



# CREATING A CULTURE OF QUALITY

## A Quality Improvement Initiative to Impact Hemodialysis Catheter Related Bacteremia

*This poster highlights a quality improvement initiative to implement CDC and APIC recommended procedures to significantly reduce HD catheter BSI rates.*

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**Background:** In 2011, Fresenius Medical Care, North America (FMCNA) implemented a comparative effectiveness assessment of CDC and APIC best practice recommendations for HD catheter exit site disinfection and CVC hub care. Specifically, we wanted to study the use of 2% Chlorhexidine with 70% alcohol swab (CHG) for exit site care and scrubbing end caps and hubs with 70% alcohol pad at initiation, termination and any time dialysis lines disconnected. The overall goal was to reduce the occurrence of BSIs in HD CVC patients.

**Methods:** 422 FMCNA facilities were matched 1:1 based on access type, size, location and catheter protocol disinfectant used. We randomly assigned 211 facilities to the revised protocol (RP) and the corresponding matched pair (N=211) into usual care (UC). Training and implementation was in July, 2011 with a 3-month baseline (4/1-6/31) compared to a 3-month follow-up (8/1 -10/30) period. The primary outcome was the rate of positive blood cultures ("bacteremia"). Rates of new IV antibiotic starts, hospitalization for sepsis and adverse reactions to CHG were also tracked. Historically, seasonal increases in infections occurred over the summer, thus the need for concurrent controls.

**Results:** A total of 422 facilities participated with a combined over 700,000 CVC days of follow-up during both the baseline and follow-up periods. There were 8,015 patients with a catheter as of day 1 of the study, ~25.2% of the total study population.

Utilizing CDC and APIC CVC care recommendations resulted in a statistically significant 20% lower rate of bacteremia in the RP group compared to the UC group ( $p=0.02$ ). This was associated with a 20% lower rate of initiation of IV antibiotics ( $p=0.0004$ ) and a trend towards lower hospitalization rates for both sepsis (36% less) and vascular access-related infections and complications (38% less). Minor skin reactions were reported in up to 2% of CHG patients, some alleviated by reducing friction when applying CHG or ensuring CHG dries before dressing placed.

An extended follow-up from baseline to 4/30/12 demonstrated a statistically significant 31% lower bacteremia rate in the RP group compared to the UC group ( $p=0.02$ ). Overall, the RP group reduced bacteremia rates from a baseline of 0.85 /1000 cath-days to 0.47/1000 cath-days.

**Conclusion:** The change in CVC care significantly lowered bacteremia rates and were accompanied by fewer antibiotic starts. Based on the results, all FMCNA facilities will start converting to new CVC care procedures in 2012.