A Pilot Quality Improvement Program to Minimize Catheter-Related Bloodstream Infection in an Outpatient Hemodialysis Setting

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Background: Technical and adaptive approaches from the Johns Hopkins University Armstrong Institute have reduced catheter-related bloodstream infection (CRBSI) in hospitals.

Methods: To evaluate whether similar approaches could prevent CRBSI in chronic dialysis patients, we conducted a collaborative, multifaceted, quality improvement program in 26 Maryland-area DaVita hemodialysis facilities. We used the Armstrong Comprehensive Unit-based Safety Program (CUSP) to survey elements of culture and practice in patient safety, adapted tools and interventions for the dialysis setting and monitored CRBSI rates.

Results: The survey was completed by 431/497 teammates (employees). We found areas for systematic improvement in pre-, intra-, and post-dialysis central venous catheter (CVC) care from the medical literature. We created a procedural kit with checklist, antimicrobial swabs for skin prep, triple-antibiotic ointment for exit site application, alcohol swabs to facilitate hub scrub, and exit site dressing. Another kit/procedural checklist was created for CVC dialysis initiation and termination. To enhance teammate engagement, clinics implemented daily team briefings to collectively identify and plan for high-risk patients. Teammates charted each new CRBSI episode utilizing a calendar to monitor progress. During the evaluation period, we saw a greater decline in CRBSI rates in project clinics than in non-project DaVita clinics.

Conclusion: Safety assessment tools and interventional approaches that reduce CRBSI in hospitals can be successfully applied to reduce CRBSI in chronic dialysis facilities.

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