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Reducing Infections in Hemodialysis Patients

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Problem: Infection is the second leading cause of death in the patient with ESRD. It also contributes to hospitalizations, mortality and increased health care costs. Central venous catheters (CVCs) are used nationally in approximately 19% of dialysis procedures but are responsible for 70% of the access related blood stream infections (BSI).

Approach: Therefore, the focus on decreasing the number of CVCs in this population should be a priority for the nephrology nurse (NN). As expected however, a certain number of patients continue to be dialyzed via a CVC. These patients belong mainly to two groups; patients with multiple failed accesses and patients who start hemodialysis (HD) with a CVC. Strategies to decrease CVCs and CVC-related BSIs include; vascular access programs, zero tolerance of infection programs, education of patients and staff, physician-nurse alignment, use of triple-antibiotic ointment at the exit site, impregnated catheters, and antibiotic lock solutions.

Solutions: Our first priority was to decrease CVCs through a “Wipe Out Catheter” (WOC) program. This program uses a 7-step process to assess and evaluate each CVC patient. WOC has achieved a companywide CVC rate of 8.9%. For those continuing to use a CVC, we established a low dose gentamicin-citrate lock protocol. Over a 3-year period, we monitored CVC lock related BSIs in approximately 5000 hemodialysis patients using National Healthcare Safety Network (NHSN) protocol. We also addressed the safety concern for resistance development. In addition, we added the use of triple antibiotic ointment at the CVC exit site. The rate of CVC-related BSI over the three years was 1.00 episodes/100 patient months, 50% lower than the national average of 2.02 for CVC-related BSI.

Conclusion: The reduction in the number of CVCs, combination of triple antibiotic ointment on the exit site and a gentamicin-citrate lock reduced infections in CVC patients by more than 50% consistently over 3 years with no evidence of emerging gentamicin resistance, no evidence for CVC breakdown. Due to these findings, these strategies became the standard of care for our patients.

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