



Decreasing the incidence of central line associated bloodstream infection in children at home on parenteral nutrition with short bowel syndrome

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BACKGROUND

Children with short bowel syndrome (SBS) and intestinal failure are chronically ill:

- Require parenteral nutrition for months to years¹
- Suffer significant complications related to their treatment²
- Costs of treatment are high both in dollars and the impact on quality of family life³

Central line associated bloodstream infection (CLABSI) is high in this population⁴

- Leads to numerous hospitalizations each year¹
- Can decrease the probability of reaching complete bowel adaptation⁵

AIM

Using the Johns Hopkins Nursing Evidence-Based Practice Model⁶ as the framework, this project:

- Introduces an evidence-based central line maintenance bundle to home care
- Empowers families to stop care that is not in accordance with the maintenance bundle and what they have been taught
- Decreases the rate of CLABSI in this population
- Improves treatment outcomes and reduces health care costs



PRACTICE QUESTION

In children with SBS at home on parenteral nutrition, will educating families and home nursing staff regarding a central line maintenance care bundle in the simulation center, then implement that bundle in home care, decrease the incidence of central line associated bloodstream infection?

EVIDENCE

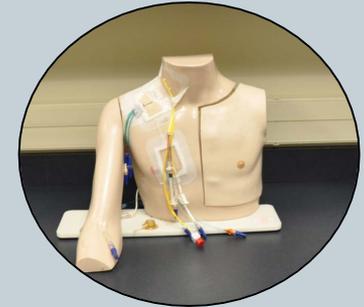
A systematic review of the evidence was performed using:

- Databases: CINAHL, MEDLINE, Cochrane Library and Health Source Nursing/Academic
- Keywords: central line, pediatrics, CLABSI, maintenance care bundle
- Inclusion criteria: English, years 2000 to present, children only
- 51 articles were included in the synthesis, noting levels 1-5, and A/B quality evidence
- 29 level 5 quality improvement programs noted success in decreasing CLABSI rates in pediatric hospitals using central line insertion and maintenance care bundles, staff education/competencies, and monitored practice using a checklist

METHODS

An evidence-based central line maintenance bundle was introduced to home care using mannequins to allow for skill perfection.

- Families were offered education regarding the maintenance bundle, hand hygiene and infection control measures in the simulation center or at home.
- Home nurses were offered didactic education and competency testing using mannequins.
- Families monitored the nurses' adherence to the elements of the maintenance bundle using a checklist.
- Families were empowered to stop any care that was not in accordance with the maintenance bundle.
- Home visits with selected families were done to reinforce education and the maintenance bundle.



The Johns Hopkins Nursing Evidence Based Practice PET Process

Practice Question

Evidence

Translation

Dearholt, S. L., & Dang, D. (2012). *Johns Hopkins nursing evidence-based practice: Model and guidelines* (2nd ed.). Indianapolis, IN: Sigma Theta Tau International

RESULTS

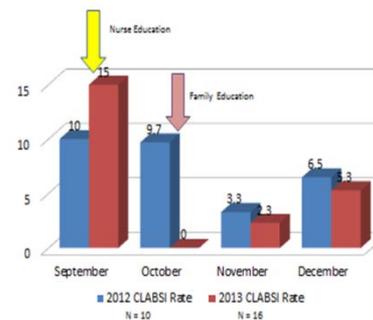
Over the 4 months of data collection, the CLABSI rate decreased by 84.6%

- 8.1 median CLABSI rate in the 2012 pre-implementation comparison period
- 3.8 median CLABSI rate for the 2013 post-implementation period
- Monthly hospitalizations remained high at 50% of the population
- Median number of hospital days per month per child was 2.55, even with the dramatic decrease in CLABSI events per month

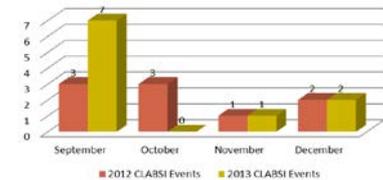
Compliance checklist return was only 28% of expected

- Compliance with the bundle was 100% the first month and fell each month thereafter
- Overall bundle compliance was 91%

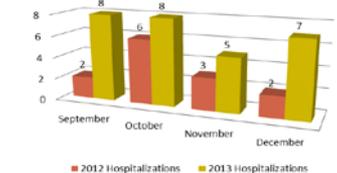
The Intervention



CLABSI Events Comparison



Hospitalization Comparison



CONCLUSIONS

- The evidence and strategies for decreasing the CLABSI rate that were successful in hospitals were implemented in a new venue, that of home care.
- Estimated cost savings of \$200,000 over the 4 months of data collection results in \$600,000 savings annually.⁷
- Decreasing the CLABSI rate can improve treatment outcomes and improve the chance to reach full bowel adaptation.
- Relationships with families and community providers were strengthened as the result of this EBP project.