

Holy Family Medical Center – Des Plaines, Illinois

Reducing Long Term Acute Care Hospital (LTACH) Central-Line Associated Bloodstream Infection (CLABSI) Episodes

Overview: Holy Family Medical Center (HFMC) is a faith-based long-term acute care hospital caring for medically complex patients, the only such hospital in Northwest Chicagoland. The hospital specializes in providing care for patients who are critically ill with complex medical conditions and must be hospitalized an extended period. HFMC is part of Resurrection Health Care, the largest Catholic health care system in Chicagoland with more than 100 sites of care.

More than 75 percent of HFMC's patient population requires central line catheters. From July 2008 through June 2009, infection control surveillance identified an average central-line associated blood stream infection (CLABSI) rate of 2.8, which is above the National Healthcare Safety Network benchmark for medical intensive care units of 2.4 per 1,000 central line catheter days. CLABSI is a common complication of central line catheters. In 2009, HFMC had 49 episodes of CLABSI. A large percent of the patients admitted are colonized with multi-drug resistant organisms. The cost per episode was valued at approximately \$10,000 per case in additional pharmacy costs and related medical interventions. Infection-control leaders were determined to reduce the CLABSI rate in a cost-effective manner.

A multi-disciplinary Plan-Do-Study-Act (PDSA) team was formed to analyze the process and find the root cause(s) of the high CLABSI rate, so that the CLABSI rate could be reduced in a cost-effective manner. Using the PDSA process improvement method, the team analyzed the cleaning practice of central line catheters and patients, and developed solutions to solve the root causes of each identified practice variation. HFMC North Unit was chosen as the beta site for this analysis. Per the PDSA team's analysis:

- There were staff and product variations in patient bathing.
- Traditional soap and water bathing practice does not fully sanitize the patient's skin, and has a limited effect on the bacterial skin burden.
- The HFMC North Unit had an individual CLABSI rate of 5.1 incidents per 1,000 patient days from July 2008-June 2009.

A four-month infection control intervention entitled "Bath-by-Numbers" was implemented by the team in October 2009. The 2% chlorhexidine gluconate (CHG) cloths and warmers for the trial period were provided (Sage Products Inc., Cary, Ill.). The product is packaged with six bathing wipes designated for use in a particular order to bathe a patient in a precise method. The step-by-step bathing method associated with the chlorhexidine bath wipe eliminates nursing bathing technique variation, sanitizing the patient's skin with less labor in less time. The patient's skin remains sanitized for 24 hours, reducing potential contamination of the central line apparatus, the root cause of the PDSA team's objective.

Impact: The results were compared in the pre- and post-pilot intervention time periods:

- 47 percent decrease in the monthly CLABSI rate (from 4.3 to 2.37) on the North Unit
- 35 percent decrease in the monthly CLABSI episodes (from 4.6 to 3.0) overall
- 29 percent decrease in bathing labor time (from 35 minutes to 25 minutes per patient)
- \$5.50 per-patient bathing cost increase (basin-soap method cost miniscule)

The pilot study's effect on the entire LTACH was a 35 percent reduction in the number of CLABSI episodes. The LTACH patients experienced a total of 49 CLABSI episodes from July 2008 – June 2009. Patient acceptance of the bath wipe was between 80 percent and 99 percent. Employees were also pleased with the performance of the product and rated it good-to-excellent.

Challenges/success factors: HFMC also created a training tool depicting the repeatable, step-by-step, Bath-by-Numbers technique. Dr. Rosie Lyles, a physician from Chicago's John H. Stroger, Jr. Hospital of Cook County, Division of Infectious Diseases, volunteered to contribute input for the training tool. All shifts of the North unit were in-serviced by nursing education using the tool. The creation of the "Bath-by-Numbers" method is unique to LTACHs because much of the published evidence exists only for acute care hospitals. The main benefit of reducing CLABSI incidents in an LTACH setting is a reduction in the patient's extended length of stay (LOS) due to acquiring the infection.

Future direction/sustainability: Phase II was launched in February 2010, incorporating the "Bath-by-Numbers" method using 2 percent chlorhexidine impregnated bathing wipes in the entire hospital. After completion of this additional six-month conversion, the CLABSI rate was reduced by 65 percent overall. Cost savings in medication and lab costs were also captured.

Holy Family Medical Center received the 2010 Goldberg Innovation Award from the National Association of Long Term Hospitals for the study.

Advice to others: As you implement a plan to reduce your CLABSI rates, make sure to:

- Review your current protocols/processes related to the use of central lines.
- Know what is reasonable; LTACHS may not get to a rate of zero based on patient population. Look at your current rate. Is it erratic and unpredictable? Establishing a protocol can lead to more predictable outcomes, thus making it easier to budget and plan.
- Ensure that sound infection-control surveillance is in place.
- Partner with your supply manufacturer.
- Have an education team and surveillance for frequent follow-up during pilot testing.
- Develop teaching tools for your clinical staff.
- Balance clinical and financial outcomes.
- Monitor results on an ongoing basis using surveys, questionnaires, etc. Everyone has to be on the same page with a common mission, vision and goals.

It is crucial to have staff, physician, family and patient buy-in. Explain that the chlorhexidine bath wipes contribute to their safety by reducing organisms on the skin, which can lead to infection.

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