevention protocol and even equipment used, such as the ET tubes, to other hospitals in the Baylor Health system.