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## **Patient knowledge of central venous catheter related complications in home parenteral nutrition**

C. E. Hanson, M. Small and S. M. Gabe

*Lennard Jones Intestinal Failure Unit, St Mark's Hospital, Northwick Park, London, HA1 3UJ, UK*

Central venous catheter (CVC) related complications are a common cause of morbidity among home parenteral nutrition (HPN) patients. A substantial number of patients on HPN carry out their own CVC care after a period of training. At St Mark's Hospital, London in 2009 a change in the method of training for HPN patients to carry out their own CVC care was instituted with more patients completing their training at home. In June 2010 a cohort of self-caring HPN patients were tested on their knowledge of CVC care as part of their routine clinic visit. This was prompted by the failure to recognise serious CVC complications in a small number of long term HPN patients.

Patients were asked to answer seven questions on systemic CVC infections, exit site infections, CVC fractures, CVC occlusion, central vein thrombosis and hydration levels, both over and under hydrated. The scores for patients trained before and after 2009 were compared. The number of CVC related complications per patient was obtained from the St Mark's HPN database. The number of days on HPN was calculated.

A total of 70 patients completed the questions representing 44% of the total self caring HPN patients. The mean age was 50.5 years (range 21 to 75 years) at the time of completing the questions. The median time per person on HPN was 1,730 (range 22–10,119) days. There were 167 CVC infections in these 70 patients over a total of 169,363 days (0.98 CVC infections per 1000 HPN days). There were 208 complications including fractures and occlusions. 19 patients had no CVC infections, 1 patient 16 infections. The majority, 80% having 3 or less infections. 57 had completed their training pre-2009, 13 since 2009. The CVC infection rate increased significantly from 1.33 per 1000 HPN days before 2009 to 3.4 per 1000 HPN days since 2009 ( $P = 0.012$ ).

The median knowledge score was 72% (range 24–96%). There was no significant difference between knowledge score and training before or after 2009 ( $P = 0.055$ ). There was a significant correlation between HPN days and number of CVC complications ( $r = 0.373$ ,  $P = 0.001$ ) and a significant negative correlation between age and knowledge score ( $r = -0.241$ ,  $p = 0.044$ ). There was no correlation between knowledge score and the number of CVC complications ( $r = 0.016$ ,  $P = 0.896$ ).

In this small cohort study of self caring HPN patients the overall infection rate was low (0.98 infections per 1000 HPN days) and patients scored well in their knowledge test (72%). This is not a validated scoring system, but reflects our training practice. We have demonstrated that there has been a significant increase in CVC infection rates at a time when there was a change in the training process for these patients. There was no difference in knowledge of complications in those trained before and after 2009, with no correlation between knowledge score and complication rate. The lack of association between knowledge and complications could be confounded by the fact that patients who develop complications have more experiential knowledge. We are concerned that the move towards home training of HPN patients may be less effective, as reflected in the increase CVC infection rates that we have observed. This merits further investigation.