



By centralizing ownership of vascular access with the team for insertion, management, and securement, the PIV Five Rights is the right approach to achieve the right results in transformation of hospital infusion therapy practices” Steere et al (2019).

Abstract:

Background: Peripheral intravenous catheter (PIVC) sales per year exceed that of the number of people in the United States (US), 350 million. With only 37 million US hospital patient admissions per year, these data indicate an average usage of 10 PIVCs per patient admission, suggesting a very high failure, very low success rate, and excess cost associated with PIVC insertions. Patients often complain of multiple catheter insertion attempts, and published data reveal up to 53% of PIVCs fail before therapy ends.

Methods: Hartford Hospital (Hartford, CT) conducted a prospective comparator single-center clinical superiority design study to determine the impact of bundled practices including device insertions using vascular access specialty team (VAST) intravenous trained nurses versus current practice. The study used a 5 step multimodal best practice intervention strategy designated as the PIV5Rights Bundle with an aim to determine if the intervention outcomes and dwell time improved over current PIVC practices. The study group applied a Lean health care standard work process with a Six Sigma design, define, measure, analyze, improve, control approach that included VAST PIVC dwell time, complications, and economic impact compared with current state general nursing practice.

Results: Outcomes of the PIV5Rights Bundle in Group 2 (experimental) using a trained vascular access nursing team for insertion and management achieved a statistically significant result of 89% of catheters achieving end of therapy with a cost saving per bed of \$3376 (\$1405 versus \$4781) per year as compared to standard practice (Group 1; control). Results of Group 1 reflected PIVC dwell time to end of treatment in only 15% of catheters. Prestudy catheter consumption analysis was 4.4 catheters per patient hospital admissions, reflecting waste within labor and supply costs for PIVC insertion and usage. Peripheral intravenous catheter retrospective audits for current practice demonstrated more than 50% catheters failed within the first 24 hours. This application of Lean methodology by Hartford Hospital with infusion therapy resulted in a projected \$2.9 million annual savings of \$3376 per bed per year for house-wide application.

Conclusions: Implementation of the PIV5Rights™ Bundle with a dedicated VAST proved to be a successful model, both from a patient and financial perspective. The journey to nursing excellence included identification of core measures and best practice evidence for PIVC placements as a procedure that affects nearly every patient entering a hospital. By centralizing ownership of vascular access with the team for insertion, management, and securement, the PIV Five Rights is the right approach to achieve the right results in transformation of hospital infusion therapy practices. Bundled approaches have often been used for central catheter infection reduction. This is the first study the authors have identified focusing on 1 PIVC per patient visit as a result of an evidence-based bundle and VAST.

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Reference:

Steere, L., Ficara, C., Davis, M. and Moureau, N. (2019) Reaching One Peripheral Intravenous Catheter (PIVC) Per Patient Visit With Lean Multimodal Strategy: the PIV5Rights Bundle.

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