Solution: SICU Pride: Zero BSI

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IDENTIFICATION:
Blood stream infection (BSI) in the Intensive Care Units is associated with high mortality and morbidity. At Johns Hopkins Bayview Medical Center (JHBMC) the Surgical Intensive Care Unit (SICU) had a BSI rate of 3.29 infections per 1000 central line days in calendar year 2007. This problem was identified through infection control surveillance and careful data collection. The SICU team was presented with their infection rates on a monthly basis and established elimination of central line bacteremia as their goal.

PROCESS:
After receiving the baseline BSI data, the SICU adopted the safety collaborative methodology to look into best practices and implement them. The literature supported these concerns, and according to the CDC report from 2007, each year, an estimated 250,000 cases of BSI occur in hospitals in the United States, with an estimated attributable mortality of 12%--25% for each infection. For medical/surgical ICUs in facilities with a major teaching affiliation with a medical school, BSI incidence in 1997 was 6.0 per 1,000 central line days, declining to 2.6 per 1,000 central line days in 2007. The marginal cost to the health-care system is approximately $25,000 per episode. (CDC.gov, 2007)

The methodologies and processes implemented to deal with the high BSI rate included joining the Johns Hopkins Safety Collaborative in 2006, which facilitated the identification of multiple safety markers for patients within the SICU. The SICU team developed interventions that were designed to address quality and safety issues and included:

- Safety Officers
- Daily goal sheets
- Nursing involvement in daily rounds
- Best clinical practices

SOLUTION:
The Blood Stream Infection Bundle was implemented by the SICU team.
Items implemented from the bundle include:

- Full barrier precautions (sterile gown, gloves, mask, and cap for the nurses and physicians/providers involved in the procedure for inserting or rewiring central lines), and full-length body drape for patients
- Use of Chlorohexidine skin prep for cleansing the site prior to line insertion
- Subclavian site is the preferred site. All other central sites avoided if possible such as femoral and external jugular
- Bio occlusive dressing over insertion site
• Removal of line as soon as clinically indicated
• Diligent IV tubing labeling and changing
• Empowerment of nurses to stop the procedure if procedures are not followed
• Empowered the nurses to question daily (during rounds) the need for a central line
• Focused review of all documented catheter related Blood Stream Infections with care team

The above interventions were implemented through executive safety rounds as well as daily clinical multidisciplinary rounds. Safety rounds occur monthly and are well attended by senior medical leadership, surgical nursing and quality and safety officers.

Results: During calendar year 2008, the Surgical Intensive Care Unit had **zero** central line blood stream infections. They have now gone 14 months without a single BSI.

The measures being taken to ensure that results are sustained over time, include:
• Continue nurse/provider collaboration and communication at all levels of care
• Daily goal sheets and daily rounding
• Close monitoring of infection rates
• Implement the line insertion cart and line insertion check list
• Continue to empower staff and document results
• Explore opportunities to participate in multi-center studies