Central Venous Catheters for Home Parenteral Nutrition: Characteristics and Outcomes of Devices in Place for Five Years or Greater.

Purpose: Intestinal failure patients may require home parenteral nutrition (HPN) for a lifetime. HPN is administered through a central venous catheter (CVC), and an important goal is to extend the dwell time many years without complications leading to loss. The aim of this study was to examine a group of HPN patients and report characteristics and outcomes of CVCs in place for at least five years.

Methods: All charts of adult and pediatric patients from one home infusion pharmacy were retrospectively reviewed for CVCs in place for at least 5 years. Data collected included CVC type, days in place, number of lumens, material, and if removed, reason for loss. HPN regimen was also reported including infusion days per week, cycle time, volume infused, and intravenous lipid emulsion (ILE) administration. Care routines were studied, such as, use of protective alcohol cap, lock therapy, antimicrobial site patch, dressing type, lab draw method and frequency, and identification of primary caregiver. Demographic data included age, gender, diagnosis for HPN, and years on HPN.

Results: 61 patients, age 13 to 91 years were identified as having at least one CVC lasting at least 5 years. Females represented at 62%. The primary diagnosis was short bowel syndrome (70.5%). Total HPN years were 1,495 averaging 24.5 years. Tunneled CVCs were most common (n=51). There were 9 infusion ports and one PICC. Total CVC days were 241,219 with an average of 3954 days (10.8 years). Most CVCs were single lumen (95%) and made of silicone (87%). HPN averaged 6 days per week, 2050 ml over a 10 hour cycle, and 85% infused ILE at least one day per week. Catheter related bloodstream infection (CRBSI) was the most frequent complication resulting in CVC loss (n=20). The infection rate was 0.08 per 1000 CVC days. The second most frequent cause of loss was catheter material damage (n=8), and the third was skin site failure (n=7). There were no obvious CVC losses related to infusion regimens. The most frequently used CRBSI prevention strategy was the antimicrobial site patch (34.4%), followed by protective alcohol caps (18%), and alcohol lock (11.4%). The majority of the patients were self care (85.2%) and used transparent dressings (75.4%). Labs were drawn from the CVC 41% of the time but none more frequently than once per month. Twenty of the 61 devices were still in place at the completion of the data collection.

Conclusion: This cohort demonstrated that there is a subset of CVCs which remain in place at least 5 years without complications requiring removal. CRBSI was the most frequent reason for CVC loss, the CRBSI incidence was very low, and few patients used CRBSI preventative strategies. Use of transparent dressings and self care may have impacted CRBSI incidence, but more studies would be needed to confirm this finding. The years of lived experience, education, and acquired catheter care knowledge in this unique group of HPN patients probably contributed to the low CRBSI rate. The material damage and skin site breakdown may be attributed to wear and tear as the CVC aged. HPN infusion regimens, thrombosis, occlusion, and blood draws from CVC did not impact the CVC dwell time. Silicone, single lumen tunneled CVCs provided the greatest longevity with the fewest complications, making this device the best choice for most HPN patients.