

# Supplementing Central Line Bundle with Evidence-Based Devices and Protocol Reduces Bloodstream Infections in Vulnerable Patient Population

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## Purpose

Our pediatric post-acute care facility's patient population has elevated risk factors for central-line-related bloodstream infections (CLABSIs) including short bowel syndrome and lengthy intravenous nutrition. We hoped to minimize infections with a multi-pronged preventive approach.

## Project Description

Careful observation at our facility showed no variation or noncompliance issues with manual disinfection of IV connectors. Yet CLABSI rates remained high. During 2009–2010, we took three preventive measures, implementing two evidence-based devices and one new protocol.

**1st device:** We implemented a kit that included a disinfection cap (orange top) packaged with a pre-filled flush syringe. The kit combination provided nurses ready access to the cap and syringe. The cap bathes the tops and threads of IV connectors in 70% IPA and protects against touch and airborne contamination.

**2nd device:** We began placing a foam patch at the insertion site that secretes chlorhexidine gluconate (CHG) to combat infection from patients' skin flora.

**Protocol:** We began scrubbing patients' IV lines with CHG after diaper changes.



Disinfection Cap



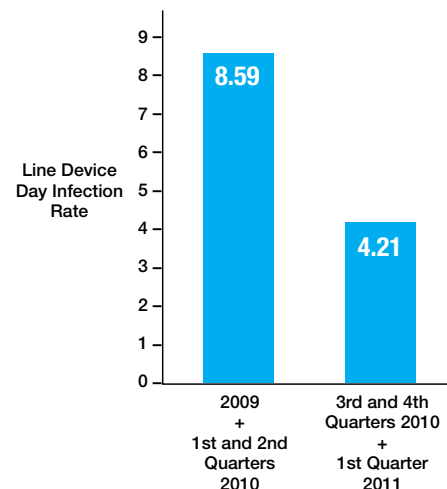
Foam Patch

## Major Outcomes

In the three-month period (3rd quarter, 2010) after the cap was implemented but before other changes were made, CLABSIs dropped by 54.7%, compared to the previous six quarters. The CHG patch and scrubbing were then added, producing an overall CLABSI rate reduction of 51%, comparing 3rd–4th quarters 2010 plus 1st quarter 2011 to the previous six quarters.

	2009	1st–2nd Quarters 2010	3rd Quarter 2010*
Number of Infections	30	12	4
Number of Line Days	3242	1646	1027
Line Device Day Infection Rate	9.25	7.29	3.89

\*Cap trialed in Q3 2010, before other changes added.



## Conclusions/Implications for Practice

Preventing CLABSIs in highly vulnerable patients requires adding evidence-based technologies/protocols that target infection sources particular to the population. The CHG patch protects against increased skin flora and improves prevention during the catheter maintenance phase. Scrubbing lines with CHG likely defends against fecal bacteria. The disinfection cap, which was in a kit with flush syringe, reduced infections even before the patch and line scrubbing were added.

## Limitations

Prospective observational study following interventions. Not a randomized controlled trial.

## Funding Source

None

## Disclosure Statement

Excelsior Medical (Neptune, N.J.) is reimbursing the author for travel and hotel expenses for the conference.