

Risk Factor's for Central Line Associated Bloodstream Infection: A Comparison of Frequently Infected vs. Rarely Infected Home Parenteral Nutrition Patients.

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Background: Home parenteral nutrition (HPN) is administered through a central venous catheter (CVC). The most frequently reported complication of HPN is central line associated bloodstream infection (CLABSI). Identification of risk factors may reduce CLABSI incidence in an HPN population.

Objective: The aim of this study was to compare risk factors for CLABSI in frequently infected (FI) and rarely infected (RI) HPN patients.

Methods: Catheter infection data was collected from January 2006 to December 2011 by medical record review from one home infusion pharmacy. Patients were divided into 2 groups based on their individual infection rate/1000 CVC days. Twenty-one patients in the FI group averaged a CLABSI rate of 4.3/1000 days. Twenty-one patients were assigned to the RI group with an average CLABSI rate of 0.04/1000 days. Risk factors for CLABSI were identified by literature review. They included number of handlers, presence of an ostomy or enteric tube, dressing material, hub care antiseptic, use of IV push medications and narcotics, and lab draw method and collection frequency. Age, sex, diagnosis, length of therapy, and CVC type were also analyzed and compared.

Results: Each group was similar for age, gender, presence of an ostomy, and alcohol swab hub care. Diagnosis for the RI group was primarily short bowel syndrome (95%). The FI group was 67% short bowel syndrome and 33% dysmotility. The RI group's length of therapy was longer with an average of 23.5 years compared to 15.75 years for the FI group. For CVC type, RI group had 100% tunneled CVCs, and FI group had 17 tunneled CVCs, 4 implanted ports, and 1 PICC. The FI group had more CVC handlers available, with 48% having a potential of 2-5 CVC caregivers. The largest number of CVC handlers for RI group was a possibility of 2 in 28% of the patients and only 1 caregiver in 72% of the patients. The FI group had 5 enteric tubes and RI group only one. Dressing material also varied between the groups with FI group using 90% transparent dressings, and RI group a combination of transparent (62%) and gauze dressings (38%). The FI group used more IV push medications (57% vs 28%) and narcotics (38% vs 0%) than the RI group. The CVC was used for lab draws in the majority of the FI group (71%) and labs were drawn more frequently than once monthly in 57% of the FI group. In contrast, the RI group had labs drawn primarily by peripheral vein (71%) and no patients had labs drawn more frequently than once monthly.

Conclusion: In this cohort of HPN patients, several risk factors were identified as more prevalent in the FI group. They include more caregivers handling the CVC, presence of an enteric tube, use of IV push medications and narcotics, and frequency of blood sampling from the CVC. Other factors that may increase risk of infection are fewer years on HPN, diagnosis of dysmotility, and implanted port and PICC use rather than a tunneled CVC. HPN patients can maintain a very low CLABSI rate, as demonstrated by Group RI. Recognition and implementation of strategies to reduce risk factors is a priority in the care of HPN patients. More studies need to be conducted to define risk factors for CLABSI in this population.