

Introduction

- Short-term peripheral venous catheters (PVCs) are one of the most frequently used medical devices.
- It is estimated that 65-70% of PVC blood stream infections are preventable with¹ appropriate insertion and maintenance care.
- Peripheral line associated bloodstream infections (PLABSI) can lead to an increase in patient morbidity, health care costs and prolonged hospital stay to the patients.
- We started capturing PLABSI rate from the month of October, 2023 to know the incidence of PLABSI.
- There was a relatively increased incidence of PLABSI in the month of November, 2023 despite appropriate insertion, maintenance practices and regular audits.
- We decided to implement a Quality improvement program to reduce PLABSI rate.

Objectives

- To prevent PLABSI by implementing PLABSI bundle
- To increase the awareness about PLABSI preventive bundle components as effective prevention strategy
- To monitor the adherence of PLABSI bundle by Intravenous infusion audit

Study design and methodology

- Duration: October, 2023-January, 2024
- Observational study
- All peripheral line blood culture positive patients were evaluated for PLABSI
- As the data examined in November 2023 indicated an upward trend, the QIP was launched

Inclusion criteria

Patients having peripheral line for more than two calendar days with bacteremia with at least 1 of the following conditions:(1) the presence of phlebitis or (2) resolution of clinical symptoms after PVC withdrawal with the careful exclusion of another focus of bacteremia³

Exclusion criteria

- Secondary bloodstream infections, blood stream infection present or incubating upon admission, clinical sepsis

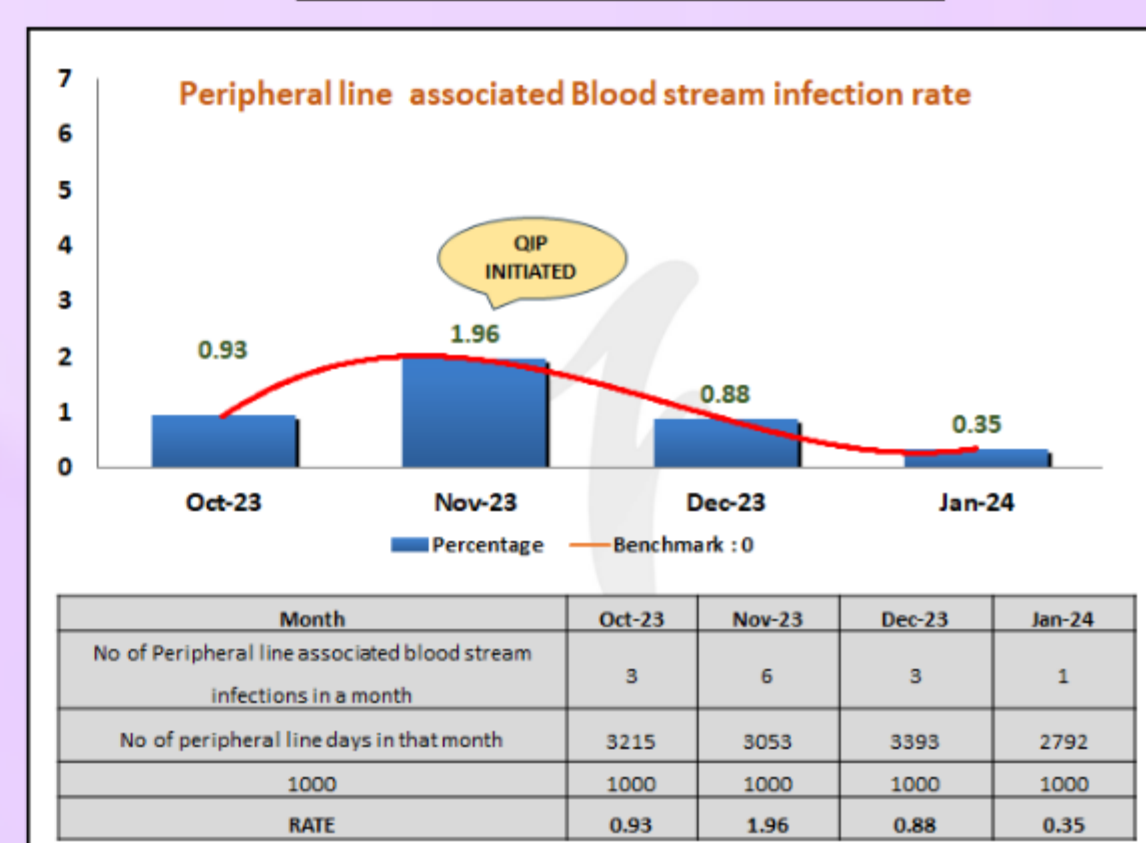
Interventions

- PLABSI workshop regarding PLABSI bundle was conducted for nurses^{1,2}
- Infection prevention and control, link nurse and nursing supervisors were involved in hands-on training with the help of mannequin to the staff nurse
- Flushing protocol poster in terms of rationale, volume, technique and moments were displayed after education
- Focused on optimizing the storage container for adapters
- Stand-alone adapters were implemented
- Weekly review of PLABSI rate monitoring was started in core team meeting
- Area wise PLABSI rate was discussed in the nurse manager meeting
- Active discussion about specific issues were addressed in the concerned committee meetings and appropriate actions was taken

Analysis of outcomes

- The PLABSI data from October 2023 to January 2024 were evaluated in terms of process (audit and education) and outcome (PLABSI rates).
- During the analysis period, the PLABSI rate was 0.93 in October 2023 and 1.96 in November 2023, respectively.
- Thus, with the successful implementation of QIP in the month of November 2023, a remarkable reduction in the PLABSI rate was observed, reaching 0.35 in January 2024

Results



Discussion

- Deviations observed in the PLABSI maintenance care: Non-adherence to flushing protocol, inappropriate storage of adapters and three-way adapters were missed during patient care.
- Key deviations were focussed and addressed with help of active involvement of leadership team in implementation of storage container, stand-alone adapters and adherence to flushing protocol.
- IPC/Infusion audit team monitored the effective usage of storage container, stand-alone adapters, and reinforced environmental cleaning practices in addition to the PLABSI bundle components

Conclusion

- With unwavering support from the leadership team, regular audits and feedback to the relevant team along with the proactive engagement of bedside nurses, in-charge nurses, and supervisors resulted in significant reduction of PLABSI.
- We were able to ensure patient safety and healthcare quality with consistent monitoring and reinforcement of the PLABSI bundle

References

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- 2.Mary Duncan, *et al*. A Bundled Approach to Decrease the Rate of Primary Bloodstream Infections Related to Peripheral Intravenous Catheters at Mercy hospital, *Journal of the Association for Vascular Access*, Volume 23, Issue 1, March 2018, Pages 15-2
- 3.Pujol M, Hornero A, Saballs M, Argerich MJ, Verdager R, Cignal M, et al. Clinical epidemiology and outcomes of peripheral venous catheter-related bloodstream infections at a university-affiliated hospital. *J Hosp Infect* 2007;67:22-9