A quality improvement initiative for peripheral vascular catheter related infections

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Background

- Healthcare associated infections (HAI) contribute significant morbidity and mortality.
- The European Centre for Disease Prevention and Control's point prevalence survey in 2017 placed Ireland's prevalence of HAI above the European average. Ireland ranked 4th in Europe for hospital acquired bloodstream infections, 25% of which were vascular catheter related [1].
- Nationally, healthcare associated *Staphylococcus aureus* bacteraemia (SAB) is an important key performance indicator (KPI) with a target of <1/10,000 bed days [2].
- At our institution, rates of peripheral line associated SAB are increasing above KPI targets.
- A quality improvement project was established to identify potential causes, determine healthcare worker (HCW) attitudes to potential interventions and increase the awareness of peripheral vascular catheter (PVC) infections among hospital staff.

Methods

- This project was selected as part of the Saolta hospital group's quality improvement initiative.
- A point prevalence study identified the status of PVCs among hospitalised patients including age, indication and compliance with current guidance on care.
- An anonymous survey was disseminated among staff to evaluate attitudes towards PVC care, familiarity with PVC infections and whether or not there was agreement towards a policy change for their routine removal at 72 hours.
- The importance of PVC care and ensuring its removal when not clinically indicated was highlighted at dedicated teaching sessions for interns and senior house officers (SHO) throughout the academic year.

Results

- The point prevalence survey examined 85 inpatients from three acute medical and surgical wards.
- 65% (58/85) had a PVC in situ, of whom only 69% (40/58) had a PVC care bundle that was reviewed twice daily.
- 23% (14/58) of those with a PVC were on no intravenous medication.
- The median age of the PVC was 2 days (range 1 – 8 days).

- Data from the HCW survey was collected from 116 members of staff.
- 80% (93/116) reported having previously encountered a PVC infection, though 53% reported they never/rarely examined their patients' PVCs.
- 41% (47/116) believed PVC care and monitoring was exclusively a nursing role.
- 60% of HCWs surveyed were not in agreement with the introduction of a policy for the routine removal of PVC at 72 hours.
- 68% of HCWs would agree with such a policy if allowances were made for those with difficult vascular access.

What is the root cause of healthcare associated SAB?

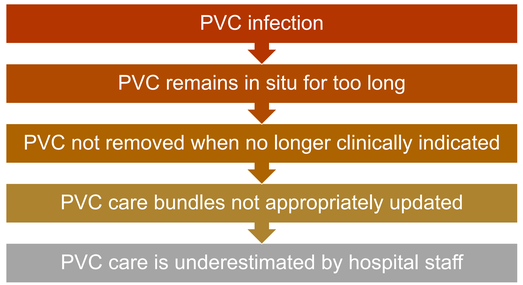

Figure 1: '5 why' diagram examining root cause of healthcare acquired SAB

Do you agree with the introduction of a 72h PVC removal policy?

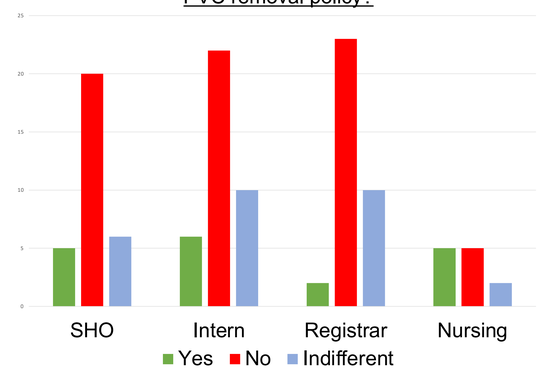

Figure 2: HCW buy in for a potential new policy on PVC care

Do you examine your patients' PVCs daily?

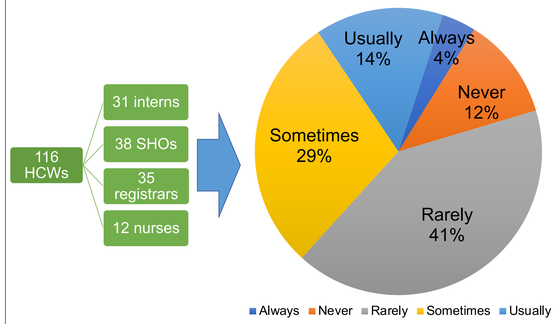

Figure 3: Breakdown of HCW survey and details of staff engagement with PVC care

Conclusion

- This project highlights a lack of awareness in PVC care, particularly among medical staff.
- The majority of HCWs surveyed do not routinely examine their patients' PVCs and data from the ward audit demonstrate that many (25%) remain in situ when no longer clinically indicated.
- Current guidance from the HPSC suggests that routinely removing PVCs every 72 hours is only advised if an institutions' ability to maintain and remove PVCs when clinically indicated is lacking [3]. In this study, only 69% of patients with a PVC in situ were being monitored in accordance with best practice.
- A change in current practice to a policy for the routine removal at 72 hours was not favoured by the majority of HCWs surveyed, though stakeholder buy-in was achievable with specific policy conditions.

- These results highlight the importance of identifying key stakeholders in any quality improvement initiative to ensure that buy-in is achievable.
- While opinions on policy may differ among staff, any change to practice risks failure so long as HCWs remain unaware of the dangers posed by PVCs.
- Education sessions targeting interns and SHOs on the importance of PVC care are critical to facilitate change in current HCW attitudes.

- Data from this study has been used by the Department of Infection Prevention and Control for the procurement of a dedicated 'IV-line team' at our institution.

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References

1. Murchan S, Murphy H, Burns K. *Point Prevalence Survey of Hospital-Acquired Infections and Antimicrobial Use in European Acute Care Hospitals: May 2017.*; 2017. www.hpsc.ie.
2. Health Service Executive. *Key Performance Indicator Metadata 2020 - Acute Hospital's Division*. http://www.hse.ie/eng/services/Publications. Accessed January 17, 2021.
3. *Interim Guidance on Infection Prevention and Control for the Health Service Executive 2021*. www.hpsc.ie. Accessed January 17, 2021.

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