Prophylactic ethanol lock therapy for the prevention of catheter-related blood stream infection in paediatric patients with intestinal failure

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Aim of the Study
Children with intestinal failure (IF) are dependent on maintenance of central venous catheters (CVC) for delivery of parenteral nutrition (PN). Catheter-related blood stream infection (CRBSI) is among the most important causes of mortality and morbidity. This study aims to evaluate the efficacy of prophylactic ethanol lock therapy (ELT) for prevention of CRBSI in a group of high-risk paediatric IF patients.

Methods
Patients with IF on home PN through tunneled silicone CVCs who were managed in a single institution were started on an ELT programme. Medical records from April 1998 to October 2019 were retrospectively reviewed. 70% ethanol was instilled into CVCs for at least 4 hours once to twice per week, followed by aspiration of lock solution after designated dwell times. Rates of CRBSI, CVC revisions and catheter thrombosis before and after ELT were compared.

Results
Seven patients (aged 3.1-25.8 years) with short bowel syndrome (SBS) or intestinal dysmotility were identified. All SBS patients had residual small bowel length of 20cm or less. A total of 15820 pre- and 13181 post-ELT days were analysed. Pooled CRBSI rate decreased by 85% from a baseline of 1.52 to 0.23 per 1000 catheter days (p=0.028) with ELT. No statistically significant difference in CVC revision rates and thrombosis rates were recorded. The ELT procedure was well tolerated and no adverse effect was reported.

Conclusion
Prophylactic ethanol lock therapy was a safe and effective method in reducing the incidence of CRBSI in paediatric IF patients on home PN.