



## Managing intravenous devices among patients with limited vascular access or prolonged therapy: a pilot randomised control trial

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### Purpose:

Despite pervasive need for peripheral intravenous catheters (PIVCs), they are often difficult to insert and fail prematurely. Midline catheters (MC) are a longer device inserted in the upper-arm. The purpose of this study was to test feasibility of the study protocol, and efficacy of MCs compared PIVCs.

### Methods:

Single centre, parallel group, pilot randomised controlled trial. Medical/Surgical patients from the RBWH,  $\geq 18$  years, with difficult vascular access ( $\leq 2$  palpable veins) and/or requiring  $\geq 5$  days intravenous (IV) therapy were randomised to receive a PIVC (standard care) or MC.

### Results:

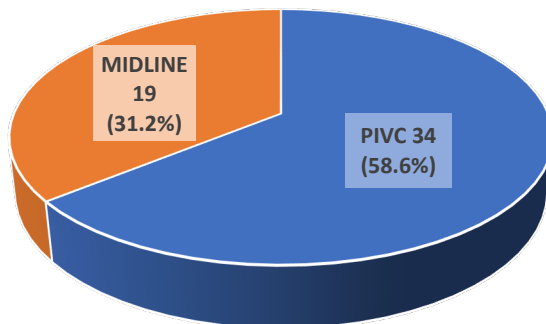
Feasibility criterion was met except for eligibility ( $>80\%$ ); 231 patients screened for recruitment and 62% (n=143) eligible for study inclusion. MCs had less failed device insertions 9/70 (13%) versus 11/69 (16%) for PIVCs (relative risk (RR) 0.81; 95% confidence interval (CI) 0.36 to 1.82; p=0.61). Post-insertion failure was significantly (p=0.004) lower for MCs (n=19; 31%) versus PIVCs (n=34; 59%) (RR 0.53; 95% CI, 0.34 to 0.82). The dwell time for MCs (117 hours) was double that of PIVCs (61 hours), with a median difference of 55 hours (95% CI, 22.5-87.6; p=0.001). Infiltration/extravasation was the most common PIVC complication (n=13; 22.4%), however no episodes were reported for MCs. PIVC failure from phlebitis (n=14; 21.1%) and occlusion (n=5; 8.6%) were higher than for MCs (phlebitis: n=6; 9.8%, p=0.05) (occlusion: n=1; 1.6%). Thrombosis was present in 2 MCs compared to none for PIVCs

### Conclusions :

MCs are a promising device with less insertion and post-insertion failure compared to PIVCs. Although not designed to provide conclusions about efficacy, post-insertion failure was statistically significant. Future trials should target patients with prolonged IV treatment.



Device Failure



■ PIVC 34 (58.6%) ■ MIDLINE 19 (31.2%)