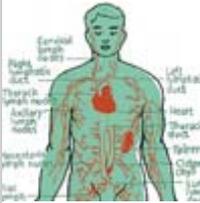


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Our vision is to be the model for addressing children's health needs by defining, then providing or advocating for: accessible, innovative and excellent patient care; integrated teaching and research and partnerships in wellness and prevention programs.

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Pediatric Bloodstream Infection

The Pursuit of the Preventable

By Alan E. Kohrt, M.D.

According to the Centers for Disease Control and Prevention (CDC), central venous catheter (CVC) related bloodstream infections are the primary cause of up to 62,500 patient deaths each year in the United States. In addition to increased mortality, bloodstream infections and their treatment create hardships for patients and their families, including reduced quality of life, longer hospital stays and, ultimately, greater healthcare expense. The CDC estimates that each bloodstream infection costs, on average, \$25,000, however, for patients in pediatric intensive care units (PICUs) the cost is even higher, \$40-45,000 per episode. But, catheter-related bloodstream infections are largely preventable through implementation of standard procedures and safety guidelines.

As part of its 100,000 Lives Campaign—a national initiative to reduce the number of avoidable hospital deaths nationwide—the nonprofit Institute for Healthcare Improvement developed a specific set of guidelines and practices (called a bundle) designed to help prevent catheter-related bloodstream infections. Children's Healthcare of Atlanta recognized the value of these guidelines and, in collaboration with Child Health Corporation of America, an alliance of 41 children's hospitals nationwide, set about to integrate them into practical standards and procedures that were first implemented in the PICUs at both hospitals.

An Integrated Approach

The Children's Blood Stream Infection (BSI) Team includes key members of the organization's staff including nurses, physicians, infection control specialists and others who ensure that recommendations are both effective and practicable. Each unit is responsible for implementing the bundle processes. The work of the team is facilitated by the performance improvement professionals from The Quality department. Borrowing Six Sigma quality control and improvement techniques from the manufacturing sector, the team adapted the comprehensive BSI protocol that includes insertion as well as maintenance bundles, groups of individual best practices whose value and efficacy are exponentially greater when used together. Key components of the program include:

- Hygiene and sterilization guidelines
- Skin preparation using chlorhexidine gluconate (CHG)
- Antibiotic-impregnated catheters
- Designated dressing change days and protocols
- Establishment and maintenance of barrier integrity

A critical success factor for the BSI initiatives is that the entire healthcare team is engaged in implementing and measuring the project, effectively eliminating any gaps in the care continuum.

Early Success

The pilot program was introduced in the PICUs at Children's in May 2005. As part of the program, clinical personnel are

required to submit completed bundle checklists to their department heads for each relevant incident. Children's mean year-to-date bloodstream infection rate per 1,000 CVC days was 5.3 at implementation. Within the first eight months of the program, the mean rate fell to 3.9—a 26.4 percent reduction. In light of this initial success, the program was extended to the neonatal ICU at the beginning of 2006.

The PICU program was initiated under the direction of Pat Richardson, the Children's Patient Safety and Improvement Officer. Early in 2006, the program was broadened to include technology-dependent and cardiac ICUs, which present even greater challenges due to illness severity and greater use of CVCs. For 2006, the PICU year-to-date data shows an even more significant decrease to 0.9 BSI rate.

One of the ultimate goals of the CVC bundles is to sustain the early successes into the long term. To this end, not only does Children's monitor the rate of bloodstream infections, but also the number of days that pass without an infection, much as manufacturing plants keep track of accident-free stretches. As of April 30, 2006, 191 days had passed since the last bloodstream infection in Children's at Eggleston's PICU, and 73 days for Children's at Scottish Rite.

Reducing bloodstream infections in our ICUs is an important step toward providing the safest and most appropriate care for patients and their families. Extending the success of the ICU initiative to the rest of the hospital promises to have an even greater impact on the lives of our patients.

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