

NANN Neonatal Peripherally Inserted Central Catheters

Guideline for Practice, 4th ed.

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BACKGROUND AND SIGNIFICANCE

The National Association of Neonatal Nurses (NANN) has been a forerunner in its commitment to recognizing the importance of consistent care of peripherally inserted central catheters (PICCs) in neonates as essential for maintenance of their lifelines. NANN has published the only guideline that focuses on PICC practices specific to neonates and infants since its first guideline in 2001. The *Peripherally Inserted Central Catheters: Guideline for Practice, 4th edition*, follows in this tradition as an updated clinical resource directed to nurses, nurse practitioners, physicians, physician associates, and others who may care for infants with vascular access requirements. This fourth edition highlights the most recent literature informing evidence-based best practices to support care of neonates and infants who may require a PICC at birth or in the future. Beginning early vascular access assessment and planning at birth promotes vessel preservation across the lifespan.

NEW TO THIS FOURTH EDITION

- Evidence-based graded practice recommendations
- Expanded discussion on Catheter-Associated Bloodstream Infection incorporating the most recent Healthcare Infection Control Practices Advisory Committee (Centers for Disease Control) recommendations
- Latest evidence for ultrasound
- Emerging technologies for securement and procedures

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Key components of this guideline include updated recommendations, neonatal PICC insertion procedures, discussion of insertion-related complications and interventional strategies, monitoring for post-insertion complications, care, maintenance, and current perspectives on emerging new technologies such as ultrasound and catheter securement. This fourth edition includes updates throughout the document supported by 280 references, with over 70% new since the third edition, with 11 images.¹

The fourth edition of the guideline presents a concerted approach to harm prevention focusing on monitoring for early complications detection and management with increased emphasis on collaborative interprofessional PICC teams.

The summary of recommendations leads with the definitive critically important key recommendation for appropriate catheter tip location in the superior vena cava through upper body insertion sites and the inferior vena cava through lower body insertion sites to minimize risks of complications.²⁻¹⁰ Additional recommendations address repositioning, antiseptics, dressings, education, and technology.

CONCLUSION

The NANN PICC Guideline has served as a respected resource for vascular access protocol development in neonatal intensive care units around the world. This most recent edition continues as the foundational resource for protocols, policies, and procedures development for nurses and other clinicians inserting PICCs and managing neonates and infants with PICCs around the world. The NANN recommends that this guideline be considered an essential resource in the development of education and training for any clinician performing PICC insertion, care, monitoring, and management. A consistent interprofessional approach is critical to influence future positive outcomes for our tiny patients. The guideline is available at <https://nann.mycrowdwisdom.com/cw/course-details?entryId=10902832>.

Summary of Key Practice Recommendations

1. Maintain the catheter tip in a central tip location in the superior vena cava/inferior vena cava.²⁻¹⁰	Rationale: Placement of the catheter tip in the superior vena cava or inferior vena cava is associated with a significantly lower risk of complications.
2. Obtain follow-up imaging subsequent to catheter repositioning and consider point-of-care ultrasound prior to any further repositioning.⁴⁻⁶⁻⁷⁻¹¹⁻¹⁶	Rationale: Catheter tip position should be verified following all repositioning efforts. Accurate information about the catheter tip location supports minimizing complications.
3. Consider noninvasive catheter repositioning strategies to correct catheter tip malposition.⁶⁻¹⁷⁻²⁰	Rationale: Noninvasive repositioning facilitates central catheter tip location while posing less trauma to the skin and patient associated with catheter withdrawal or replacement and dressing removal.
4. Maintain the extremity where a catheter is inserted in a consistent position for accurate radiographic confirmation.⁶⁻¹²⁻²¹⁻²⁴	Rationale: Consistent patient positioning of the extremity of catheter insertion supports accurate and consistent confirmation of the catheter tip location. Changes in patient position impact catheter tip location and depth.
5. Perform dressing change as needed per patient or external indications.⁶⁻²⁵⁻²⁹	Rationale: The needs, risks, and benefits of dressing changes should be considered because the procedure is not without risk and may cause discomfort or trauma to fragile skin.
6. Consider chlorhexidine gluconate or povidone iodine as disinfectant agents for skin antisepsis. Remove povidone iodine prior to dressing application.¹⁻²⁸⁻⁴⁷	Rationale: Removing povidone iodine minimizes the risk for tissue damage, absorption, and thyroid suppression.
7. Consider incorporating new technology and equipment to enhance visualization and vascular access practice as appropriate to specific patient needs.⁶⁻¹³⁻³⁰⁻³³	Rationale: Evolving technology enables new procedures that may help meet specific patient needs and improve outcomes.
8. Implement preventive strategies for complications including central line-associated bloodstream infection, as well as mechanical and other complications.⁶⁻³⁴⁻³⁶	Rationale: A culture of complications prevention has been successful in central line-associated bloodstream infection prevention.
9. Provide initial, ongoing, and consistent education for providers who insert and care for PICCs.⁶⁻²⁹⁻³⁵⁻³⁹	Rationale: Appropriate and timely education for those placing and caring for PICCs has been integral to preventing central line-associated bloodstream infection and is critical in harm prevention of other complications.
10. Consider the right saphenous vein in the initial assessment for catheter placement unless gastroschisis is present.⁶⁻⁴⁰⁻⁴⁶	Rationale: Lower-extremity vessels are associated with lower complication rates. The right saphenous vein is associated with lower malposition rates.

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