

Peripheral intravenous catheter insertion in the Emergency Department

Kelly Decker^{1,2}, Sharyn Ireland^{1,3}, Lorna O'Sullivan³, Sue Boucher⁴, Lauren Kite^{1,3}, Deb Rhodes¹, Biswadev Mitra^{1,4}

1 Emergency & Trauma Centre, Alfred Health, 55 Commercial Road, Melbourne, Victoria, 3004, Australia

2 Monash University, School of Nursing and Midwifery, Peninsula Campus, McMahons Road, Frankston, Victoria, 3199, Australia

3 La Trobe University, School of Nursing and Midwifery, Plenty Road and Kingsbury Drive, Melbourne, Victoria, 3086, Australia

4 Monash University, Department of Epidemiology & Preventive Medicine, 99 Commercial Road, Melbourne, Victoria, 3004, Australia

Corresponding author: k.decker@alfred.org

Background

Growing research suggests that a large number of peripheral intravenous catheters (PIVCs) inserted in the Emergency Department (ED) are unused. The aim of this study was to assess the proportion of unused ED inserted PIVCs in a before-and-after interventional study. Additional aims were to ascertain indications for PIVC insertion in the ED and to increase the appropriateness of PIVC insertion.

Method

A prospective interventional study was conducted and data were collected on 150 cases in the pre- and a further 150 cases in the post-intervention phase. During the intervention phase, strategies were implemented to increase appropriate PIVC insertion in the ED. Interventions included introduction of insertion and removal stickers, new venepuncture devices, changing the intravenous (IV) trolley layout, and an educational campaign.

Results

The results of the study show a significant reduction in the proportion of PIVCs inserted following the intervention (74 vs. 50; $p=0.005$), while the proportion of PIVCs used (50 vs. 28) remained unchanged. Of note, the proportion of PIVC insertion initiated by nursing staff reduced significantly ($p=0.049$). With regards to indication for PIVC insertion, the interventions were associated with significantly fewer PIVCs being inserted for routine blood collection ($p=0.006$), and for potential need for medications and fluids ($p=0.03$).

Conclusion

This study demonstrated a high proportion of unused PIVCs in the ED. A composite intervention strategy was developed and significantly reduced the proportion of PIVC insertion.

Key Words

Emergency Service, hospital; Catheterization, peripheral