

Use of Clinical Decision Support to Mitigate CLABSI Risk in High-Risk Patients

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The integration of user-friendly clinical decision tools heightens situational awareness for high-risk patients.

Background

- Central line-associated blood stream infections (CLABSI) are a source of increased morbidity and mortality in critical ill pediatric patients with central lines.
- Best Practice Alerts (BPA) integrated into the electronic health record have shown benefit in alerting to a patient's nosocomial risk.

ⓘ Patient is high risk for CLABSI - PICU Attending must complete Chronic Care Rounding Note.

PICU CLABSI Risk Score	
4	Total Score
1	CLABSI Score - Central Line Duration > 7 Days
1	CLABSI Score - Immunocompromised Diagnosis on Problem List
1	CLABSI Score - Active Oncology Treatment Plan
1	CLABSI Score - Active TPN Order

[Start Rounding Note](#)

Acknowledge Reason

[Not my patient](#) [Remind me in 1 hour](#)

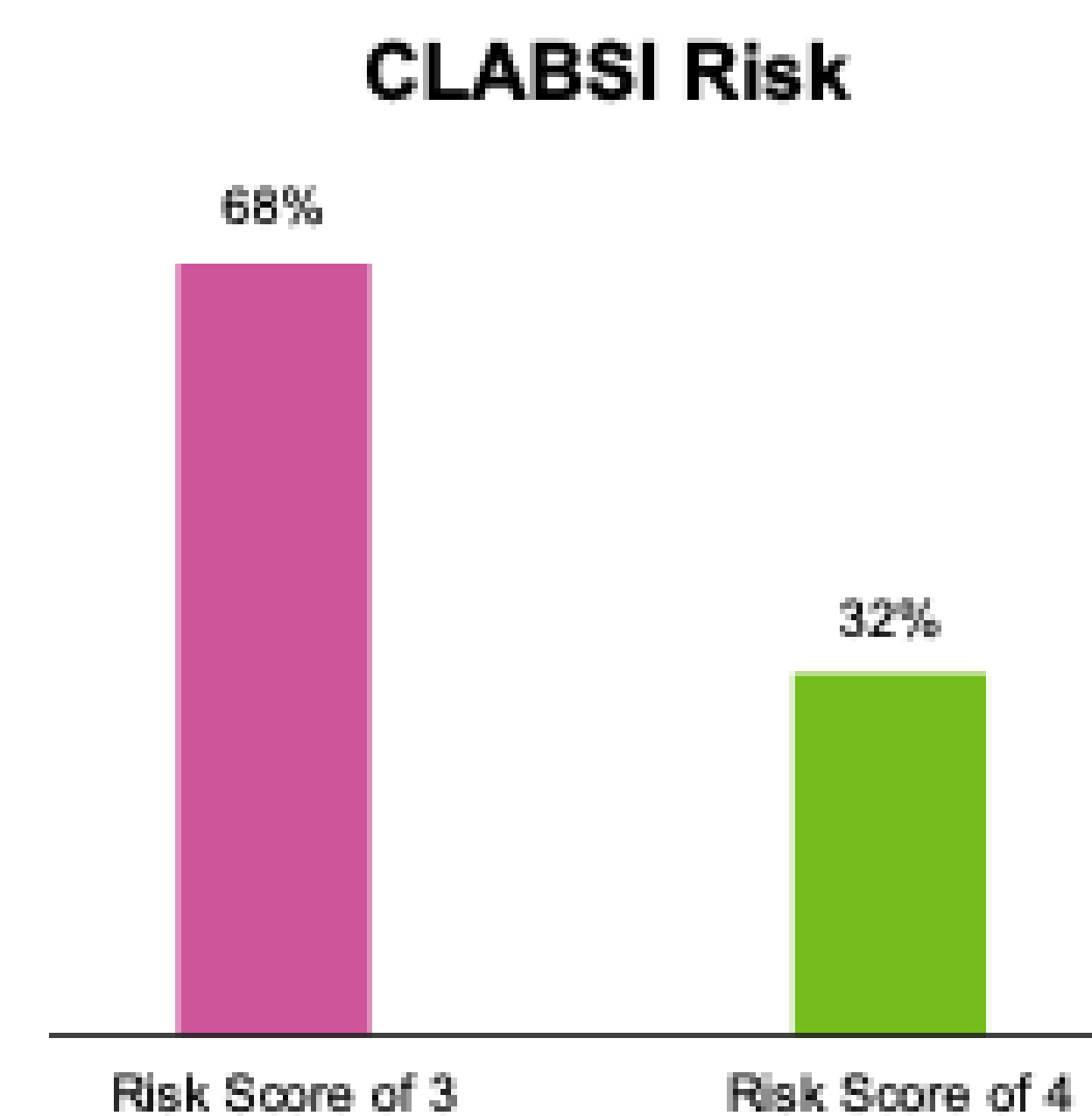
- In the CCHMC PICU, BPA CLABSI risk scores of 3 or 4 trigger a Clinical Decision Support (CDS) tool designed to advance situation awareness through a patient-specific plan for all team members to follow.

Objective

- Assess the saliency of a CDS tool designed for PICU patients that are at high-risk for CLABSI.

Methods

- Retrospective review of 103 CLABSI Risk Tool notes filed on CCHMC PICU patients with high-risk CLABSI scores from 12/2023 to 12/2024.



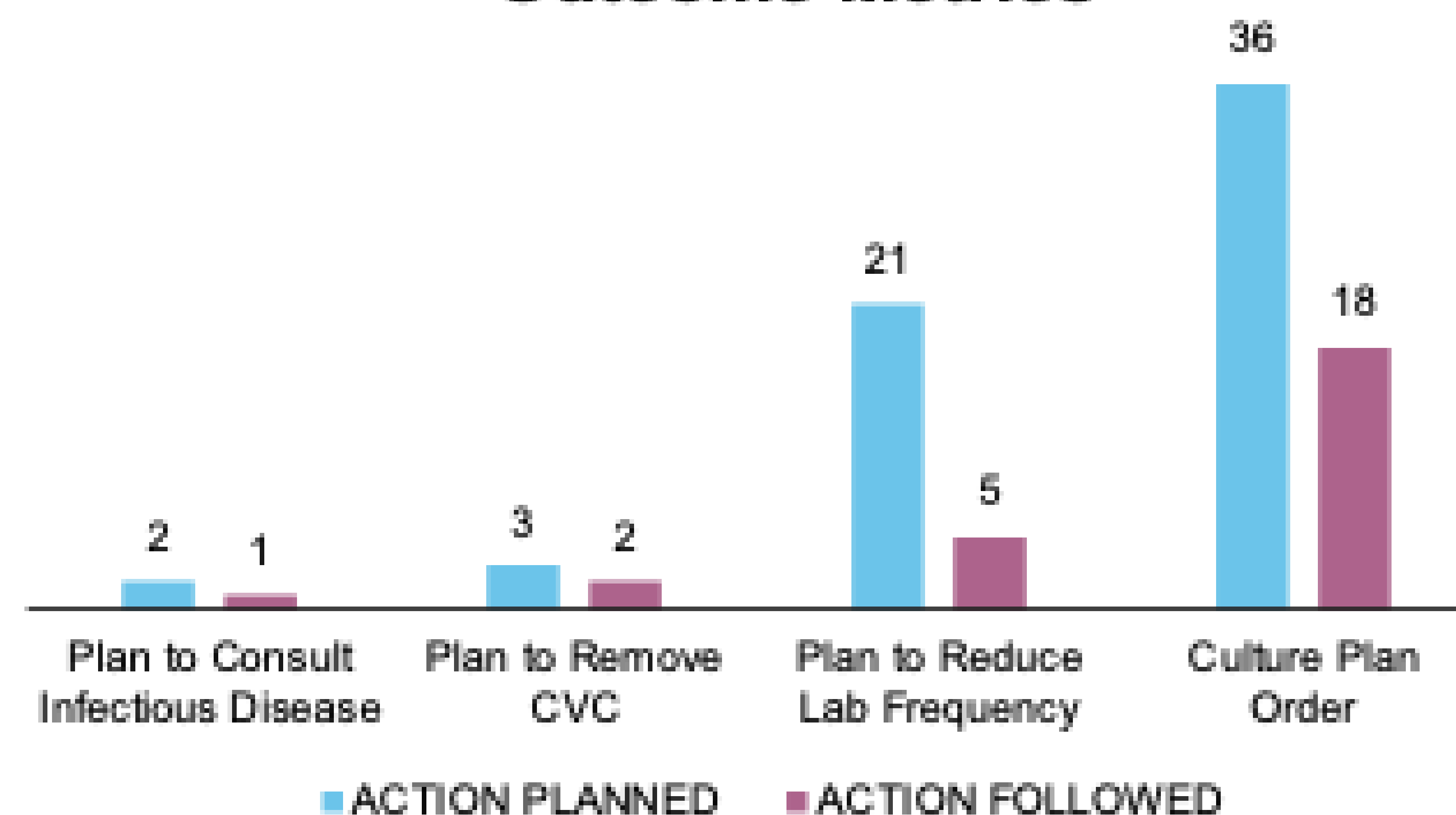
Characteristic

Characteristic	Patients (n = 44)
Age at time of BPA, years, median (IQR)	11 (0, 31)
Male sex, n (%)	27 (61%)
Race, n (%)	
Black or African American	5 (11%)
Middle Eastern	8 (18%)
White	28 (64%)
Unknown	3 (7%)
ICU length of stay, days, median (IQR)	82 (5, 877)

Results

- There was 50% saliency of planned actions across the study period.
- Each reviewed note had four possible actions deemed salient to the study.

Outcome Metrics



Conclusions

- Effectuating change requires time and adherence, but user-friendly clinical tools can ease associated burdens.
- CLABSI rates in the CCHMC PICU prior to tool launch in 2023 were 2.5 per 1000-days compared to 1.2 in 2024 after the tool was live.
- Our analysis demonstrates that an evidence-based CDS tool has effective saliency as an adoption measure for mitigating CLABSI risk.
- A limitation within our study is the dynamic health states of our patients thus limiting ability to implement the planned actions within the CLABSI Risk Tool.

References

- Urrea M, Pons M, Serra M, Latorre C, Palomeque A. Prospective incidence study of nosocomial infections in a pediatric intensive care unit. *Pediatr Infect Dis J*. 2003;22:490–4. doi: 10.1097/01.inf.0000069758.00079.d3.
- Spiegel MC, Goodwin AJ. Development and implementation of a clinical decision support system-based quality initiative to reduce central line-associated bloodstream infections. *J Clin Transl Sci*. 2024 Sep 23;8(1):e132. doi: 10.1017/cts.2024.566. PMID: 39345695; PMCID: PMC11428117.