Randomized controlled trials evaluate the effectiveness of interventions for central venous access devices, however, high complication rates remain. Scoping reviews map the available evidence and demonstrate evidence deficiencies to focus ongoing research priorities" Takashima et al (2017).

Abstract:

BACKGROUND: Randomized controlled trials evaluate the effectiveness of interventions for central venous access devices, however, high complication rates remain. Scoping reviews map the available evidence and demonstrate evidence deficiencies to focus ongoing research priorities.

METHOD: A scoping review (January 2006-December 2015) of randomized controlled trials evaluating the effectiveness of interventions to improve central venous access device outcomes; including peripherally inserted central catheters, non-tunneled, tunneled and totally implanted venous access catheters. MeSH terms were used to undertake a systematic search with data extracted by two independent researchers, using a standardized data extraction form.

RESULTS: In total, 178 trials were included (78 non-tunneled [44%]; 40 peripherally inserted central catheters [22%]; 20 totally implanted [11%]; 12 tunneled [6%]; 6 non-specified [3%]; and 22 combined device trials [12%]). There were 119 trials (68%) involving adult participants only, with 18 (9%) pediatric and 20 (11%) neonatal trials. Insertion-related themes existed in 38% of trials (67 RCTs), 35 RCTs (20%) related to post-insertion patency, with fewer trials on infection prevention (15 RCTs, 8%), education (14RCTs, 8%), and dressing and securement (12 RCTs, 7%). There were 46 different study outcomes reported, with the most common being infection outcomes (161 outcomes; 37%), with divergent definitions used for catheter-related bloodstream and other infections.

CONCLUSION: More high quality randomized trials across central venous access device management are necessary, especially in dressing and securement and patency. These can be encouraged by having more studies with multidisciplinary team involvement and consumer engagement. Additionally, there were extensive gaps within population sub-groups, particularly in tunneled devices, and in pediatrics and neonates. Finally, outcome definitions need to be unified for results to be meaningful and comparable across studies.

Reference:

Takashima, M., Ray-Barruel, G., Ullman, A., Keogh, S. and Rickard, C.M. (2017) Randomized controlled trials in central vascular access devices: A scoping review. PLoS One. 12(3), p.e0174164. eCollection 2017.

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