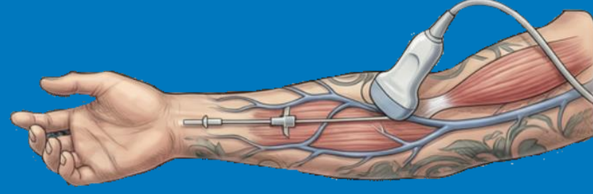
# Optimising Vascular Access In Clinical Trials:

## A Feasibility Study Of Ultrasound-Guided Midline Catheter Insertion In Tattooed Participants And Long-Term Study Cohorts



Melita Cummings[1+], Angela Boahen[2+], Chris Holmes [1], Marianne Horwood [1], Thomas Polasek[1,3,4]

[1] CMAX Clinical Research, Adelaide, South Australia, [2] Adelaide University, Adelaide, South Australia. [3]Monash University, Melbourne, Australia [4]Fusion Clinical Research, Adelaide, Australia

## 1. Introduction

Peripheral intravenous (PIV) cannulation is the predominant vascular access method used in early-phase clinical trials. However, participants with extensive arm tattoos are frequently excluded from trial enrolment [1].

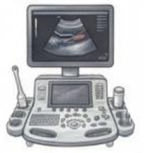
Ultrasound-guided vascular access allows real-time visualisation of venous anatomy, independent of skin pigmentation, and is associated with improved vascular access and reduced complications [2].

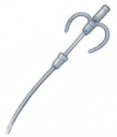
Midline catheters inserted under ultrasound guidance access deeper, larger-calibre veins, with fewer complications [3].

**Hypothesis:** One device, instead of repeated PIV cannulations every 72 hours, may improve participant comfort, reduce anxiety, and enhance retention.

**Aim:** To evaluate the safety, practicality, and cost-effectiveness of ultrasound-guided midline catheters for up to 30 days.

## 2. Methodology



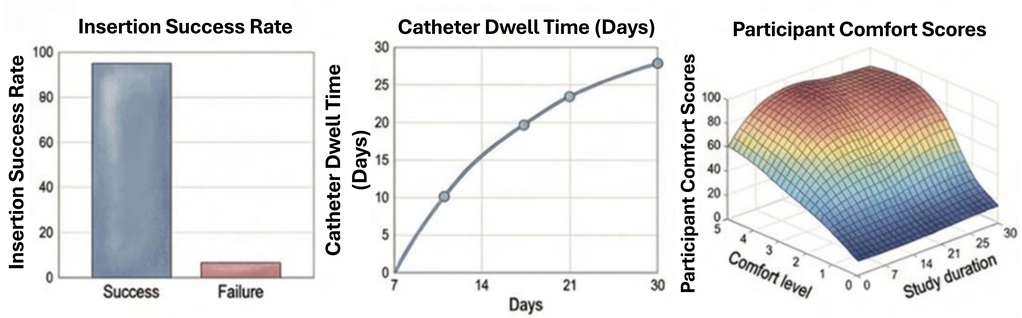


Prospective observational study enrolling healthy volunteers (18-40 years, n=20) with extensive bilateral arm tattoos and ultrasound confirmed large calibre veins (>3 mm).

Ultrasound-guided midline catheters inserted under aseptic technique. Monitored for up to 30 days for insertion success, dwell time and complications compared to PIV.

Participant-reported outcomes to evaluate comfort and preference. Clinician feedback and cost-effectiveness analysis included.

## 3. Results




Representative graphs and images to illustrate the anticipated outcomes of the study. Ultrasound-guided midline catheter insertion is expected to achieve a high success rate (100%), with catheter dwell times of up to 30 days and improved participant comfort throughout the study period.

## 4. Discussion

**Interpretation:**
Successful single-device access supports uninterrupted study procedures.

**Context:**
Promotes equitable clinical trial participation and informs evidence-based vascular access policy.

**Limitations:**
Small feasibility study, results may need larger validation.

## 5. Conclusion

- Ultrasound-guided midline catheters offer safer and more reliable vascular access strategies.
- Supports uninterrupted study procedures while reducing patient discomfort and infection risk.
- Enhances participant experience and promotes greater inclusivity in early-phase clinical research.

## 6. References

1. Infusion Nurses Society. Infusion Therapy Standards of Practice, 8th ed. J Infus Nurs. 2021;44(1S):S1-S224.
2. Lamperti M, Bodenham AR, Pittiruti M, et al. International evidence-based recommendations on ultrasound-guided vascular access. Intensive Care Med. 2012;38(7):1105-1117.
3. Australian Society for Ultrasound in Medicine (ASUM). Guidelines for Ultrasound-Guided Vascular Access. Sydney; 2020.

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