Reducing Catheter-Associated Blood Stream Infections In a Pediatric Inpatient Unit: Proven Strategies In a Novel Setting

**PEDIATRIC HOSPITAL MEDICINE RESEARCH AWARD RECIPIENT**

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Purpose
Catheter associated blood stream infections (CA-BSI’s) remain a major concern in pediatric hospitals. Attention has been focused on reducing these infections in the intensive care setting. No published study has described an infection reduction program in a general pediatric inpatient unit. By using proven catheter-care practices, we aimed to reduce the rate of CA-BSI’s in the pediatric inpatient setting.

Methods
Following a literature review and consultation with NICU and PICU leaders, a central line maintenance care bundle was developed for the pediatric inpatient units. The bundle focused on proper hand hygiene, sterile barrier, thorough scrub and dry, limiting line access and encouraging prompt line removal. Education to MD and RN staff occurred with description of the care bundle and its success in other units. The bundle was employed for care of all central lines on the inpatient unit. Using an observation checklist, bundle compliance was audited and recorded. All elements of the bundle had to be completed to be considered compliant. The main process measure was compliance with the maintenance bundle. The main outcome measure was the rate of CA-BSI’s on the three different inpatient units.

Results
During the study period of December 2008 to September 2009, 20 CA-BSI’s occurred with a total of 6,899 line days. The CA-BSI rate for the inpatient units decreased from 2.77 (cases per 1000 line days) to 2.24, a 19% reduction. The unit with the highest baseline rate saw the greatest improvement, achieving a 41% reduction in rate over the study period. From March 2009 to September 2009, 282 line maintenance events were audited. Compliance with the bundle increased from 85% to 100% over this period.

Conclusion
Compliance with best practices in central line care can be improved through education and frequent auditing. Our data show that strategies which reduce CA-BSI’s in the intensive care setting can be applied successfully in the inpatient pediatric setting, particularly in units with currently high rates. There remains no benchmark data for the rate of CA-BSI’s in general pediatric inpatient units. Collaboration and further research are needed to better define the optimal maintenance care bundle for the general inpatient pediatric setting.