

Peripheral intravenous catheter care among nurses in High Dependency Ward

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Introduction:

Peripheral intravenous catheters (PIVCs) are the most commonly used invasive medical device in hospitals but can lead to complications such as thrombophlebitis and bloodstream infections (BSI). This study aim to evaluate PIVC care practices and knowledge among high dependency ward (HDW) nurses at Queen Elizabeth Hospital, with the goal of reducing BSI and thrombophlebitis rate.

Methods:

This prospective study was conducted from December 2024 to March 2025. Rates of BSI and thrombophlebitis in HDW were reviewed before and after the intervention. A clinical audit of PIVCs was performed using the PIVC mini-Q, and nurses' knowledge was assessed with a designed test. Based on the findings, areas for improvement were identified, followed by a teaching session and the introduction of a modified-PIVC checklist for nurses.

Audit Results:

The highest dressing site issue was no date documentation which lead to prolonged usage of cannulas 24 out of 30 cannulas has no date documented leading to 12 cannulas were kept >5 days.

Apart from that, 13 cannulas were soiled with bloods / fluids and 12 had loose or lifting edges.



Figure 1. PIVC Audit results

PDSA cycle

Plan	Establish baseline BSI rate in HDW To introduce PIVC care to HDW staff
Do	Data collection for BSI rate in HDW Audit on PIVC care among nurses
Study	Lack of knowledge in PIVC care among nurses Current PIVC chart dose not included dressing site care for cannulas
Act	Education on PIVC care to nurses Introduce modified- PIVC check list Regular process monitoring Assign ward sister and link nurse to enforce compliancy

The modified-PIVC check list focus on documenting duration of cannulas and dressing site care.

4 HOURLY OBSERVATION CHART FOR PHELEBITIS

Name: _____ RN: _____ ward: _____

Side of IV cannulation: Right / Left : hand/ leg / scalp

Date (*)	Time	Site of cannulation	Usage Medications/ drip/ blood	Line conditions					VIP	Phlebitis	Dressing condition				Initials & remarks				
				Unknown	Slight redness	Redness	Swelling	Palpable venous			Pyrexia	pain	Yes	No		Soiled	Loose	Tape only	Blood in line

(*) : days of cannula, if >5 days suggest to off cannula

if soiled or loose please change dressing, use semipermeable plaster

Note: continue observation for 48 hours after cannula was removed

Figure 2. Modified-PIVC check list used in HDW from February –March 2025

Post PDSA :Improvement seen before and after education and modified-PIVC form

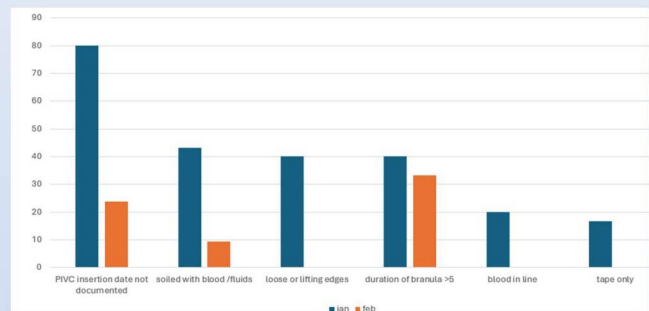


Figure 3. Dressing issues comparing Jan and Feb 2025 per 100 PIVC

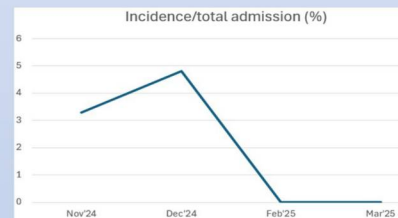


Figure 4. Incidence rate /total admission for phlebitis



Figure 5. Incidence rate/100 admission for BSI

Results

Total 30 PIVCs was audited and 40 nurses completed the knowledge test. After education and implementation of a modified PIVC checklist, undocumented PIVC date decreased from 80% to 23.8%, soiled dressing with blood or fluids decreased from 43.3% to 9.5%, usage of cannulas more than 5 days decreased from 40% to 33.3%, whereas loose dressing (40%), blood in line (20%) and tape dressing (16.7%) has reduced to 0%. One month post-intervention, bloodstream infection rates declined from 2.8% in November and 1.8% in December 2024 to 1.47% in February and 0% in March 2025. Thrombophlebitis rates also dropped from 3.3% in November and 4.8% in December 2024 to 0% in February and March 2025.

Conclusion:

The PIVC mini-Q is an effective tool in identifying gaps in cannula care, including poor documentation, prolonged dwell time, and inadequate dressing condition. Targeted education and the implementation of a modified PIVC checklist significantly improved compliance with proper PIVC care practices. These interventions were associated with marked reductions in bloodstream infection and thrombophlebitis rate. Engaging ward sister and link nurse can also help to ensure compliancy to check list.

References:

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