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HERSTON HEALTH PRECINCT SYMPOSIUM 2021

TRAN-0020

6 - 10 September 2021
Education Centre
RBWH



Clinician acceptability of team planning for neonatal peripheral intravenous catheter insertion

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Purpose: Peripheral intravenous catheters (PIVCs) are essential to treat sick or preterm neonates. However, first time insertion success is rare and often due to the varying level of clinician experience, and poorly defined escalation pathways.^{1,2} Insertion tools have demonstrated some benefit for Paediatric PIVC insertion.³⁻⁷ **This study aimed to implement and evaluate, non-invasive near infrared (NIR) informed team planning 'scrums' for neonatal PIVC access.**

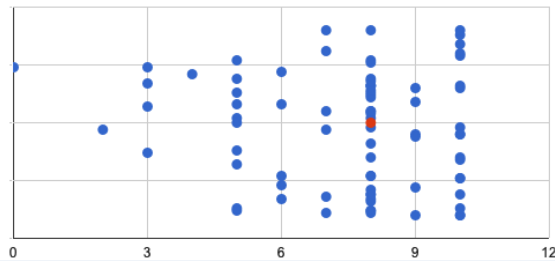


Figure 1: Evaluation of team planning insertion median - 8/10 (IQR 6-9)

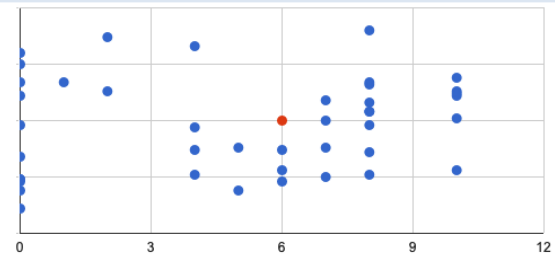


Figure 2: Evaluation of NIR tool median - 6/10 (IQR 0.25-8)

Methods: A three-phase implementation study (pre, implementation, post) occurred at the RBWH, with neonatal PIVC characteristics audited three days a week. PIVC scrums were introduced, and consisted of an NIR device to illuminate insertion sites and an insertion plan by two clinicians (e.g., site selection, number of insertion attempts). The scrum process and NIR device were evaluated during the implementation and post implementation phase with questions using an 11-point Likert scale (0=dissatisfied; 10=satisfied). Additional NIR questions explored vein and valve visibility. Descriptive statistics were summarised using Microsoft excel. Ethics waiver was obtained (LNR/2020/QRBW/62945).



Results: A total of 248 neonates (276 PIVCs) were included in the implementation and post implementation phase of the study. Evaluation responses for the scrum process were completed for 81 (29%) insertions, and 42 (15%) of insertions using the NIR tool. Inserter acceptability for the scrum process achieved a median score of 8/10 (IQR 6-9) (Figure 1); and of the NIR tool achieved median score of 6 (IQR 0.25-8) (Figure 2). Only 21 (20%) of 104 inserters reported the NIR tool helped with vein visualization and 10 (9.7%) of 103 reported clearly seeing a vein valve.

Discussion: Despite the project team including research experts and neonatal inserters of all experience levels; there was reluctance to use the NIR tool and evaluate its use in this neonatal setting. Interestingly, only inserters provided feedback, while ad-hoc comments by staff assisting in insertion found both the planning process and tool helpful. Future qualitative exploration would assist in identifying barriers to use of adjunct tools for PIVC insertion in neonates and therefore inform future initiatives.

Conclusions: The PIVC scrum process was accepted by inserters in this neonatal setting. However, the benefit of the NIR tool for neonatal cannulation is unclear.

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