

The Use of Nursing Bundles to Decrease Central-Line Associated Bloodstream Infections (CLABSI) Rates

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Identification of the Problem (75-100) 103

Central line-associated bloodstream infections (CLABSIs) are serious yet preventable hospital-acquired complications, costing up to \$45,000 per case, extending hospital stays, and contributing to high mortality and readmission rates (Chovanec et al., 2021). The COVID-19 pandemic worsened CLABSI rates due to reduced adherence to prevention protocols (Draper et al., 2024). In response, there is renewed interest in evaluating bedside CLABSI care bundles to reduce infections, lower costs, and improve outcomes. Nurses play a critical role in implementing these interventions, making it essential to assess their effectiveness. Proactively addressing CLABSIs offers a meaningful opportunity to enhance patient safety, care quality, and overall healthcare system performance.

Review of the Literature (200-300) 284

A substantial body of literature supports the effectiveness of nursing care bundles in reducing central line-associated bloodstream infections (CLABSIs) across diverse patient populations, including adult, pediatric, and neonatal intensive care units, as well as oncology and transplant units.

Research designs span quality improvement (QI) initiatives, retrospective reviews, observational studies, and randomized controlled trials (RCTs), contributing to a broad base of evidence. Commonly evaluated interventions include chlorhexidine gluconate (CHG) bathing, CHG-impregnated discs, hub disinfection, and standardized dressing change protocols (Davis et al., 2024, Star et al., 2024). These often incorporate two-person verification, vascular access team (VAT) involvement, and adherence to strict aseptic techniques (Turoldo et al., 2024). Complementary strategies—such as staff education, audit-feedback mechanisms, and prevention rounding—have consistently improved compliance with infection prevention measures (Reynolds et al., 2021, Star et al., 2024). For example, targeted educational outreach and audit-feedback have been linked to increased CHG bathing adherence, while the use of individualized central venous catheter (CVC) logbooks has promoted greater adherence to best practices. Despite these improvements, several challenges persist (Turoldo et al., 2024). Reported barriers include adverse skin reactions to CHG, issues with adhesive materials, and sustainability concerns related to staffing turnover, high patient acuity,

and inconsistent monitoring. These factors may limit the long-term success of bundle implementation in some settings. The overall strength of the evidence is moderate to high, with studies classified as Level II through V (Dang et al., 2021). This supports the continued use of nursing care bundles as a promising intervention for CLABSI prevention, while also highlighting the need for ongoing evaluation and adaptation. Future research should aim to address variability in bundle components and further explore strategies to enhance sustainability and effectiveness in real-world clinical environments.

Recommended Intervention (100-150) 113

Hospitals should adopt nursing care bundles as a foundational strategy for CLABSI prevention. These bundles should incorporate evidence-based practices such as rigorous hand hygiene, CHG-based skin interventions (e.g. wipes and dressings), daily audits, structured prevention rounding, and a two-person approach to dressing changes to ensure compliance with aseptic technique. Additionally, consistent staff education on central line necessity and maintenance is essential (Star et al., 2024). Nurses must be integrally involved in selecting and tailoring bundle components based on the most current and robust evidence. By prioritizing the prevention of CLABSIs through comprehensive nursing interventions, healthcare systems can reduce costs, decrease length of stay, lower readmission rates, and improve both patient outcomes and satisfaction.

Suggestions for Further Study (50-100) 100

In alignment with professional medical and nursing organizations recommendations, and supported by existing research, integration



Left to Right: Alyssa Crossen, Heily Vo, Dylan Hunter, Kolby Murphy, Tara Kieu, and Olivia Wright

of comprehensive nursing care bundles that include audits, educational initiatives, rounding protocols, two-person dressing changes, hand hygiene, and antimicrobial interventions should be adopted as standard practice to reduce CLABSI rates. While current studies have demonstrated the effectiveness of various nursing-led interventions, limitations persist due to variability in bundle components and a lack of high-level, U.S.-based research. Therefore, future investigations should focus on producing rigorous, standardized studies within U.S. healthcare settings to better assess the effectiveness, sustainability, and generalizability of nursing care bundles for CLABSI prevention. ■

References online:
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Brief Biography for Authors/Contributors: Tara Kieu, Alyssa Crossen, Dylan Hunter, Kolby Murphy, Heily Vo, and Olivia Wright, graduated May 8, 2025, with Bachelor of Science in Nursing degrees from the Fran and Earl Ziegler College of Nursing at the University of Oklahoma Health Sciences. They will be starting their nursing careers in the CVICU, MICU, OR, and ER. Their decision to investigate the effects of nursing bundles on reducing CLABSI rates stemmed from the recognition that CLABSIs have persisted as a significant health challenge for decade; therefore. This long-standing issue prompted a growing emphasis on implementing nursing-driven bundles that prioritize compliance with evidence-based practices to effectively reduce CLABSI incidence. They would like to thank Dr. Crossley for her wonderful guidance and support throughout their nursing school journey. Nicole P. Crossley is an assistant professor at the Fran and Earl Ziegler College of Nursing at the University of Oklahoma Health Sciences. Presentation details - Kieu, T., Crossen, A., Hunter, D., Murphy, K., Vo, H., Wright, O., & Crossley, N.P. (2025, April 25). *The Use of Nursing Bundles to Reduce Central Line Associated Bloodstream Infection (CLABSI) Rates* [Podium]. Fran and Earl Ziegler College of Nursing Evidence-Based Practice Symposium, Oklahoma City, OK, United States.



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