Decreasing CLABSI Rates via the Implementation of a "Central Line Cart"

William Mangin DO , Hong Lou DO , David Maldonado MD
HCA Medical City Healthcare UNT-TCU GME – Internal Medicine

Introduction

- Central line-associated blood stream infections (CLABSIs) impart both a significant increase in mortality but also a substantial financial burden onto hospitals. In the United States, there are up to 80,000 of these infections each year, resulting in an estimated 28,000 deaths.[1] Each CLABSI costs a hospital and average of $45,000. The Centers for Disease Control and Prevention (CDC) recommends 5 key interventions that have shown to significantly decrease CLABSI rates and an additional 6 strategies to increase adherence of these practices. The landmark multi-center Keystone ICU Project showed that these interventions significantly reduced CLABSI rates.[2]

5 evidence-based strategies

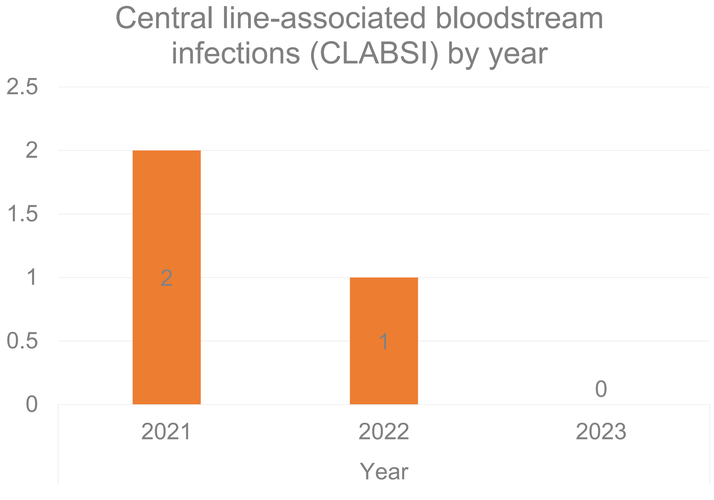
Proper hand washing	Full-barrier precautions	Chlorhexidine skin prep	Avoiding femoral site	Removing unnecessary catheters

Strategies to increase use of above strategies

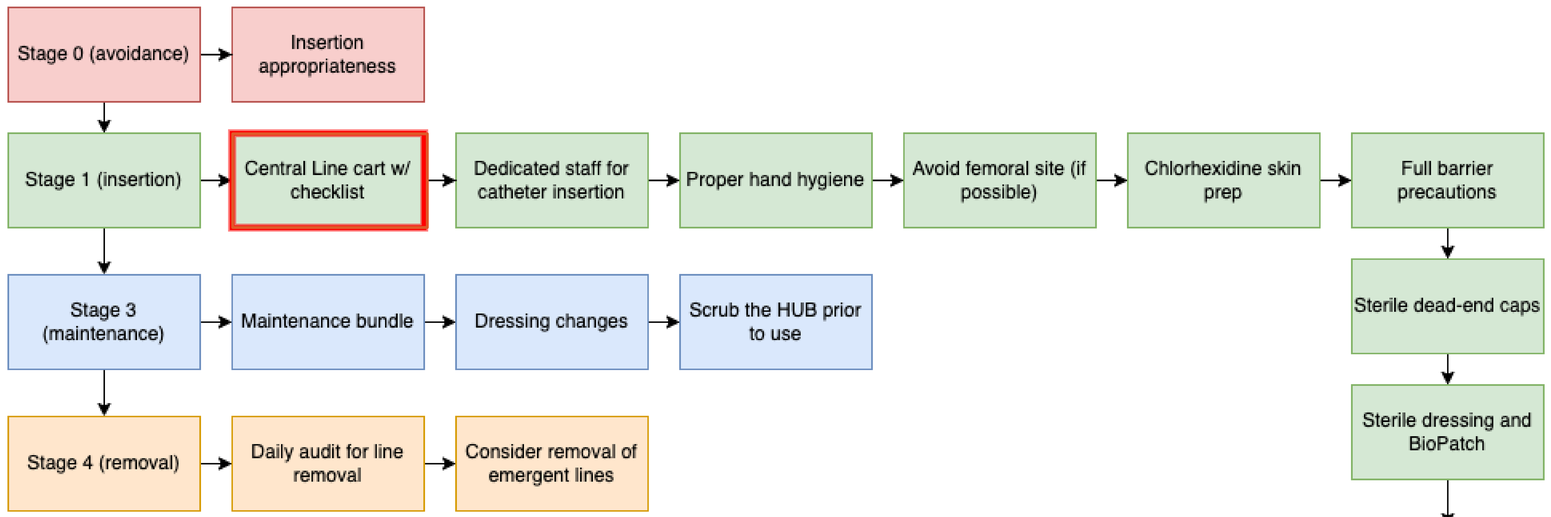
Clinician education	Line cart with supplies	Checklist	Stopping procedure if practices not followed	Catheter removal discussed at daily rounds	Feedback

Results

- Although data is still preliminary, there has not been any CLABSIs since implementation of this quality improvement initiative
- Anecdotally, the carts have helped cut down on procedural preparation time



Methods



- Process map analysis of current practices highlighted need for line cart and procedure checklist to help improve compliance of core strategies.
- Line carts were added to both medical and cardiovascular intensive care units (ICU) in December 2022
- Carts contain supplies for placement of central lines, dialysis catheters, arterial lines, and interosseous access
- In addition, carts contain a laminated check list of proper line placement protocol that acts a reminder to both physician placing the line and the nurse assisting with the procedure.
- Each cart is restocked on a bimonthly and as needed basis in conjunction with the stocking of ICU supply rooms.
- Beginning February 2023, an initiative to further increase compliance was implemented. The check list mentioned above is to now be signed by both physician and nurse at end of procedure and put in patient's paper chart.

Conclusion

- Central line-associated blood stream infections (CLABSIs) are considered preventable hospital-acquired infections (HAIs) and have been categorized as "never events" by the Centers for Medicare & Medicaid Services (CMS) and private insurance companies.[3]
- The Centers for Disease Control and Prevention (CDC) has published guidelines to prevent these infections, which have been validated by several large studies.[1]
- Here, we present a quality improvement (QI) initiative wherein dedicated line carts were added to both ICUs.
- Additionally, a check list for proper line placement was implemented to aid in compliance.
- Although continued CLABSI surveillance is required to properly assess effectiveness of the above changes, since implementation, no line infections have occurred.

References

1. O'Grady NP, Alexander M, Burns LA, et al. Summary of recommendations: Guidelines for the Prevention of Intravascular Catheter-related Infections. *Clin Infect Dis*. 2011;52(9):1087-1099. doi:10.1093/cid/cir138
2. Pronovost P, Needham D, Berenholtz S, et al. An intervention to decrease catheter-related bloodstream infections in the ICU. *New England Journal of Medicine*. 2006;355(26):2725-2732. doi:10.1056/nejmoa061115
3. Strickler S, Gupta RR, Doucette JT, Kohli-Seth R. A quality assurance investigation of CLABSI events: are there exceptions to never? *Journal of Infection Prevention*. 2018;19(1):22-28. doi:10.1177/1757177417720997

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.