

Significant Reduction of Device-Related HAIs Through Creation of HAI Steering Committee

Danielle Teran, MPH, CIC; Heather Lee, BSN, RN, CIC; Firas Zabaneh, MBA, MT(ASCP), CIC, CIE, FAPIC; Angelina Asare-Frimpong, MSN, RN, CCM; Traci Valasquez, RN; Jennifer Jaromahum, RN; Manikandan Padmanabhan, RN; Ian Glass, MD, MBA

Background/Introduction

Central line-associated bloodstream infections (CLABSI) and catheter-associated urinary tract infections (CAUTI) cause patient morbidity and mortality and are costly to an organization. At a 358-bed acute care hospital, there were 12 CLABSIs and 9 CAUTIs in 2022, which cost upwards of \$700,000 and caused patient harm. Root cause analysis of the hospital-acquired infections (HAI) revealed repeated fallouts with basic prevention guidelines and hospital policies, despite feedback to nursing leaders, prompting an executive lead, multidisciplinary approach.

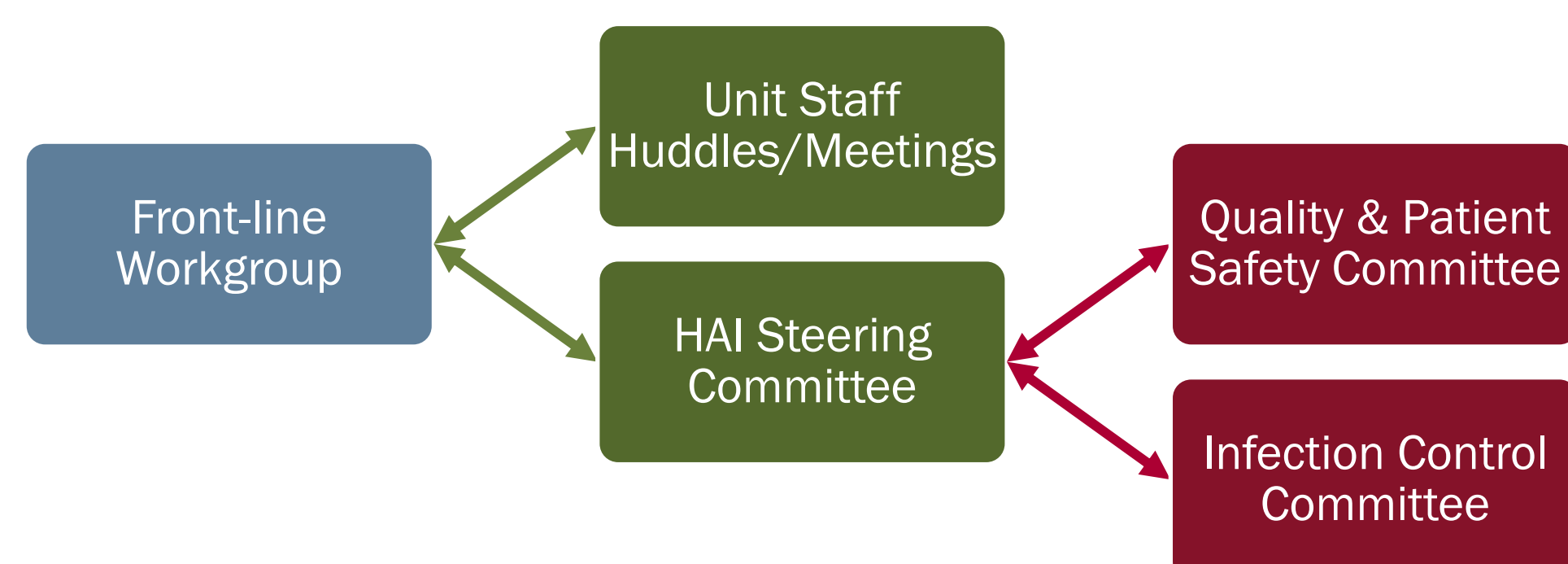
Methods

A multidisciplinary HAI Steering Committee was created in December 2022 through the use of a charter with an executive sponsor leading the meetings. A point prevalence conducted by Infection Preventionists and Nursing Directors assessed device-related prevention bundle compliance which guided corrective action plans and provided a baseline to benchmark. A front-line staff workgroup was also created to discuss challenges that prevented adherence to policies, obtain process improvement ideas from those directly involved with patient care, and feedback on newly implemented processes and products. The workgroup met every two weeks for rapid cycle improvement and reported updates to the steering committee for accountability and support from various stakeholders.

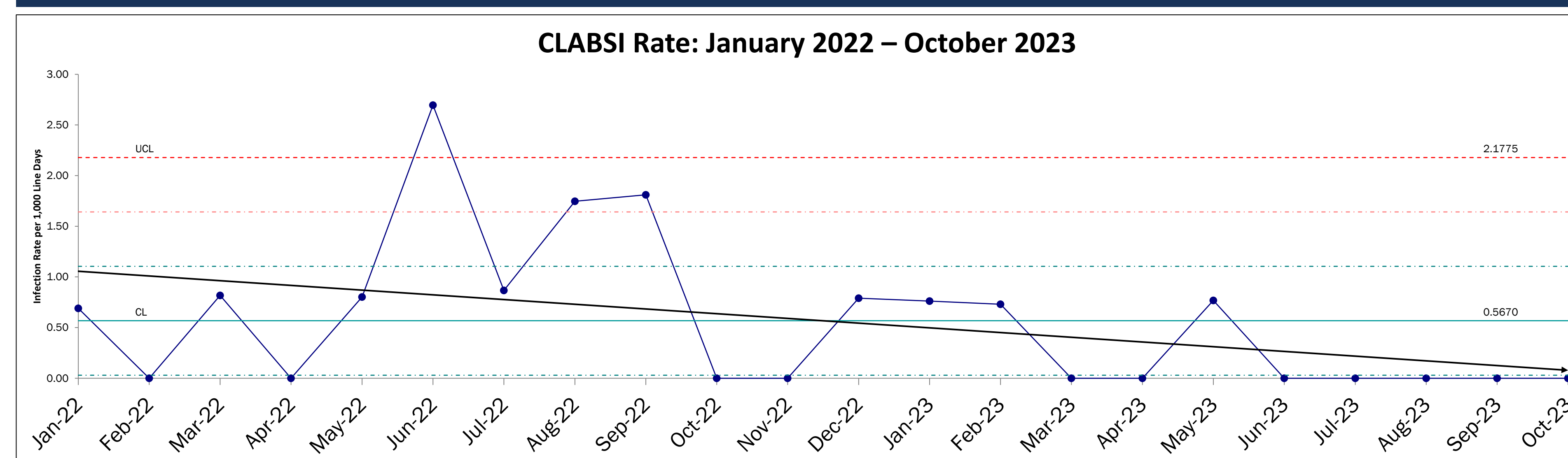
Charter

<p>Purpose Statement: Facility is committed to providing an unparalleled safe and reliable care for all patients. We recognize that CLABSIs and CAUTIs have vast negative impact on patient safety and patient outcomes. Therefore, this committee was formed to provide oversight for standardizing infection prevention practices across the hospital and implement a sustainable program aimed at the elimination of CLABSIs and CAUTIs.</p>	<p>Team Leads: Executive Sponsor: Medical Chairman: Phys. Champions: Nursing Leads: IP&C Lead: Project Coordinator: Clinical/IC Analyst: Quality/PI Lead: Nursing Ed Lead: Supply Chain: ASP Lead:</p>	<p>Team Members:</p>																				
<p>Team Strategies:</p> <ul style="list-style-type: none"> Develop and implement an effective process for monitoring compliance with CLABSI and CAUTI prevention bundle elements. Conduct a point prevalence study related to bundle compliance to establish a baseline. Continue case reviews and implement a bi-directional notification process of findings for leadership and staff. Develop and implement targeted interventions to address infection trends. Ensure system education related to CLABSIs, CAUTIs, and hand hygiene are assigned to and completed by nursing staff. Develop and implement targeted education for physicians related to bundles. Monitor compliance with completion of system CLABSI and CAUTI prevention modules. Consider implementation of rapid cycle process for units not achieving targets. Review device utilization data and consider strategies to achieve standardized utilization ratios of better than the national benchmark (NHSN). Implement stop the line protocol for patient transfers with lines deemed not necessary. Implement a training process for nursing leadership to enhance awareness regarding NHSN surveillance definitions for their patient population. Collaborate with HMWB ASP to ensure proper utilization of ABX. 	<p>Anticipated Impact:</p> <table border="1"> <tr> <td></td> <td>High</td> <td>Mod</td> <td>Low</td> </tr> <tr> <td>Improve Outcomes</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td>Improve Efficiency</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td>Improve Patient Satisfaction</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td>Reduce Lost Revenue</td> <td>●</td> <td>●</td> <td>●</td> </tr> </table>		High	Mod	Low	Improve Outcomes	●	●	●	Improve Efficiency	●	●	●	Improve Patient Satisfaction	●	●	●	Reduce Lost Revenue	●	●	●	
	High	Mod	Low																			
Improve Outcomes	●	●	●																			
Improve Efficiency	●	●	●																			
Improve Patient Satisfaction	●	●	●																			
Reduce Lost Revenue	●	●	●																			
<p>Risk (Leadership Perspective):</p> <ul style="list-style-type: none"> Lack of training and validation for frontline staff Lack of appropriate feedback and shared learning to leaders & staff Readiness to meet national standards and regulatory requirements 	<p>Goals: By end of CY 2023</p> <ul style="list-style-type: none"> Achieve the System CLABSI goal of a SIR of equal or better than the top 30% of the HMWB Vizient cohort Sustain or improve the hospital CAUTI SIR to achieve a rating of equal or better than the top 30% of the HMWB Vizient cohort 																					
<p>Financial Impact: Assuming 63% reduction in CLABSI to achieve goal</p> <table border="1"> <tr> <td>HAI Reduction Target</td> <td>Estimated Cost of CLABSIs (AHRQ)</td> <td>Cost Avoidance with IP&C</td> </tr> <tr> <td>CLABSI</td> <td>\$70,696</td> <td>\$ 494,872</td> </tr> </table>	HAI Reduction Target	Estimated Cost of CLABSIs (AHRQ)	Cost Avoidance with IP&C	CLABSI	\$70,696	\$ 494,872																
HAI Reduction Target	Estimated Cost of CLABSIs (AHRQ)	Cost Avoidance with IP&C																				
CLABSI	\$70,696	\$ 494,872																				

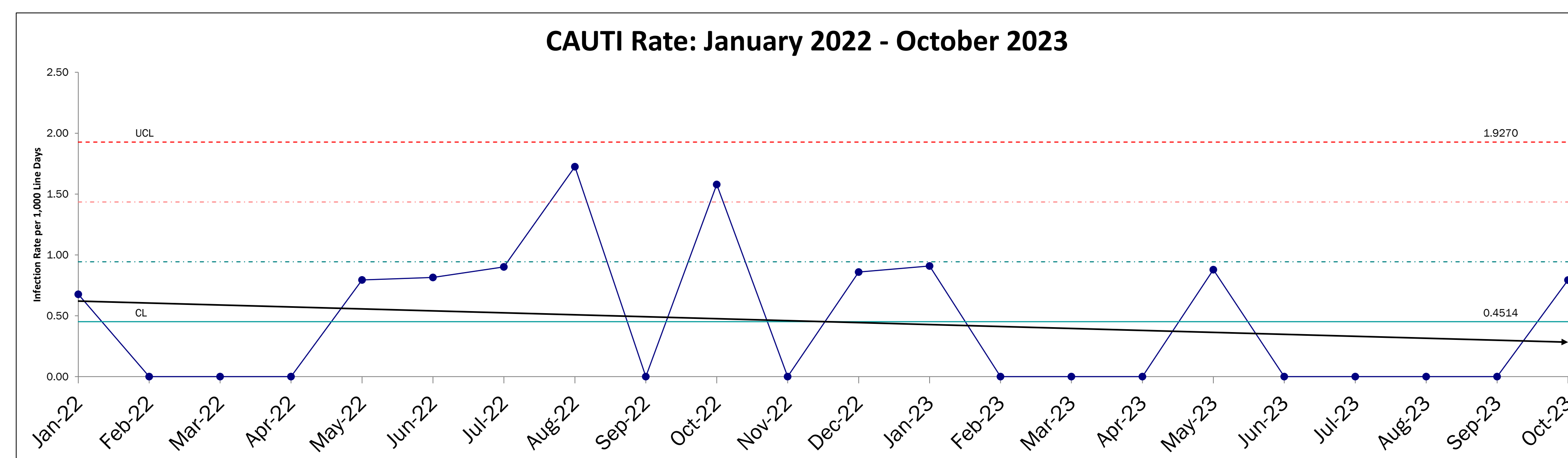
Communication Structure



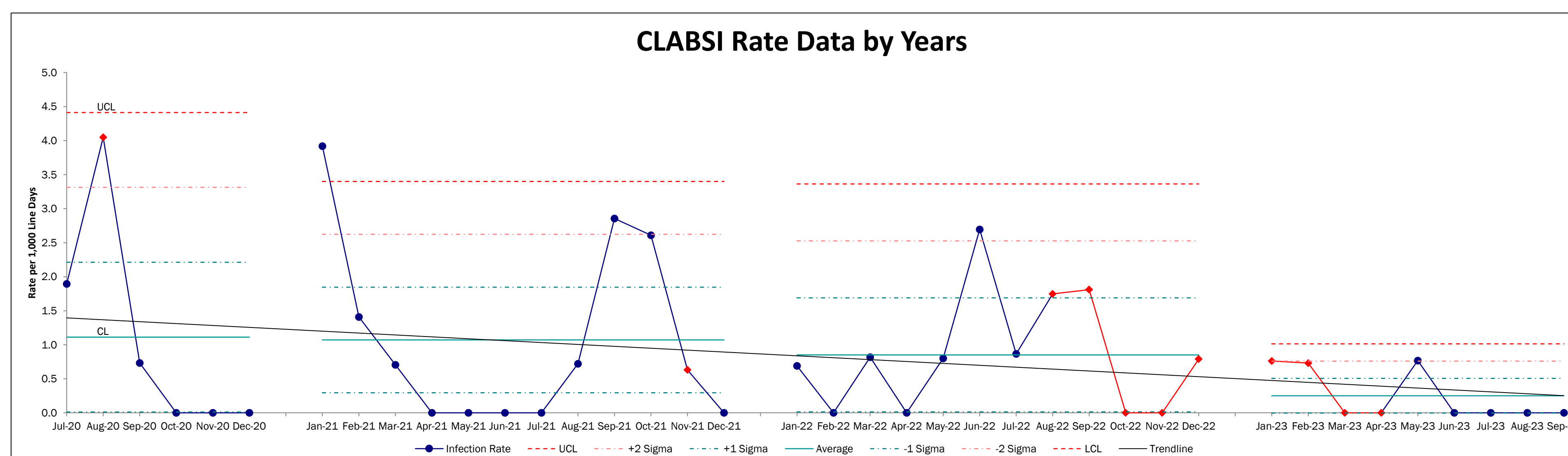
Results



Year	Infections	Predicted Infections	Central Line Days	SIR	P-value	95% CI
2022	12	12.017	14505	0.999	1	0.541, 1.698
2023 thru Oct	3	10.261	12708	0.292	0.0108	0.074, 0.796



Year	Infections	Predicted Infections	Urinary Cath Days	SIR	P-value	95% CI
2022	9	12.968	14637	0.694	0.2692	0.338, 1.274
2023 thru Oct	3	9.498	10960	0.316	0.0191	0.080, 0.860



Results

In 2022 there were 12 CLABSIs with a standardized infection ratio (SIR) of 0.999 and 9 CAUTIs with a SIR of 0.694. After creation of the steering committee and workgroup, January through October of 2023, there were 3 CLABSIs with a SIR of 0.292 representing a 70% reduction in central line-associated infections (Two-tailed p-value: 0.0442; 95% Conf. Interval: -93.4, -2.8) and 3 CAUTIs with a SIR of 0.316 representing a 54% reduction in catheter-associated infections (Two-tailed p-value: 0.2419; 95% Conf. Interval: -90.1, 61.1).

Statistical Process Control (SPC) Charts from 2020 – 2023 show less variation in CLABSI rates in 2023 and tighter control limits compared to that of previous years.

Conclusions

Statistical analysis from CLABSI data supports the creation of a multidisciplinary, executive lead steering committee in combination with a frontline staff lead subgroup to reduce hospital acquired infections.

Statistical Process Control (SPC) Charts indicate less variation in CLABSI rates in 2023 compared to that of previous years when processes were not as controlled and occurrences were highly unpredictable, indicating special cause variation.

Creation of the frontline workgroup that met every two weeks was proven successful with rapid cycle improvement as the hospital saw an immediate decrease in CLABSI and CAUTI occurrences within just 2 months of starting the program. The program showed sustained improvement in decreasing CLABSIs and CAUTIs along with continued engagement from all parties, from executives to frontline staff, indicating a robust program with long term benefits.

Acknowledgments

Bobbiejean Garcia, MPH, CIC, FAPIC; Velva Smith, MSN, RN, NE-BC, CMSRN; Nicole Twine, PhD, APRN, ACNP-BC, NE-BC; Mona Kapadia, MD; Thalia Casimire, MD, FCCP, MHA; Lastenia Holton, DNP, MBA, RN, CNML.

References

Central Line-Associated Bloodstream Infection (CLABSI): An Introduction.
<https://www.cdc.gov/infectioncontrol/pdf/strive/CLABSI101-508.pdf>

Results. Content last reviewed November 2017. Agency for Healthcare Research and Quality, Rockville, MD.
<https://www.ahrq.gov/hai/pfp/haccost2017-results.html>