

Enhancing peripheral intravenous catheter care: implementing an infection prevention bundle

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Background

Peripheral intravenous catheters (PIVCs) are commonly used in hospitals for administering intravenous (IV) treatment.

The use of PIVCs can lead to complications:

- Phlebitis (11%)
- Bloodstream infections (BSIs) (0.18%)

The study was motivated by identification of BSIs linked to PIVCs, lack of documentation regarding the daily management of the PIVCs, and insufficient data on related complications.

Objective: Enhance PIVC management through a comprehensive care bundle aimed at reducing complications.



Methods

We conducted a **quality improvement study** at Haraldsplass Deaconess Hospital, a large local hospital with five inpatient wards, from June 2022 to November 2023 using the Quality Improvement Model.

The intervention consisted of **a care bundle** aimed at improving PIVC practices and contained:

- Revision of local guidelines
- Introducing a closed integrated PIVC
- Staff education on infection prevention
- Bloodculture monitoring
- Audit and feedback

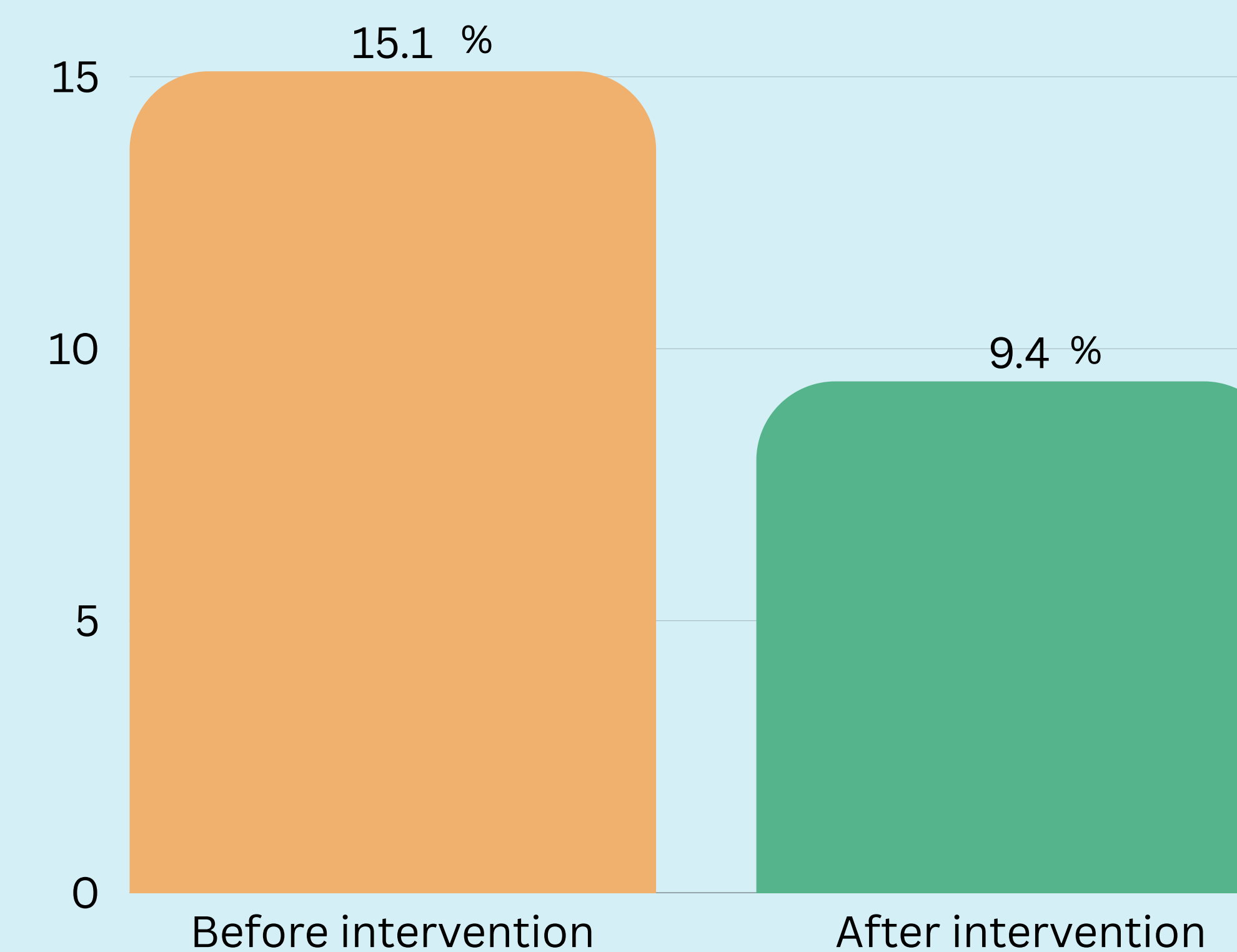
We conducted pre- and post-intervention audits using the **Peripheral Intravenous Catheter-Mini Questionnaire (PIVC-miniQ)** (1), covering 1,330 PIVCs in adult patients. PIVC-miniQ includes 16 variables capturing key aspects of PIVC care: **signs and symptoms of phlebitis, dressing integrity and IV connections, and documentation.**

Results

1

Prevalence of phlebitis

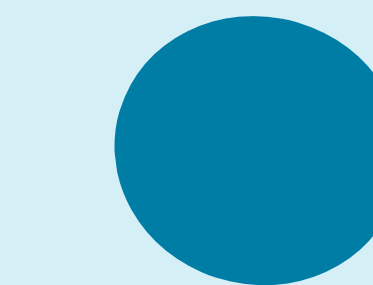
The post-intervention prevalence of phlebitis decreased from 15.1% to 9.4%.



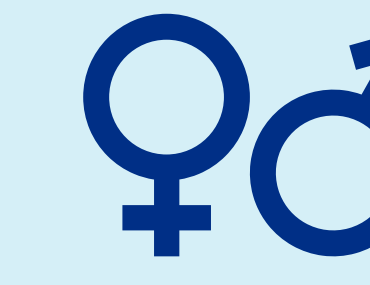
The risk of phlebitis was 61% higher pre-intervention compared to post-intervention.

2

Predictors of phlebitis



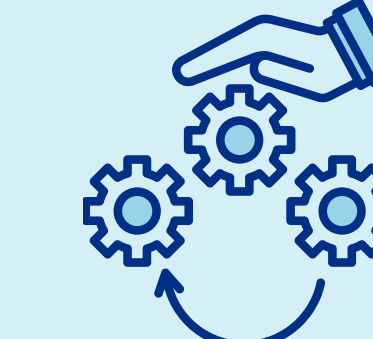
PIVC gauge



Gender



Ward



The nature of the intervention

3

Overall, the quality of PIVC dressing, IV connection, and documentation improved from baseline to post-intervention.

Comparing pre- to post-intervention, the risk of at least one deviation in the “PIVC dressing and IV-connection” domain was **52%** higher, and in the “documentation” domain the risk was **27%** higher.

4

PIVC mini-Q sum score

- Significant decrease in overall PIVC-miniQ sum score post-intervention.
- The PIVC quality is significantly better using closed integrated PIVCs compared to ported PIVCs.

Conclusion

This is the first longitudinal quality improvement study assessing PIVC care quality using the PIVC-miniQ instrument after implementing multiple interventions. The findings indicate substantial improvements and emphasize the critical role of proper PIVC management in reducing complications. Further research is warranted to identify which specific interventions yield the most significant benefits.

[Read the article](#)



¹ Høvik, L.H.; Gjellø, K.H.; Lydersen, S.; Rickard, C.M.; Retvold, B.; Damås, J.K.; Solligård, E.; Gustad, L.T. Monitoring Quality of Care for Peripheral Intravenous Catheters: Feasibility and Reliability of the Peripheral Intravenous Catheters Mini Questionnaire (PIVC-miniQ). BMC Health Serv. Res. 2019, 19, 636.



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