

Letter to the Editor

Implementation of a peripherally inserted central catheter service by pediatric anesthesiologists and anesthesia assistants

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Keywords: Vascular Access, Anesthesia Assistants, Anesthesia Care Team

<https://doi.org/10.29390/001c.154938>

Canadian Journal of Respiratory Therapy

Vol. 62, 2026

DEAR EDITOR,

Establishing reliable vascular access in children can be difficult and distressing, particularly when repeated failed attempts lead to pain, procedural anxiety, and long-term healthcare aversion.¹ While interventions like the Comfort Promise aim to reduce the burden of failed peripheral IV (PIV) attempts, peripherally inserted central catheters (PICCs) are increasingly preferred in pediatric care for their ability to provide safe, durable access for medications, parenteral nutrition, and blood sampling. PICC insertion requires technical skill and often sedation or general anesthesia, factors that can delay care and limit who can perform the procedure.^{2,3}

In response to these challenges, the IWK Health (Halifax, Canada) introduced an anesthesia-led PICC insertion service in 2020 to provide timely vascular access in pediatric inpatients with high success rates. Staffed by anesthesiologists and anesthesia assistants, this service was not designed to replace existing providers such as Nurse Practitioners (NPs), but rather to supplement them, particularly in urgent, technically difficult, or after-hours cases. Outcome data from anesthesia-led PICC services in pediatric settings remain limited. This report provides additional insight into the feasibility, effectiveness, and safety of this model.

METHODS

The IWK Research Ethics Board approved our study effective January 11, 2025. This retrospective study describes data between January 2020 and May 2023, collected via the EMERALD database, managed by Infection Prevention and Control. The primary outcome was first-attempt success rate. Secondary outcomes included total number of insertion attempts and complication rates. Descriptive statistics were used to summarize insertion characteristics, and Fisher's exact test and ordinal regression were used to compare outcomes between provider groups.

RESULTS

Data from 1579 PICC insertions were analyzed; 214 were performed by the anesthesia-led team and 1365 by NPs. Anesthesia providers achieved first-attempt success in 151 cases (70.6%), compared to 815 (59.7%) for NPs. The odds of requiring multiple attempts were higher in the NP group (OR 1.62; 95% CI: 1.18–2.21; $p < 0.01$). Complication rates were similar: 10.4% for anesthesia providers versus 14.6% for NPs ($p = 0.11$). While these differences were not statistically significant, specific complication types varied. Accidental line removal and flushing difficulty were more frequent in the anesthesia-led group, while localized swelling was more common among NP-placed lines. These exploratory findings are hypothesis-generating and must be interpreted with caution given the multiple comparisons made. Complications rates were similar to other reported studies.^{4,5} In addition, we observed a trend toward improved insertion success over time, with fewer attempts required in later years.

DISCUSSION

Our findings suggest that, with appropriate organizational support and training, anesthesiologists and anesthesia assistants can perform PICC insertions with high technical success and a comparable complication profile to experienced NP teams. This success likely reflects local organizational strengths, including high procedural volume, ultrasound expertise, and of our anesthesia-led team's role as the rescue service for failed PIV or PICC attempts.

We observed a trend toward improved first-attempt insertion success over time, which may be related to increased use of real-time ultrasound, dynamic needle tracking, and workflow improvements, including procurement of new ultrasound equipment and implementation of standardized insertion protocols.

We acknowledge limitations in comparing provider groups: individual expertise varies, and outcomes are

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highly context-dependent. The aim of this study is not to generalize or rank providers, but to describe the feasibility and impact of introducing an alternative vascular access model.

CONCLUSION

The introduction of an anesthesia-led PICC service at IWK Health has improved timely access to central lines for pediatric patients, particularly in complex or urgent cases. While these findings may not be directly generalizable, they demonstrate that integrating anesthesiology personnel into PICC workflows can be safe, effective, and responsive to institutional needs. Other centers may consider evaluating their staffing models and adopting a similar approach to optimize pediatric vascular access delivery.

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FUNDING

This study did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

COMPETING INTERESTS

All authors have completed the ICMJE uniform disclosure form and declare no conflict of interest.

AUTHORSHIP

All authors meet the requirements of authorship and have reviewed and approved the final edit.

AI STATEMENT

The authors confirm that no generative AI or AI-assisted technology was used to generate content.

ETHICAL APPROVAL

The IWK Research Ethics Board approved the study.

Submitted: December 05, 2025 EDT. Accepted: December 18, 2025 EDT. Published: January 12, 2026 EDT.



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REFERENCES

1. Lorenc J, Flaucher N, Evans E, Schurman JV. Establishing a plan to improve pediatric patient comfort during PIV insertions and blood specimen collection: a quality improvement effort. *Br J Nurs*. 2024;33(7):S36-S42. doi:[10.12968/bjon.2024.33.7.S36](https://doi.org/10.12968/bjon.2024.33.7.S36)
2. Westergaard B, Classen V, Walther-Larsen S. Peripherally inserted central catheters in infants and children - indications, techniques, complications and clinical recommendations. *Acta Anaesthesiol Scand*. 2013;57(3):278-287. doi:[10.1111/aas.12024](https://doi.org/10.1111/aas.12024)
3. Borretta L, MacDonald T, Digout C, Smith N, Fernandez CV, Kulkarni K. Peripherally Inserted Central Catheters in Pediatric Oncology Patients: A 15-Year Population-based Review From Maritimes, Canada. *J Pediatr Hematol Oncol*. 2018;40(1):e55-e60. doi:[10.1097/MPH.0000000000000882](https://doi.org/10.1097/MPH.0000000000000882)
4. Ojo SA. Reflections on setting up a nurse-led paediatric peripherally inserted central catheter service. *Br J Nurs*. 2020;29(14):S16-S20. doi:[10.12968/bjon.2020.29.14.S16](https://doi.org/10.12968/bjon.2020.29.14.S16)
5. Sainathan S, Hempstead M, Andaz S. A single institution experience of seven hundred consecutively placed peripherally inserted central venous catheters. *J Vasc Access*. 2014;15(6):498-502. doi:[10.5301/jva.5000248](https://doi.org/10.5301/jva.5000248)