CLABSI Reduction Process at Yale New Haven Hospital

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Introduction

- Among patients using a central venous catheter (CVC) for dialysis access, central line-associated blood stream infections (CLABSI) are frequent, dangerous, and costly.
- Nationwide, in 2014, CLABSI occurred at a rate of 2.16 per 100 patient-months for patients dialyzing with a CVC, nearly 10 times the rate of blood stream infections in patients with a permanent vascular access.[1]
- The cost associated with a single CLABSI is estimated to be $17,000-$32,000.[2]
- Mortality in the 12 weeks following CLABSI is nearly 20%.[3]
- Recently, Yale New Haven Hospital (YNHH) noted a high rate of CLABSI among hospitalized dialysis patients who used a CVC for vascular access.

Objective

Reduce the rate of CLABSI among patients dialyzing with a CVC who were admitted to YNHH

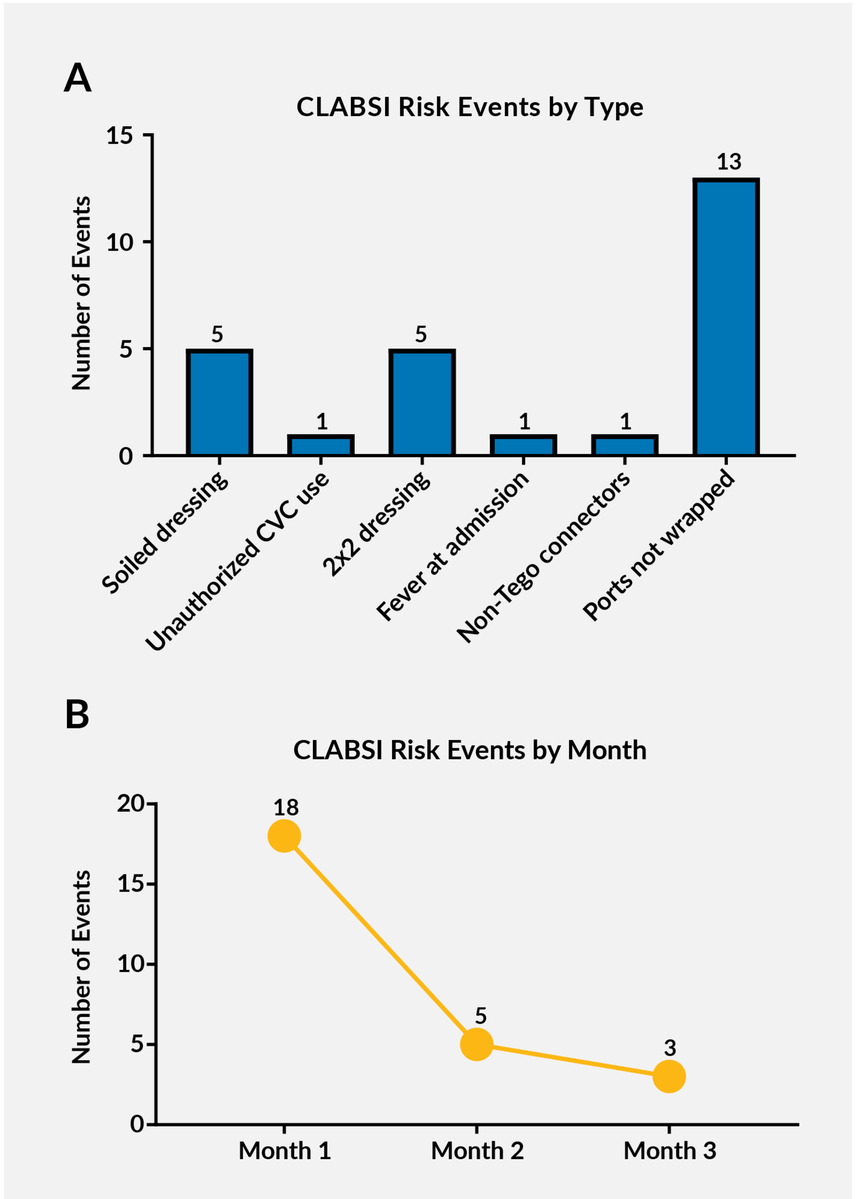
Methods

- Members of the DaVita Hospital Services Group developed a plan to reduce CLABSI at YNHH.
- The plan included a list of risk events to be recorded and reported. Risk events were: unauthorized access of the CVC by non-dialysis personnel, the absence of HD-only labels (initialed by the dialysis nurse) on the CVC, absence of annotation on the label of the lumen dwell time and dressing change date, fever at admission of >100.4°F, use of a 2x2 dressing during the admission, signs and symptoms of infection at the CVC site, use of non-Tego® connectors, and presence of soiled dressings.
- The risk assessment had the potential to trigger investigations into deviations in policy or practice that may increase CLABSI risk.
- Dressing changes were required to be documented in the electronic medical record (EMR).
- Hospital dialysis staff were retrained regarding care of CVCs; new competencies and training programs were added.
- Joint rounding by a designated CLABSI steering committee ensured compliance with the CLABSI prevention processes.
- The efforts described here were conducted as quality improvement activities and as such did not satisfy the definition of research as specified in 45 CFR 46.102(d). Therefore, the HHS regulations for the protection of human subjects did not apply. Institutional Review Board review and informed consent were not required.

Results

- In the period immediately following implementation of the CLABSI risk factor reporting protocols, 26 risk events were reported (Figure 1A).
- Risk events were more common in the month immediately following implementation of the program (18 events, Figure 1B), compared to each of the subsequent two months (5 and 3 events, respectively).
- During 2015, a total of 3210 dialysis treatments were performed on 400 unique patients using a CVC, with 9 CLABSI events (Figure 2).
- In 2016 (2585 dialysis treatments, 375 patients), 5 CLABSI events occurred prior to implementation of the program, and 0 thereafter.
- During 2017 (2280 treatments, 382 patients), no CLABSI events occurred.
- No CLABSI occurred during Q1 2018, for a total of 22 consecutive months following the start of the program with no CLABSI events.

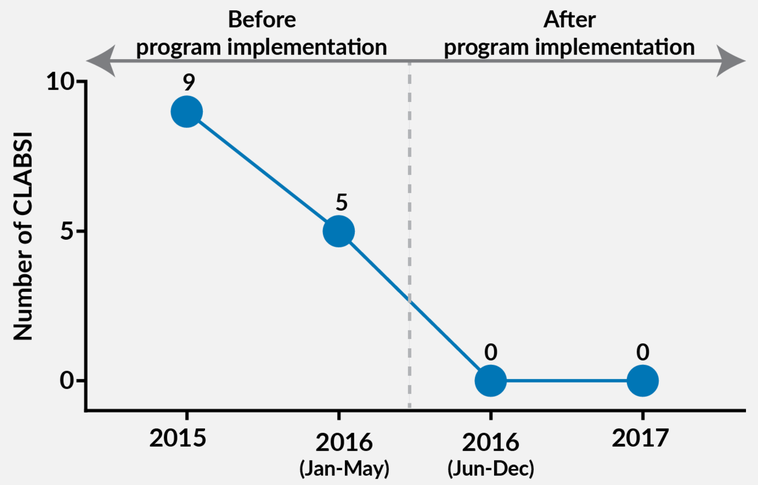
Figure 1: CLABSI Risk Events During the 3 Months Following Program Implementation



A) CLABSI risk events that occurred May 25–August 25, 2016 are reported by event type. B) The number of CLABSI risk events (all types) that occurred in consecutive 30-day periods beginning on May 25, 2016 are shown.

Abbreviations: CLABSI, central line-associated blood stream infection; CVC, central venous catheter

Figure 2: Number of CLABSI Before and After Program Implementation



The number of CLABSI recorded in each indicated time period are shown. The year 2016 is shown as two separate periods: January–May, prior to the implementation of the CLABSI prevention program, and June–December, following implementation of the program. The years 2015 and 2017 are displayed as full calendar years.

Abbreviations: CLABSI, central line-associated blood stream infection

Conclusions

Implementation of CLABSI prevention programs can reduce the rate of CLABSI. This improves outcomes for patients dialyzing with a CVC, while simultaneously reducing the cost of their care.

References

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