

HOSPITAL CHARACTERISTICS

WOMEN AND CHILDREN'S HOSPITAL

▶ Charleston, WV

▶ 776 beds

▶ www.camc.org

Women and Children's Hospital is an affiliate of the Charleston Area Medical Center, a non-profit regional referral system. The hospital includes a Level III neonatal intensive care unit and pediatric intensive care unit, and hosts 3,000 births each year.

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



SAFE

A checklist approach was used to improve compliance with both clinical procedures and housekeeping responsibilities.



EFFICIENT

The new bundle to reduce VAP incorporated emerging best practices around nasal continuous positive airway pressure, or nasal CPAP.



PATIENT-CENTERED

Clinicians carefully tested new breathing masks and prongs to determine which devices best served their patients.

VAP REDUCTION IN THE NICU

The Problem

In 2005, the neonatal intensive care unit (NICU) at Women and Children's Hospital of West Virginia experienced a ventilator-associated pneumonia (VAP) incidence rate of 18 percent for infants weighing less than 1,500 grams. The incidence rate was 50 percent higher than

the baseline standard of the Vermont Oxford Network, a worldwide consortium of 800 NICUs.

The Solution

That year, Women and Children's Hospital adopted a VAP prevention bundle developed by the Vermont Oxford Network. The bundle includes steps for proper hand washing, gloving, gowning, masking and educating staff and NICU visitors on those techniques. NICU clinicians began giving patients a regular oral antibiotic treatment every four hours as a preventive measure.

The NICU also implemented strategies to reduce the time patients are exposed to ventilators, thus reducing their potential exposure to pneumonia. As an alternative to ventilator use for newborns, clinicians began using devices to facilitate nasal continuous positive airway pressure, or nasal CPAP. Clinicians also reduced the pressure of the ventilators on infants' lungs, which are susceptible to lifelong damage from too much pressure.

Additionally, housekeeping incorporated a checklist to ensure that the NICU was properly cleaned each time.

Results

In 2006, the incidence of VAP in the NICU fell to 10 percent from 18 percent in 2005; by 2007, the incidence rate declined further to 2 percent. The NICU now reports that it conforms to the Vermont Oxford Network VAP reduction bundle at a 99 percent rate of compliance.

Background

In 2005, a multi-disciplinary team in the NICU began exploring strategies for lowering the incidence of chronic lung disease, says Nancy Marcus, RN, NICU nursing manager. Out of that effort, a small group formed to specifically study methods for reducing infants' exposure to VAP. After studying global best practices and the Vermont Oxford Network's bundle, the group engaged all 90 members of the NICU staff to come up with unit-appropriate strategies for changing standard practice. "We included everyone from radiology to housekeeping," says Dale Vogelbach, R.N., the NICU's respiratory care supervisor.

The changes included the adoption of current Centers for Disease Control (CDC) standards around the use of gels, antiseptic soap and proper gloving. At the same time, the housekeeping staff started using a checklist to ensure that the NICU's sleeping spaces were being cleaned properly. To avoid contamination, the radiology department began using a dedicated radiology reader in the NICU and ended the practice of bringing radiology films in from other units.

Vogelbach says the biggest practice change involved the administration of nasal continuous positive airway pressure (CPAP). In turn, that precipitated a major educational effort to help frontline staff learn how to properly use the new devices. "It's very labor intensive," Vogelbach says. "The babies move and the device moves off their face."

The hospital's executive leadership support-

TEAM MEMBERS

Nancy Marcus, RN

NICU Nurse Manager

Dale Vogelbach, RN

Respiratory Care Supervisor

Ed Welch

Board Member and Quality Committee
Chair

Dale Wood

Vice President of Quality and Systems
Improvement and Chief Quality Officer

ed the initiative by assigning respiratory therapists to attend high-risk deliveries and support frontline staff. As new best practices emerged over time, the respiratory therapy team held regular in-service meetings to educate staff on the implementation of new procedures. “Everyone took ownership,” says Dale Wood, Charleston Area Medical Center’s vice president of quality and systems improvement.

**Principles of
Performance
Excellence**

Reducing Process Variation

In addition to practice changes, the multi-disciplinary group investigated the efficacy of the existing NICU equipment to determine if any changes were needed. After learning that the ventilation heaters were causing the tubing to burn out prematurely, the hospital switched to a different device. The NICU staff switched the infant resuscitator it currently used to one that doesn’t place too much pressure on the baby’s lungs. The unit also continually evaluates nasal prongs and masks that facilitate independent breathing for newborns. “We’ve gone through a couple of different brands to find what’s best for our patient population,” Vogelbach says.

Creation of High-Reliability Culture

The hospital’s emphasis on continual improvement begins with robust discussions on the Charleston Area Medical Center board’s quality committee, says Ed Welch, chair of the committee and president of the University of Charleston. Welch says the committee formed several years ago as part of a board effort to devote the same time and energy to quality improvement as its traditional fiduciary responsibilities.

“Over the course of five to eight years, our quality attention has gone from being where it was in most hospitals, where it was not an important issue and the board spent all its time in finance to being a major focus,” Welch says.

The committee meets monthly with administrative leaders and clinicians to analyze current initiatives and discuss future projects. Committee members are expected to educate themselves on a range of issues so they can meaningfully engage clinicians in quality discussions, Welch says.

“The quality committee feels empowered to say, ‘we’re concerned about this and we want to see it get better,’” Welch says. “We’re emboldened to understand we are responsible for quality. I can ask how about how many patients we harmed last month. These are real people with real consequences.”

According to Wood, Women and Children’s Hospital uses Six Sigma methodology to regularly analyze current care delivery techniques and adhere to emerging best practices. Outcomes are monitored at a service line level, and each service line has its own quality improvement committee with a clinical director and a physician serving as co-chairs. When new initiatives are rolled out, each team begins by identifying an administrative and physician “champion” to promote the program and engage with staff. The emphasis on continual quality improvement begins in the board room and filters into every level of CAMC’s operation, Wood says.

“It’s one thing to have a good outcome on occasion,” Wood says. “It’s another to

have outcomes improved across many dimensions.”

Continual Improvement

Today, the NICU staff continues to monitor its VAP incidence rate in infants weighing less than 1,500 grams against a core group of five other children’s hospitals across the country. The NICU also monitors its progress in comparison to a bench-

mark VAP rate developed by the CDC. In addition, the hospital regularly analyzes patient cultures testing positive for pneumonia to look for trends in infection and determine if any particular units are more susceptible to infection. Those analyses are used to compare performance and determine where further changes may be necessary, Marcus says.