MUSC Health
Medical University of South Carolina
Charleston

23-C: EHR-Embedded Clinical Decision Support to Reduce Hospital-Acquired Infections

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Care Category: Process Improvement/Performance Excellence

PROBLEM / OPPORTUNITY

- Hospital-acquired infections (HAIs) are associated with poorer patient outcomes and are costly to MUSC
- Over-utilization of invasive devices contributes to HAIs
- Existing clinical decision support systems for promoting device de-escalation are ineffective

IDEA SUMMARY

- Inpatient quality improvement lists utilize rule-based logic to identify and highlight central venous lines (CVLs) and foley catheters that are potentially eligible for removal (Figure 1)
- Replaces ineffective pop-up BPAs

VALUE PROPOSITION / BENEFITS

- Timely removal of unneeded CVLs and foleys should reduce incidence of HAIs
- The lists uniquely allow MUSC to track the incidence and removal of potentially unneeded invasive devices
- This clinical decision support is more effective than traditional pop-up alerts, mitigates alert fatigue, and could serve as a model for addressing other quality metrics in the future

IMPLEMENTATION PLAN

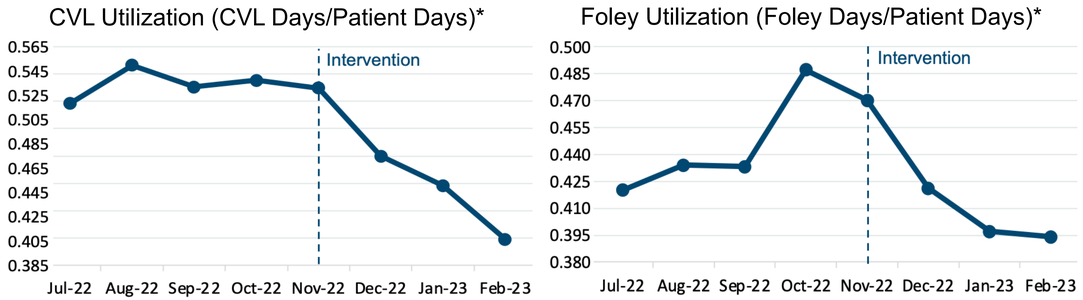
- Dedicated list for each adult ICU and ICU team
- Adult ICU medical directors and nurse managers received education prior to implementation
- CVL de-escalation selected as FY23 QI project for pulmonary/critical care fellows and APPs
- Lists available in Epic 11/1/2022

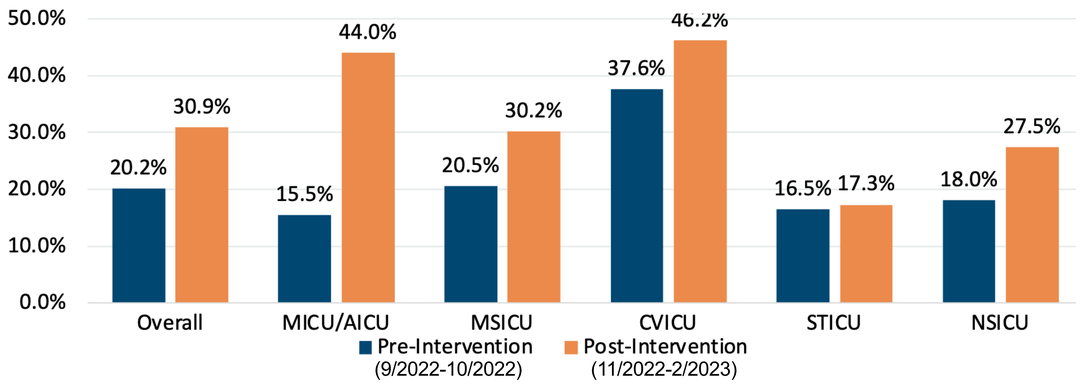
★ ICU CVL and Foley List - 6 MICU 6 Patients

Patient Name (MRN) / Age / Sex or Bed Status	Active Central Lines	CVL/HD cath ready for removal?	Highest norepinephrine dose over the past 24h	On additional pressors in past 24h?	Other CVL Criteria?	RRT/PLEX within 3d?	Urinary Catheter Duration
Brogdon, Tommie Jr. (005544603) (58yrs NB)	Percutaneous Central Line – Triple lumen 01/06/21	No	—	Neo / Dobutamine	TPN	No	5
Testing, Retained (005546715) (40yrs M)	Percutaneous Central Line – Triple lumen 10/10/22 Percutaneous Central Line- Double lumen 9/15/22	HD cath Yes	—	—	TTM	No	1
Zzzoptime, Difficult (005546749) (23yrs M)	Percutaneous Central Line – Double lumen 10/14/22 Percutaneous Central Line- Triple lumen 10/15/22	CVL Yes	8	—	None	Yes	7

Figure 1: Inpatient QI list design

METRICS / RESULTS





*Average weekly percentage, adult ICUs (MUSC Charleston)

BUDGET / FINANCIALS

- IS time (main cost) minimized by utilization of a physician builder + IS buddy to complete the build
- Funding requested for:
  - IS support for additional optimization of the lists and expansion to RHNs ($9,000)
  - Automated data capture for ongoing performance audit ($6,000)

SUSTAINABILITY PLAN

- IS to maintain lists after final optimization
- Automated data capture and reporting for ongoing performance audit to ensure innovation is continuing to have desired impact

LESSONS LEARNED

- Uptake has varied by ICU, suggesting need for tailored approach to implementation
- Multidisciplinary engagement is needed
- Audit and feedback of clinicians' device de-escalation practices compared with those of peers appears effective

ADDITIONAL INFORMATION

Division: CHARLESTON

Department: MICU

Leaders: Andrew Goodwin (Medical Director) and Janet Byrne (Nurse Manager)