Improving patient safety in a Vascular Access Unit through the introduction of key performance indicators

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Introduction:

The CUH Vascular Access Unit (VAU), established in 2006, is a high-performing multidisciplinary service providing safe and reliable vascular access. Demand and case complexity have increased significantly due to expanding referrals with over 6000 procedures being performed annually.
In 2022, aligned with the Association of Anaesthetists' Safe Vascular Access guidelines, the VAU introduced key performance indicators (KPIs) to monitor practice and drive continuous improvement.

Aim:

The aim of the service evaluation was to assess the adherence to KPIs and explore how targeted interventions had impacted on them.

Methods:

KPIs were defined for inpatient (IP) and outpatient (OP) pathways.
Data were collected prospectively on the hospital database dashboard (CHEQS) for all vascular access procedures performed by the VAU team for the years 2022 and 2025.
Compliance was calculated against these targets

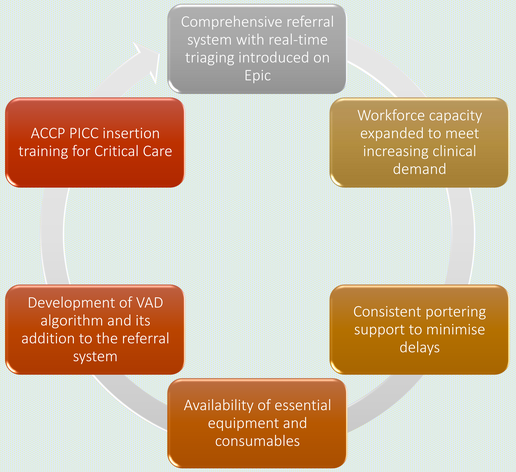
Responsiveness Key Performance Indicators

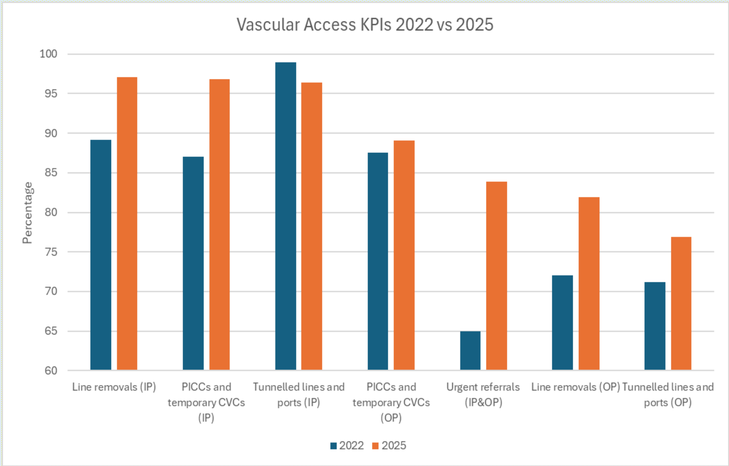
Success defined as ≥ 90% of procedures done within the defined timescale.

Procedure	Key Performance Indicator
PICC lines and temporary CVCs (IP)	≤ 2 working days
PICC lines and temporary CVCs (OP)	on requested day
Tunnelled lines and ports (IP)	≤ 2 weeks
Tunnelled lines and ports (OP)	on requested day
Line removals (IP)	≤ 2 working days
Line removals (OP)	on requested day
Urgent referrals IP &OP	≤1 day

Interventions:

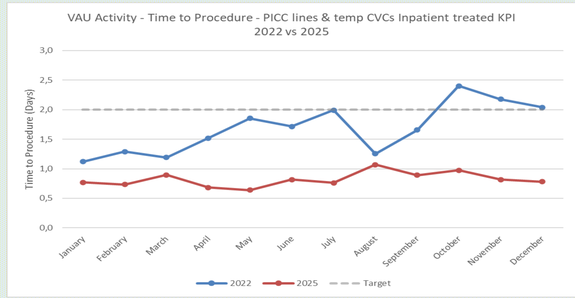
A series of targeted service improvements were implemented to enhance the efficiency and reliability of vascular access pathways.

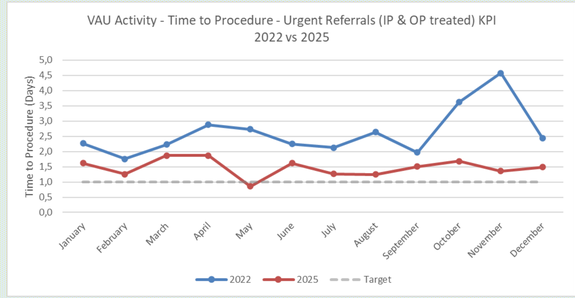




Results:

Across the two study years, 12,648 vascular access procedures were audited, demonstrating significant improvements in multiple KPI domains. Compliance for inpatient PICCs/CVCs, urgent referrals, and inpatient line removals all increased markedly, with urgent referrals showing the largest gain (+18.9%). Outpatient indicators also improved overall, and although a small decline was seen in inpatient tunnelled lines and ports, performance remained above the KPI threshold.





Conclusion:

Implementing KPI-driven monitoring based on national safety standards ensures timely vascular access and supports patient safety. Our results demonstrate that structured performance targets can be achieved in a busy clinical setting, providing a model for other institutions.

References:
1) Johnston, A.J., Simpson, M.J., McCormack, V., Barton, A., Bennett, J., Chalisey, A. et al. (2025) 'Association of Anaesthetists guidelines: safe vascular access 2025', Anaesthesia, 80(11), pp. 1381–1396. doi:10.1111/anae.16727.