

**Abstract:**

**BACKGROUNDS AND AIMS:** Long term central venous access for Home Parenteral Nutrition (HPN) is associated with catheter related complications. The most studied and well known of these is Catheter Related Blood Stream Infection (CRBSI). This paper looks at other venous access complications, including blocked and damaged catheters, catheter related thrombosis and CRBSI. This paper will also present treatment outcomes for each of these complications. This paper will also examine if there are any correlating patient or catheter related factors that can help predict future catheter related complications. By demonstrating the treatment outcomes for each line complication, it is hoped this will contribute to the literature that could be used for standard setting in complications related to long term central venous access.

**METHODS:** HPN data were analysed from the Greater Glasgow and Clyde (GGC) Home Parenteral Nutrition Database (HPN) which is a comprehensive, prospectively maintained electronic record of all HPN patients treated in GGC. The time period of data collection was 1998-2017. Descriptive statistics were used to report data frequency, age, and catheter days' distributions. Data were not normally distributed and so non-parametric tests were used. Spearman's Rho correlation was used to measure correlation between two numeric groups. Catheter complications were reported as a rate in count data, meaning that more than one event could be recorded per patient, with 1000 catheter days as the person-time denominator. Poisson means test and Fisher exact tests were used to compare different rates, as complications were treated as count data increasing over variable total time periods.  $P < 0.05$  with 95% confidence interval (CI) was considered significant in all tests. Comparisons between binary data sets used two sample t-tests to compare the groups.

**RESULTS:** From 169 patients, 101 (59.8%) were female and 68 (40.2%) were male. The age when first starting HPN ranged from 16 to 79 years old with a median of 56 years. Total catheter days was 173,151 derived from 408 catheter insertions on 169 patients. 282 complications occurred in 85 patients over the study period. An overall catheter complication rate of 1.62/1000 days was found. 84 patients did not experience a single complication. There were 171 proven catheter infections in 66 patients over the study period. Infection rate from the entire period of report was 1.35 infections/1000 catheter days. This decreased over time. Infection was found to be correlated with length of time on HPN, catheter location, catheter diameter and use of Taurolock-Hep100. Thrombosis ( $n = 16$ ) was associated with total time on HPN ( $r^2 = 0.187$ ,  $P < 0.05$ ) and the number of infections ( $r^2 = 0.207$ ,  $P < 0.05$ ). Damage was strongly associated with increasing time on HPN with ( $r^2$  of 0.494 and  $P < 0.005$ ). Blockage was not associated with any patient or catheter factors. Overall catheter salvage rate for CRBSI by antibiotic treatment was

61.87%. Success varied according to organism cultured. Catheter salvage was less successful in other complications and overall catheter salvage rate was 41,115 catheters were salvaged from 282 complications.

**CONCLUSIONS:** This study has provided a baseline for rates of less common venous access complications in HPN and their management. Catheter salvage is possible after at least 41% of complications. It is likely that experience is helpful whether that of individual patient, the team or a clinical network. Our results support the use of smaller central venous catheters, in upper body veins, and the use of Taurolock-Hep100 in patients who have recurrent infections.

**Reference:**

Leiberman, D., Stevenson, R.P., Banu, F.W., Gerasimidis, K. and McKee, R.F. (2020) The incidence and management of complications of venous access in home parenteral nutrition (HPN): A 19 year longitudinal cohort series. *Clinical Nutrition ESPEN*. 37, p.34-43. doi: 10.1016/j.clnesp.2020.03.025.