Process Maturity in Peripheral Vascular Access Device Care: A Decade of Surveillance, Education, and Governance

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Background

- Peripheral vascular access devices (PVAD) are often perceived as lower-risk devices compared with central vascular access devices (CVAD).
- However, PVAD- and CVAD-related complications significantly affect patient outcomes.
- In 2015, our institution identified essential gaps in peripherial intravenous cather (PIVC) care, including lack of standardized processes, limited traceability, underestimated complication rates, and insufficient governance.
- A process improvement study was undertaken to assess PIVC-related events, develop quality and safety indicators, and implement institutional changes to PIVC processes (**Figure 1**).

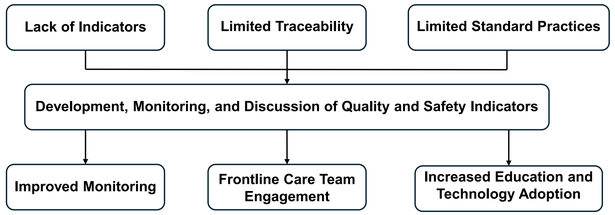

Figure 1. Flow chart of institutional changes to PIVC process.

Methods

- This study was conducted in a 300-bed private hospital in São Paulo, Brazil.
- A comprehensive audit of PIVC placements and outcomes was performed between 2015 and 2025 and reviewed by clinical leaders, senior management and the Infection Prevention and Control (IPC) department.
- Improvement guidelines focused on sustainability, safe processes, governance, and technology adoption were progressively implemented (**Figure 2**).

Results

- Early audits demonstrated lack of standardization, limited active surveillance, and absence of a dedicated professional for data stratification and education.
- Staff training, active monitoring, and governance strengthening followed.
- Practice evolution included the transition to clinically indicated replacement, therapy adoption, and decision-making matrices for PIVC insertion, maintenance, and removal.
- Institutional maturity progressively strengthened with the improved with PIVC audits.
- Over ten years, 411,155 PVAD-days were monitored, with incidence rates of 0.06 for peripheral line-associated bloodstream infection (PLABSI), 4.38 for phlebitis, 1.04 for infiltration, and 0.04 for extravasation.

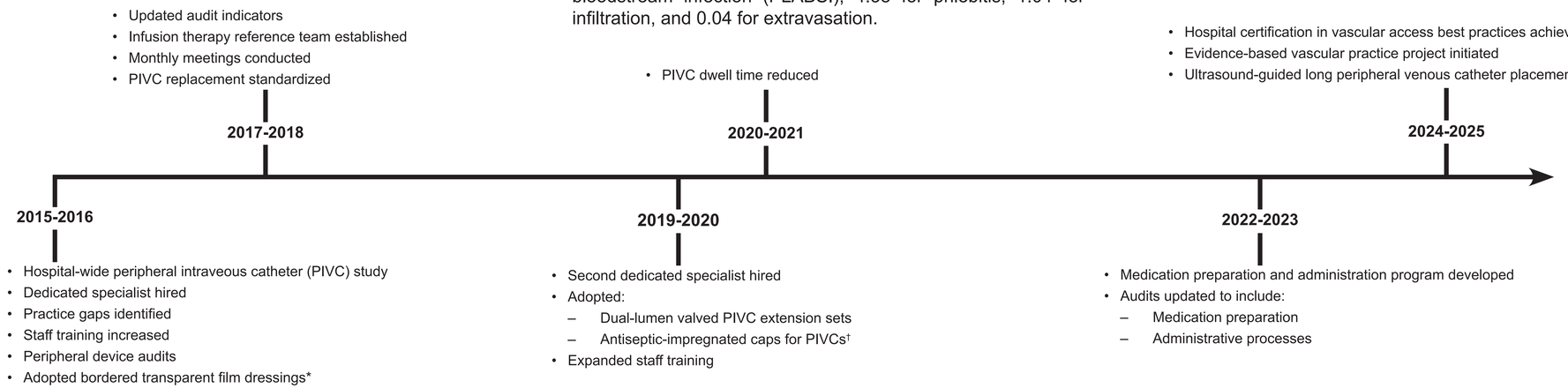

Figure 2. PVAD process evolution.

Conclusions

- PVADs require the same level of attention, governance, and monitoring historically dedicated to CVADs.
- As PVADs evolve toward longer dwell times, institutions must reinforce surveillance, governance structures, and evidence-based care to avoid underestimating peripheral risks and to sustain prevention of PLABSI and other complications.
- Progressive implementation of indicators, audits, education, and safe technologies strengthened the institution's safety culture and improved data-driven decision-making.

Presented at the 9th World Congress on Vascular Access, 15-17 April 2026, Valencia, Spain.

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The authors thank Solventum for poster preparation and production. J Armani is a consultant for Solventum. P Constantion is an employee of Solventum.