Abstract:

Background: To evaluate the feasibility of an efficacy trial comparing a hydrophobic polyurethane peripherally inserted central catheter (PICC) with a standard polyurethane PICC.

Methods: This pilot randomised controlled trial (RCT) was conducted between May 2017 and February 2018. Adult participants (n = 111) were assigned to hydrophobic polyurethane PICC with proximal valve (intervention) or a polyurethane PICC with external clamp (standard care). Primary outcome was trial feasibility including PICC failure. Secondary outcomes were central line-associated bloodstream infection, local infection, occlusion, thrombosis, fracture and dislodgement, phlebitis, local or systemic allergic reaction, and PICC dwell time.

Results: All feasibility outcomes were achieved, apart from eligibility criteria. In total, 338 patients were screened, 138 were eligible (41%), and of these 111 were randomised (80%). Patients received the allocated PICC in 106 (95%) insertions. No patients withdrew from the study and there was no missing data. PICC failure was 24% (13/55) in the intervention group and 22% (12/55) in the standard care group (p = 0.820). PICC failure per 1000 PICC days was 16.3 in the intervention group and 18.4 in the control group (p = 0.755). The average dwell time was 12 days in the intervention and 8 days in the control group.

Conclusions: This study demonstrates the feasibility of an efficacy trial of PICC materials in an adult population, once adjustments were made to include not only in-patients, but also patients being discharged to the Hospital in the Home service.

Trial registration: Australia and New Zealand Clinical Trials Registry ACTRN12616001578493. Prospectively registered on 16 November 2016. The trial protocol was published a priori (Kleidon et al., Vasc Access 3:15-21, 2017).

Reference: