To describe practice evolution, complications and risk factors for multiple insertion attempts and device failure in paediatric central venous access devices (CVADs)” Kleidon et al (2019).

Abstract:

AIM: To describe practice evolution, complications and risk factors for multiple insertion attempts and device failure in paediatric central venous access devices (CVADs).

METHODS: A paediatric retrospective cohort study using prospectively collected data from CVAD database 2012-2014. Data included were patient (i.e. age, condition), insertion (i.e. indication, device, technique) and removal (complications, dwell). Descriptive statistics and incidence rates were calculated per calendar year and compared. Risk factors for multiple insertion attempts and failure were explored with logistic regression and cox regression, respectively.

RESULTS: A total of 1308 CVADs were observed over 273,467 catheter-days in 863 patients. Multiple insertion attempts remained static (14%) and significantly associated with non-haematological oncology (odds ratio 2.19; 95% confidence interval (CI) 1.08-4.43), respiratory (3.71; 1.10-12.5), gastroenterology (4.18; 1.66-10.5) and other (difficult intravenous access) (2.74; 1.27-5.92). CVAD failure decreased from 35% (2012) to 25% (2014), incidence rate from 1.50 (95% CI 1.25-1.80) to 1.28 (1.06-1.54) per 1000 catheter-days. Peripherally inserted CVAD failure was significantly associated with lower body weight (per kilogram decrease, hazard ratio (HR) 1.02; 95% CI 1.00-1.03), cephalic vein (1.62; 1.05-2.62), difficult access (1.92; 1.02-3.73), sub-optimal tip placement (1.69; 1.06-2.69) and gastroenterology diagnosis (2.27; 1.05-4.90). Centrally placed CVAD failure was significantly associated with younger age (per year, HR 1.04; 95% CI 1.00-1.07), tunnelled device (3.38; 2.41-4.73) and gastroenterology diagnosis (1.70; 1.06-2.73).

CONCLUSIONS: While advancement in CVAD practices improved overall CVAD insertion and failure outcomes, further improvements and innovation are necessary to ensure improved vessel health and preservation for children requiring CVAD.
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Reference: