

Human-Machine Partnership: Data-Facilitated, Targeted CLABSI Reduction in the Face of a Global Pandemic

Jefferson Health

Primary Contact Information:

- Oren Guttman, MD, MBA
Vice President, High Reliability and Patient Safety
Edward Asplundh Chief Quality & Safety Officer – Abington
Associate Professor of Anesthesiology
- Oren.Guttman@jefferson.edu
310-595-6642

Clinical Project Lead:

- Kelly Zabriskie
Enterprise Vice President – Infection Control
- Kelly.Zabriskie@jefferson.edu
- 732-330-6356

IT Project Lead:

- Cara Martino, MSN, RN
Director of Quality and Safety Analytics
- Cara.Martino@jefferson.edu
- 215-237-4852

Executive Summary

From calendar year 2019 (CY19) to calendar year 2020 (CY20), as the world grappled with climbing COVID-19 cases, central line-associated blood stream infections (CLABSI) in the United States saw a 24% increase in the national standardized infection ratio (SIR), and a 22% increase in Pennsylvania.¹ At Jefferson Health, which comprised two divisions with six acute care hospitals on a common electronic medical record (EMR) at the time, CLABSI SIR increased by 3.98% over the same period. While this infection rate was lower than at national or state levels, even a modest increase in CLABSI SIR leads to higher patient morbidity, mortality, and longer hospital stays—threatening patient health and taxing hospital resources already strained by the novel coronavirus. Enmeshed in a global pandemic, handling the highest number of COVID-19 cases in the region, and staring down a February 2021 merger onto a single EMR that would see expansion to four divisions and eleven acute care hospitals, work was already in motion at Jefferson Health to

address the issue of rising numbers of CLABSI cases. In Fall 2019, Jefferson Quality and Safety leadership identified five to six hot-button quality and safety measures for intensified focus and action planning: CLABSI, catheter-associated urinary tract infection (CAUTI), clostridioides difficile (C.Diff), restraint management – violent and non-violent, and venous thromboembolism) (VTE). The Jefferson Enterprise Analytics team then incorporated these measures into a new Epic Radar dashboard aimed directly at preventing and treating them, called the *OnPoint Quality and Safety Huddle Dashboard* – custom-built by the Jefferson team. The platform was designed to be immediately interpretable with big, easy-to-read meters, much like a car's dashboard, and would provide all that the user needed to take corrective actions, at the push of a button. Released in a phased approach through CY20 and CY21, the *OnPoint Quality and Safety Huddle Dashboard* led to a marked decrease in CLABSI SIR in each division following implementation, culminating in a 28% reduction in CLABSI SIR for the health system as a whole in CY20 to CY21.

Lessons learned include:

Avoid mission creep. Often, a tool like the *OnPoint Quality and Safety Huddle Dashboard* runs the risk of becoming ineffective, by virtue of trying to make it inclusive of every imaginable issue faced in the hospital. Opportunities for improvement then get lost in the noise of having too many measures, being packed too tightly, and the impact of, "if everything is important, then nothing is important." At every stage of development, it is vital that the team remains focused on the key objectives and measures that will have the greatest impact.

Build in time to refine. Over the course to full deployment, the process measures informing central line care compliance were revisited more than once, with more nuance added each time to better reflect the reality of patient care.

Alignment is key. Discovery of a lack of full alignment, which impacted tracking ability, led to full enterprise alignment on standardized central line dressing change procedures and policy.

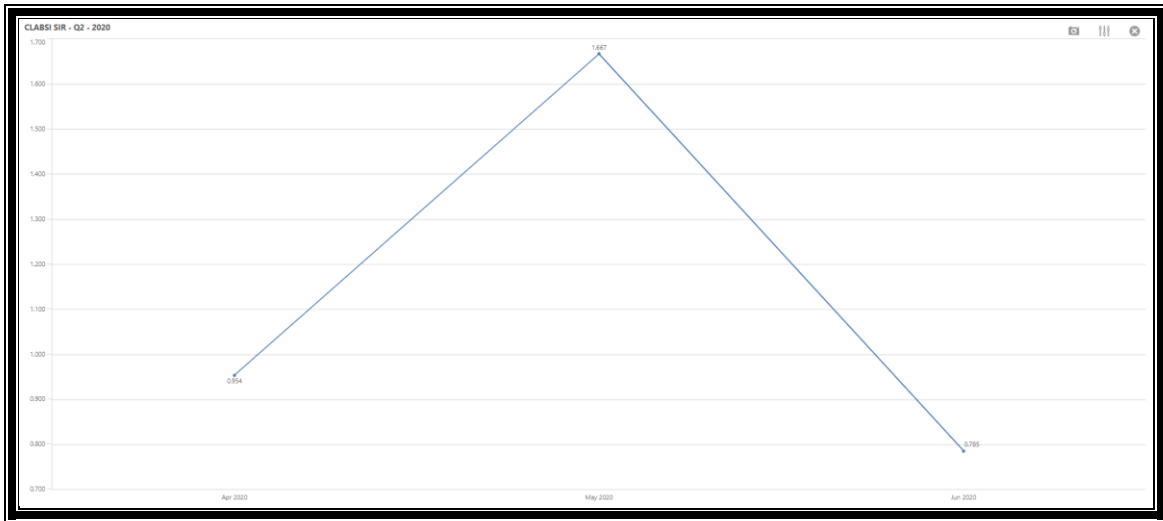
Education is critical to adoption. While real-time data is a critical element of the dashboard, it became clear during development/dashboard testing that more end user education would be needed to understand the difference in supporting report structure and timing, versus batch job timing for the report driving the dashboard. The slightest difference in time of report runs, which is inevitable, could wind up showing different numbers—both being accurate, dependent on the time of each run. Dashboard workshops were held virtually and, ultimately, tip sheet links were embedded directly on

the dashboard, to always ensure immediate access to the most current version of education on the tool.

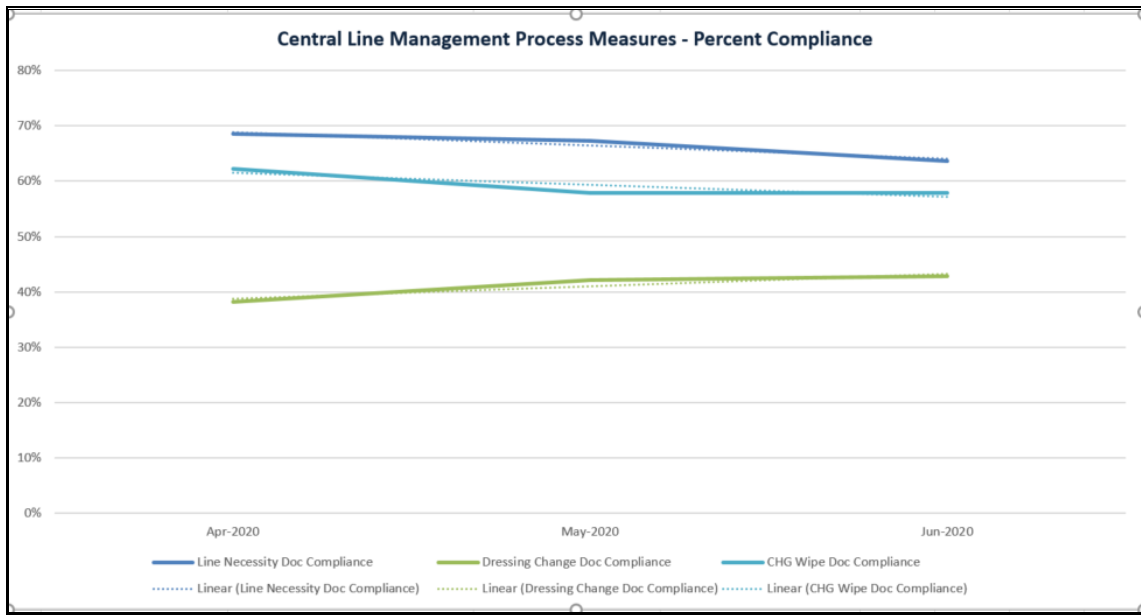
Define the Clinical Problem and Pre-Implementation Performance

According to the Centers for Disease Control (CDC), approximately one in 31 U.S. patients contracts at least one infection in association with his or her healthcare treatment. CLABSIs raise patient mortality by 12-25%, prolong hospital stays, increase morbidity, and the CDC estimates attributable CLABSI cost at approximately \$70,696 per episode, with a range of \$40,000 to \$100,000.² Studies have estimated that CLABSIs account for between 84,000 and 204,000 infections per year, resulting in up to 25,000 preventable deaths. Evidence-based practice guidelines have been recommended to reduce the risk of CLABSI—including catheter choice, catheter site selection, insertion technique, and catheter maintenance.³

Since 2015, Jefferson Health has grown exponentially from a three-hospital network in Philadelphia to the region's largest health system, spanning three Divisions: Center City (Thomas Jefferson University Hospital, Jefferson Hospital for Neuroscience, and Methodist Hospital), Jefferson New Jersey (Washington Township, Cherry Hill and Stratford Hospitals), and the Northern Division (Abington, Lansdale, Torresdale, Bucks, and Frankford Hospitals). With these mergers, gaining insight into and alignment around policy, procedure, and compliance for central line management was paramount. Parallel efforts surrounding central line management and CLABSI reduction were already in place during the ramp up phase of the *OnPoint Quality and Safety Huddle Dashboard*. A temporary action group (TAG) had been underway to zero in on process measures impacting CLABSI. Our Enterprise Vice President for Infection Control's team was able to provide clear detail around the metrics to target. Synergies were readily gained by placing primary focus on CLABSI, and the pandemic and subsequent high volume of critically ill patients only sharpened our focus. As seen below, compliance with leading measures for central line management were well below optimal levels, not adhering to Jefferson's CLABSI bundle goals.



Above: Quarter 2, Calendar Year 2020 performance – CLABSI SIR



Above: Quarter 2, Calendar Year 2020 performance – compliance with central line management process measures

The CDC's National Healthcare Safety Network (**NHSN**) serves as steward for SIR, not just for CLABSI, but for other hospital acquired infections (HAI) as well. SIR compares the actual number of HAIs reported (numerator) to the number predicted (denominator), given the standard population (i.e., NHSN baseline), adjusted for several risk factors that have been found to be significantly associated with differences in infection incidence. The SIR is only calculated when the number of predicted infections is at least 1.0.⁴ CLABSI events

reported as mucosal barrier injury, or with extracorporeal life support (ECMO), or a ventricular assist device (VAD) are excluded from the numerator of the CLABSI SIR.⁴

Given that Jefferson assesses performance in line with the fiscal year measurement period, the goal for fiscal year 2021 (FY21) CLABSI SIR was aggressively set in line with the NHSN target of 0.633. While SIR remained our enterprise target, we also enhanced long-term tracking of the process measures for central line management that have been shown to reduce CLABSI occurrence.

Design and Implementation Model Practices and Governance

The request for the original concept of the dashboard that became the *OnPoint Quality and Safety Huddle Dashboard* came from the Center City Divisional CNO (chief nursing officer). As the tool evolved, ownership expanded to include a governance body comprising an established nursing leadership committee that meets regularly, whose members include CNOs, innovation unit nurse managers, nursing informatics, and infection control leadership — all with full enterprise representation. This governing body ensures operational ownership of all build change decisions, adherence to hospital policy, and alignment maintained across the hospitals utilizing the dashboard twice daily in AM and PM safety huddles, held by every inpatient nursing unit across each hospital. The Director of Quality and Safety Data Analytics presents updates related to the tool's utilization and evolution monthly to the full CNO leadership group, from which the original concept emanated. That group has allocated decision-making for changes to the dashboard to the governance body.

**OnPoint Quality & Safety Huddle Dashboard
Governance Committee**

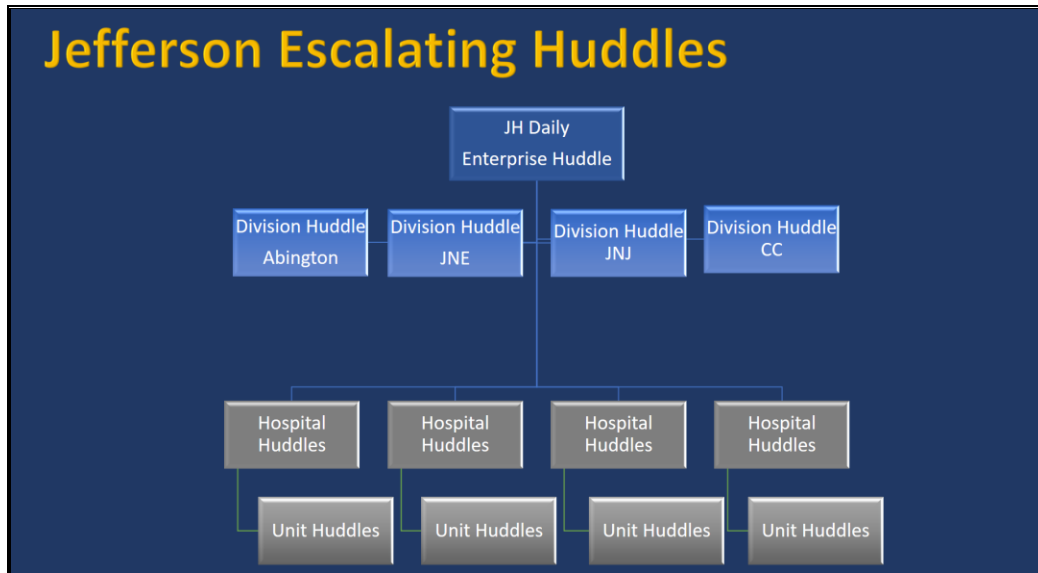
Infection Control	Nursing	Nursing Informatics	Enterprise Analytics
Enterprise VP	Divisional CNOs	Divisional Nursing Informatics Directors	Director Quality & Safety Analytics
Infection Preventionist CC	SVP Nursing Professional Practice	Epic Clinical Documentation Team	Director Enterprise Business Intelligence
Infection Preventionist JNJ	EVP Chief Nursing Executive		Manager Quality & Safety Analytics
Infection Preventionist ABH	Nurse managers		Manager Enterprise Business Intelligence
Infection Preventionist JNE			Business Intelligence Developer
			Business Intelligence Analyst

Dashboard Governing Body

Working closely with nursing leadership and infection preventionists (IP) from the outset, the Enterprise Analytics team consulted closely with the Epic@Jeff Project team to ensure correct data points were pulled. A pilot version of the *OnPoint Quality and Safety Huddle Dashboard* was prepared by early February 2020, and the pilot dashboard was distributed to four nursing innovation units across the two Jefferson divisions that were live on Epic at that time (Center City and New Jersey). Live education sessions were held with pilot units and IPs prior to pilot launch, and feedback from these groups led to rapid refinements of the initial dashboard. Reviews were strongly favorable. After COVID-related delays at the onset of the pandemic, the dashboard went live for Jefferson Center City Division's three hospitals in July 2020, followed by the New Jersey Division's three hospitals in October 2020. By March 2021, the dashboard was fully live, across all divisions and hospitals, having been incorporated directly into go live training for the northern divisions.

Requests for enhancements or changes can come in from any user or interested party, but the governing body ultimately decides what is implemented. Testing is carried out by the Enterprise Analytics team and reviewed before release by subject matter experts from the governing body. Enterprise Analytics works in coordination with Nursing Informatics to disseminate use and education to frontline users, which range from nurses on every unit up to C-suite executives—CNOs, CQOs, SVPs, EVPs—all of whom utilize the dashboard. Education is provided via multiple channels – live (pre-pandemic), virtual, video, and written.

With the need for real-time data to drive this initiative, the Epic EMR was the natural choice to serve as the foundational tool in partnership with nursing units. While regular safety huddles were already part of existing nursing workflow, the addition of the *OnPoint Quality and Safety Huddle Dashboard* exponentially raised the focus and effectiveness of the huddles. The dashboard proved so popular with frontline staff and the executive suite that it was trained as part of the go-live workflow expectation when new Jefferson divisions joined Epic. Once the tool was fully implemented across the enterprise, escalating huddles were developed up the chain of command.



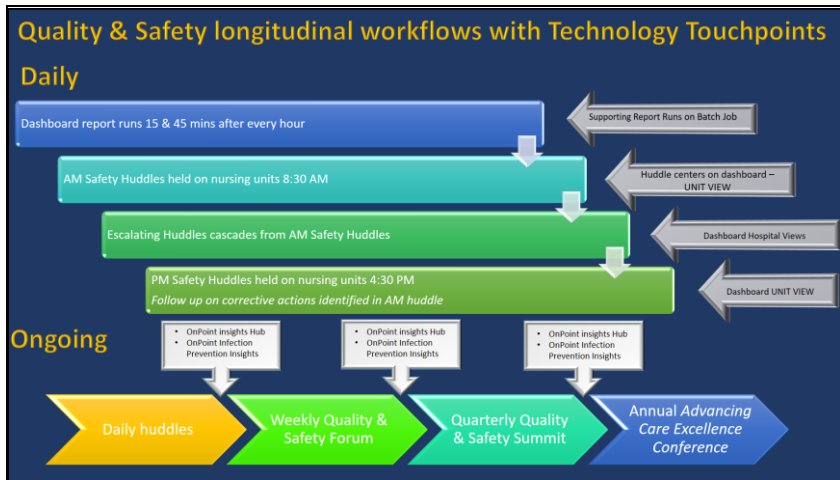
Jefferson Escalating Huddles

Clinical Transformation Enabled Through Information and Technology

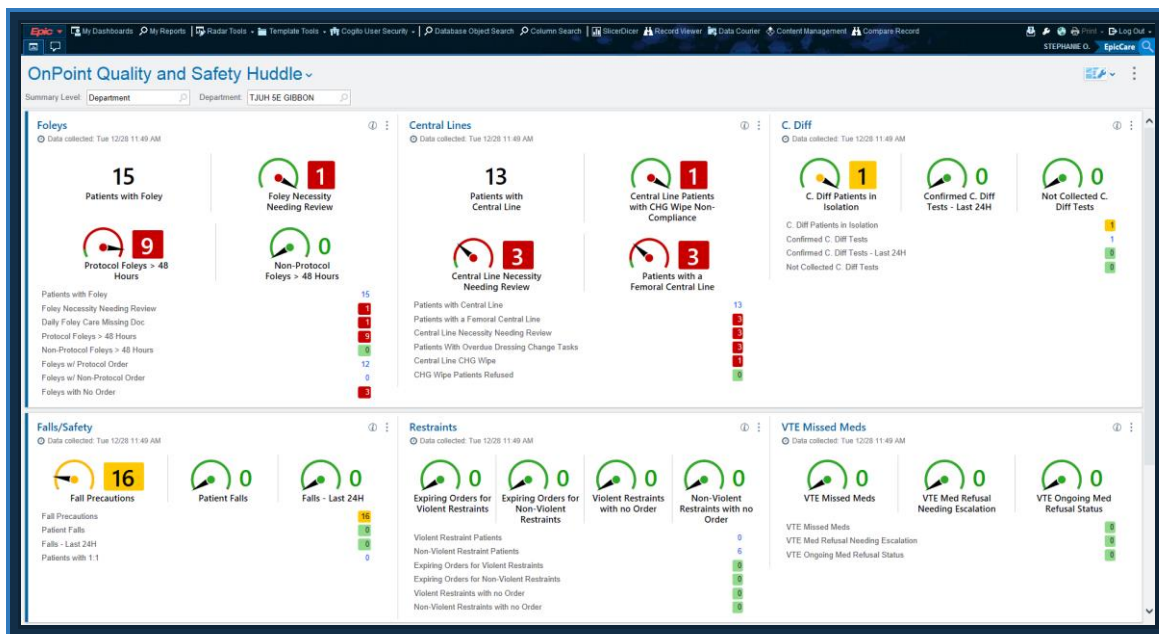
Every aspect of the *OnPoint Quality and Safety Huddle Dashboard* was fully custom built by a highly skilled Jefferson Health Enterprise Analytics development team possessing both clinical and technical backgrounds, with thoughtful input from experienced Jefferson clinicians. This dashboard was driven by custom rule build, automated to run the massive report supplying the metrics on a batch job every thirty minutes, timed to be fully ready when huddles are held, and designed to ensure metrics are always up-to-date without users—nursing, IPs, CNOs—having to wait for the report to run. Every detail mattered, and because all levels of the organization were engaged, the team made sure that the dashboard provided views of each metric at the unit level, the hospital level, and the enterprise level.

Established clinical workflows were augmented and enhanced by the use of the *OnPoint Quality and Safety Huddle Dashboard*. Instead of presenting additional work, documentation, and boxes to check, the dashboard was designed to work as a true partner, allowing frontline clinicians to address issues and facilitate interventions most efficiently. Below is a pictorial representation of the regular workflows, followed by the same image with indications of points where technology has been interwoven to drive the clinicians to meeting the standard of care. The pre-existing workflow primarily consisted of the daily safety huddles at each shift change, and decision support in the way of tasks added to nursing tasks lists upon central line insertion. Central line insertion also triggers a background BPA (best practice advisory) which adds central line education points to the patient education plan – but that education remains to be carried out and documented

as such. Central line order panels should be used, and our embedded detail reports clearly call out if the appropriate panel has not been placed. Incorporation of the dashboard's regular use serves to provide additional decision support — which is not interruptive — but provides pertinent details at a glance, such as whether a given patient is on pressors, TPN, or undergoing chemotherapy. The implementation of our data and technology tools (real-time in Epic) as well as longitudinal data tracked in our third-party business intelligence tools, grew into the addition of the escalating huddles—now that upper levels of operations were afforded full transparency into performance across these areas. Each level ensures additional layers of accountability — local leadership assesses workload distribution and directly assigns staff when gaps in central line care are identified. Overall increased awareness of opportunities for improvement and open discussion in huddles centered on just-in-time data at the point of care provides social accountability embedded within a well-supported, safety-focused culture.



The dashboard was designed by the Jefferson Health Enterprise Analytics development team with efficient usability in mind. The original concept was that, even without any training, a user could interface with the dashboard and have an understanding of which issues require attention. The tool was bolstered with ample inclusion of detailed descriptions indicating precisely what feeds each metric, giving the user an indication of how to rectify the situation most efficiently. Even with a user-friendly presentation, training was provided virtually, with training session recordings initially made available for asynchronous training as well. Detailed tip sheets were also linked directly on the dashboard itself, affording access at point of use to the most updated education on the tool.



Dashboard as it would appear in daily use, set at a unit view level. Clicking on the "I" icon within any component provides full detail on derivation of the metrics in that component.

Helpful Links

Tip Sheets
[OnPoint Quality and Safety Huddle Tip Sheet](#)
[Onpoint Quality & Safety Huddle Central Line Report Tip Sheet](#)

OnPoint
[OnPoint Reporting & Feedback](#)
[OnPoint Insights Qlik Stream](#)

OnPoint Nursing Performance Dashboard
[OnPoint Nursing Performance](#)

Service Now Request
[Open a Service Now Report Request](#)

Link on dashboard – to tip sheet, as well as longitudinal reporting

A click into any metric on the dashboard will run a supporting detail report on demand. The detail report for central lines provides patient-level detail. From here, the patient chart can be entered directly to speed up the action being taken. Information provided here has been expanded as the tool has been used and feedback gained. Each addition seeks to improve clinician efficiency in meeting standard of care compliance.

IP Find Central Line Patients (Department) - T [9676313] as of Sat 3/5/2022 6:05 PM

Age	Admit Date/Time	Department	Central Line Hours	Femoral CL	CVC Dressing Change	Line Necessity Review	va Dressing Change	CHG Wipes	Central Line no Placement	CHG Wipe Refuser	CL Panel	Vasopressor	TPN	Current Treatment Plan
37	01/05/2022 0635	TJUH 4W GIBBON	354.09	+	3/7/2022	✓	!	✓			✓			IP GYN VPCBAE
42	02/16/2022 0448	TJUH 4W GIBBON	195.54		3/8/2022	✓		✓			✓			None
52	02/27/2022 0657	TJUH 4W GIBBON	98.91		3/12/2022	✓		✓			✓			None
70	03/01/2022 0654	TJUH 4W GIBBON	90.74	+	3/7/2022	✓		✓			✓	✓		None
74	02/26/2022 0836	TJUH 4W GIBBON	186.09	+	3/7/2022	✓		✓			!	✓		None

Allergies (Reviewed on: 03/02/22)
 No Known Allergies

Medical Problems

Hospital Problem List	ICD-10-CM	Priority	Class	Noted	PGA	Never Reviewed
Fall	W19.XXXA			2/26/2022	Yes	
Encounter for geriatric assessment	Z01.89			2/28/2022	Not Applicable	
Nonischemic cardiomyopathy (CMS/HCC) (Chronic)	I42.8			2/28/2022	Unknown	

5 of 5 results loaded

Central line detail report (with several patient information columns removed) — provides details necessary to aid clinician in meeting standard of care compliance.

The dashboard has become a trusted partner, and usage has steadily increased since its inception. A Service Now ticket system link is available directly on the dashboard as well, encouraging continued feedback and immediate communication of any perceived inaccuracies.



OnPoint Huddle Dashboard utilization trend since Center City division launch, July 2020.

As a result of these efforts, the *OnPoint Quality and Safety Huddle Dashboard* allows performance across eleven hospitals to be seen from the highest to the most granular level, instantly. In tandem with the dashboard build, Enterprise Analytics also developed the analytical tools to allow long-term tracking of both these leading measures and the lagging measures they were focused on impacting.

The statistics show the impact. After launching the dashboard in July 2020 for Jefferson's Center City Division (three hospitals), and October 2020 for the New Jersey Division (three hospitals), CY20 TO CY21 saw a 16% decrease in CLABSI SIR. After full implementation of the dashboard in March 2021, CY20 to CY21 saw a 28% decrease in CLABSI SIR for the enterprise as a whole. If we further isolate the five hospitals that did not join the Epic EMR until March 2021, these hospitals displayed a combined 40% decrease in CLABSI SIR after gaining access to the *OnPoint Quality and Safety Huddle Dashboard*.

	Two Divisions - six hospitals - (CC & JNJ)	Four Divisions - eleven hospitals - (CC, JNJ, ABH, JNE)	Divisions joined Epic EMR March 2021 - five hospitals - (ABH, JNE)
CLABSI SIR			
Percent change in CLABSI SIR: CY19 to CY20	3.98% ↑	11% ↑	22% ↑
Percent change in CLABSI SIR: CY20 to CY21	16% ↓	28% ↓	40% ↓
Process Measure Performance			
Line necessity documentation: CY19 to CY21	62.1% to 80.0%		
Dressing change compliance: CY19 to CY21	46.2% to 50.5%		
CHG wipe compliance: CY19 to CY21	44.3% to 67.9%		

CC = Center City
 JNJ = Jefferson New Jersey
 ABH = Abington
 JNE = Jefferson Northeast

Improving Adherence to the Standard of Care

Jefferson's goal from the outset was to pursue proactive means of reducing the occurrence of CLABSI, rather than reacting months down the line to data reflecting performance in the form of the SIR. The *OnPoint Quality and Safety Huddle Dashboard* has, thus far, delivered on this goal. It has been so effective, in fact, that the enterprise CLABSI bundle has been updated to include the dashboard as a focal point in continuing to improve performance.

Preventable Harm Initiative **ONPOINT**

CLABSI Enterprise Bundle

2 Person Dressing Change

Who: Nursing staff (RN or above)

What: Dressing changes will occur with a 2nd person observer.

Tools:

- Central Line Dressing Change Instructions
- Blood Culture Procedure
- Blood Draw Procedure
- Epic Task CHG Bath
- Epic Task Dressing Change

How:

- Monitor Epic Alerts for Dressing Changes & CHG Bath Tasks
- Find 2nd observer for dressing change
- Follow "Central Line Dressing Change" instructions.
- Observer to stop the dressing change if protocol is not followed.
- Document in Epic & co-sign with observer.

Enterprise Standards:

- Doesn't matter when the patient's dialysis day is, dressing changes will occur on Monday.
- If the dressing is soiled, coming off, or compromised it should be changed as soon as identified (this includes the dressings of dialysis patients). Providers need to look at dressing every day.
- Dressing changes are done on Monday.

Observed Line Placement & Infection Control Timeout

Who: Insertor (Attending, fellow, resident, APP, RN) Observer (Attending, fellow, resident, APP, RN, Trained MA), CLABSI Unit Champion

What: Central line placements will occur with a 2nd person observer and include an infection control timeout.

Tools:

- Observed Central Line Placement & Infection Control Checklist
- Epic
- Central Line Maintenance Audit Tool / RedCap

How:

- Observed Central Line Placement & Infection Control Timeout
 - Insertor will find 2nd person observer.
 - Insertor begins the process by stating, "Patient safety is a team effort, I expect you to stop me if you see or even suspect that I may have broken the sterile field."
 - Observer completes the top of half of document prior to insertion.
 - Prior to insertion, the observer reads out loud from the "Infection Prevention Safety Practices of Insertor" to the end of the checklist ensuring each step is followed.
 - Observer to stop the line placement if any of the above measures are not followed & the process will need to be re-started.
 - Insertor places the line and follows regular protocol.
 - Document insertion in Epic with co-signer.
- Central Line Maintenance Audit
 - Audit will be completed monthly by the CLABSI champions or designees using the tool in RedCap.
 - Infection Prevention to review RedCap Audit Data
 - Infection Prevention/Nursing to bring data to CVC Committee/CLABSI Committee

Enterprise Standards:

- Limit attempts to 2 and/or get a new person or new device.
- Observer can be patient's nurse, another floor nurse, charge nurse, resident, medical assistant.
- Orders for each blood draw are to be used if no other access lines. If done, document the reason.

Visual Management

Who: Nurse Manager / Charge nurse, CLABSI Unit Champion or designee, Nursing Staff

What: Visual management will be emphasized and incorporated into daily workflows.

Tools:

- OnPoint Quality & Safety Huddle Dashboard
- Patient Metric Board

How:

- Patient Metric Board
 - CLABSI Champion updates on a daily basis with 2 metrics: 1) # of Central line days, 2) if CHG bath was done that day (yes/no)
- Quality Huddle Dashboard
 - Nurse manager/charge nurse review the Quality Huddle Dashboard at least 2x daily during shift changes.
 - Team to huddle around dashboard and discuss lines to determine if they can be removed or if any daily care needs to be done.

Enterprise Standards:

- Unit councils will review CLABSI data.
- Quality Huddle Dashboard will be reviewed for CLABSI data at least 2x daily.
- ICU Physicians round on metrics.
- Patient Metric Board in the patient's room & updated daily.

Patient & Family Centred Education

Who: Nursing Staff, Provider

What: Patient education will be provided before, during and after the line is placed.

Tools:

- CLABSI in the Hospital (PDF) in Epic
- CLABSI At Home (PDF) in Epic

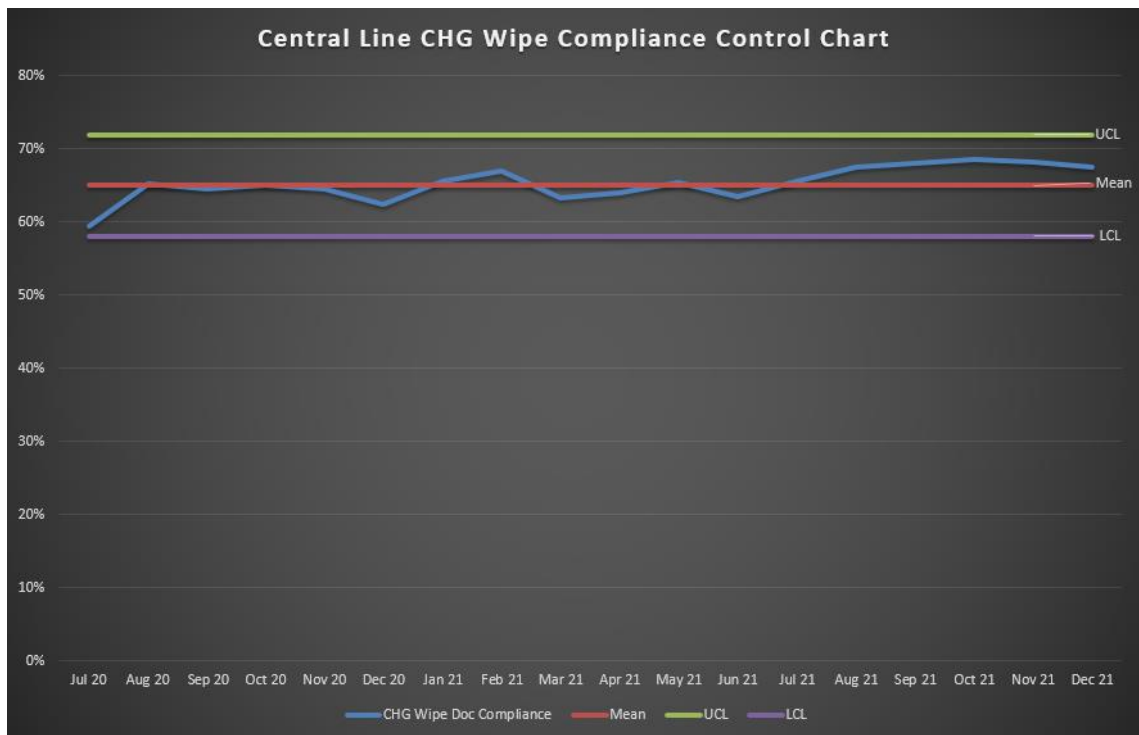
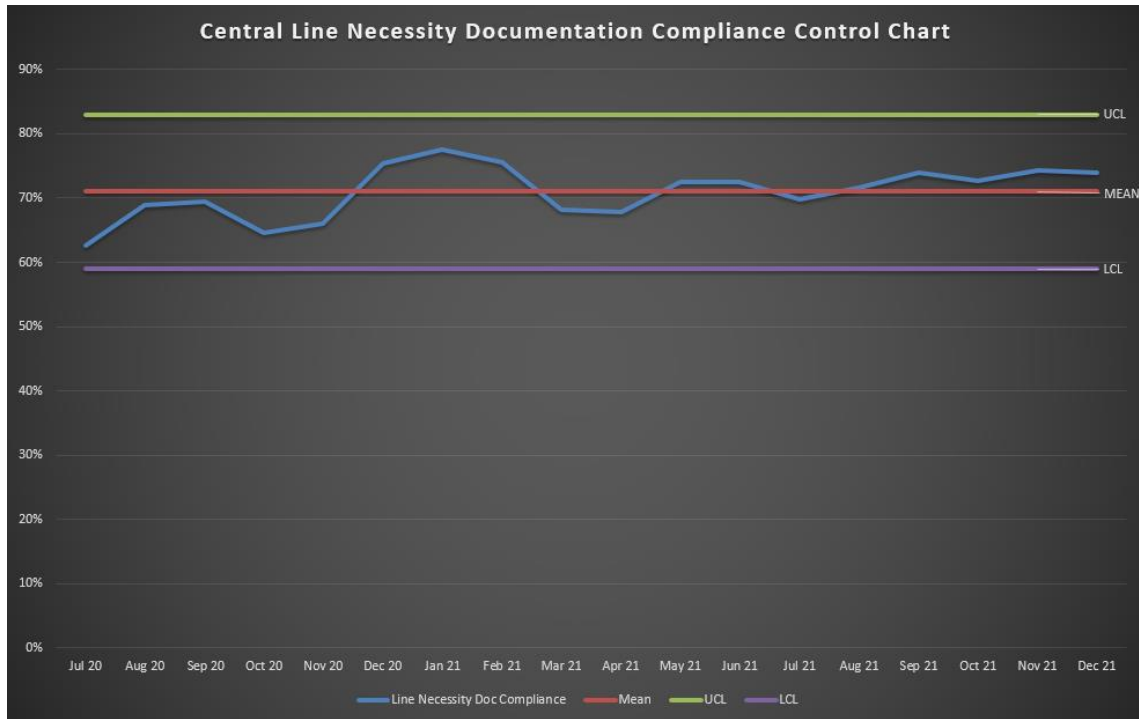
How:

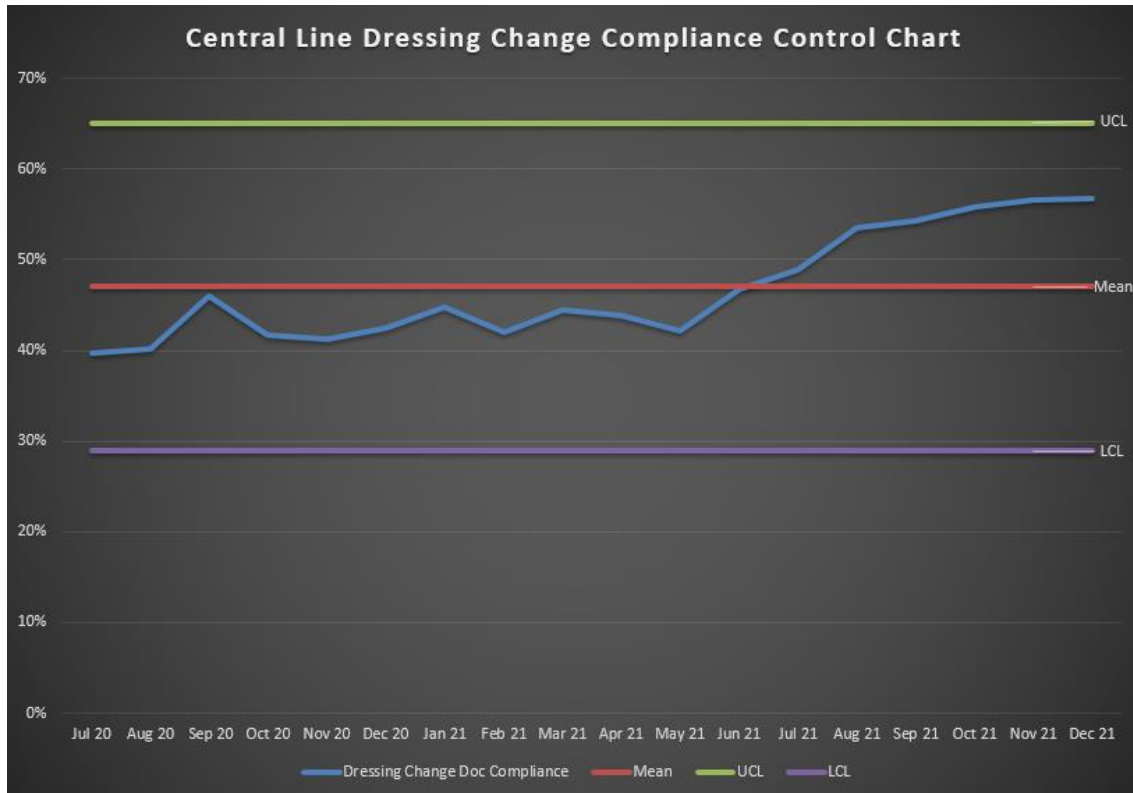
- Put up handout in Epic to review
- Before the line, Provider starts with consent/insertion/discussion of PICC lines & uses "CLABSI in the Hospital" to provide education
- During/After line: Primary nurse/team assigned to patient uses "CLABSI in the Hospital" to provide education
- After the line discharge, Primary nurse/team assigned to patient uses "CLABSI At Home" to provide education
- Document in Epic that education was provided

Enterprise Standards:

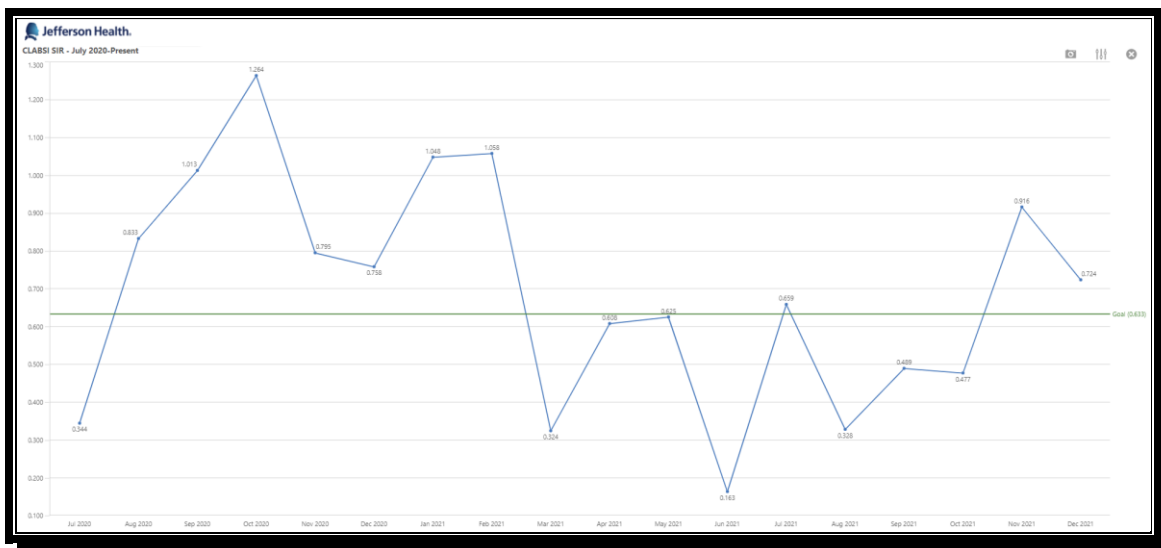
- Handouts will live in the Education Independent section in Epic
- Documentation will occur in Epic when education is provided.
- If patient is not able to be educated (no family/support present, document in Epic)

When it comes to the dashboard's effectiveness in improving adherence to the standard of care at Jefferson, a closer look at the central line care process measures that we set out to better control compliance with, by way of the *OnPoint Quality and Safety Huddle Dashboard* implementation, tells the tale as illustrated below. These efforts have all served to move Jefferson in the right direction, but as evidenced in the remaining gap to move ever closer to zero patient harm, the impact of the ongoing COVID-19 pandemic on nursing staff, not only in terms of attrition, but also the stress, trauma, and fatigue suffered by frontline caregivers – is recognized. Jefferson has launched multi-pronged strategies to bolster nurse staffing levels, ensure availability of a pool of highly skilled nursing personnel ready for deployment in areas determined to be at low staffing levels, provide peer-to-peer psycho-social response teams, and initiated innovative programs in conjunction with the university nursing program to accelerate practical, experience-based education for the next incoming wave of nurses.





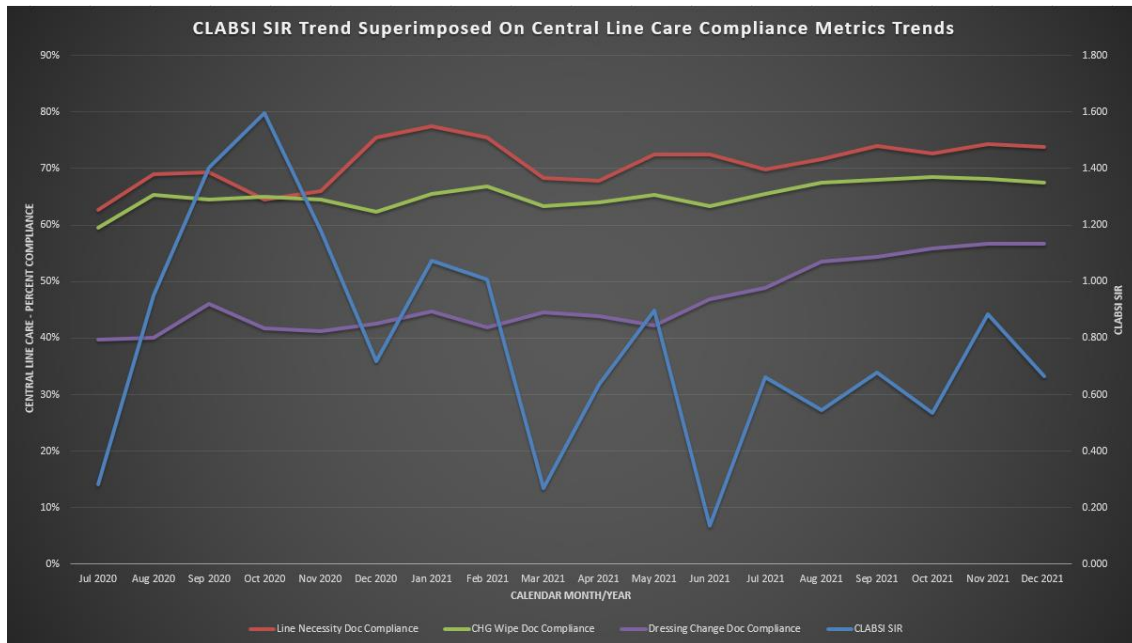
The overall proof of concept is in the NHSN's benchmark figures. Collectively, as an enterprise, Jefferson has shown a 28% decrease moving from a SIR of 0.839 for CY20, to a SIR of 0.604 for CY21. The data we track here is straight from NHSN, pulled directly by our Infection Control team and utilized in our business intelligence platform by Enterprise Analytics. The target line indicates the NHSN 2021 national CLABSI SIR goal of 0.633. Jefferson's current CLABSI SIR is 0.604 for CY21.



Jefferson Health CLABSIR – July 2020 to December 2021 (inclusive of 4 divisions, 11 acute care hospitals)

Improving Patient Outcomes

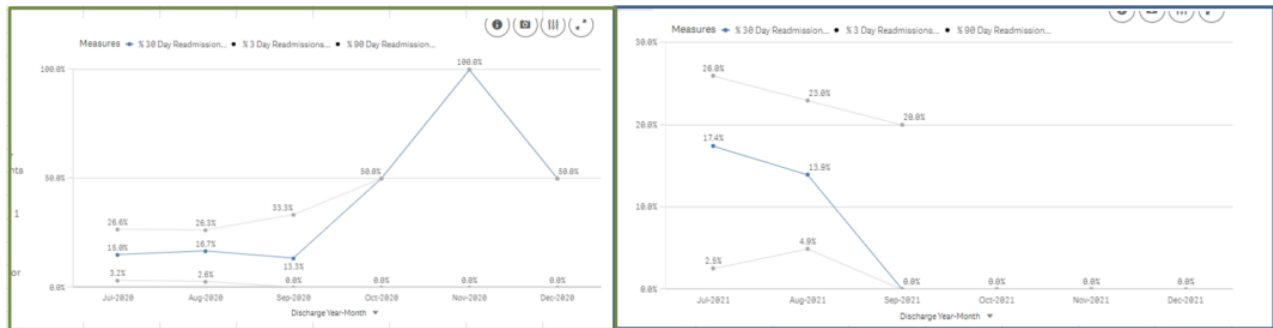
The key metric of focus in this case is CLABSIR. CLABSIR is a reflection of the occurrence of life-threatening bloodstream infections associated with a central line that was part of the patient’s care. As seen in the trend chart below, Jefferson’s CLABSIR showed a clear downward (improved) trend over the time period since implementation of the *OnPoint Quality & Safety Huddle Dashboard*. We can also see, in this view, that key central line management process measures showed an upward trend in compliance (improved) over this same period.



Decreasing incidence of CLABSI creates a positive ripple effect that improves other patient metrics as well. To demonstrate this positive impact, the team pulled a sample of 800-900 patients from July 2020 onward (based on admission dates), and from July 2021 onward, and examined within our business intelligence platform (Physician Hospital Insights) for comparison. Below are some of the noteworthy observed differences. The value-added impact of the OnPoint program cannot be overstated in helping to move Jefferson toward established 5% reduction targets for length of stay and case mix index, moving toward the 7.5% reduction stretch targets for these metrics. Benchmarking risk-adjusted performance against other Vizient member hospitals, Jefferson optimistically anticipates movement into top decile performance in this area.

	July 2020 Onward By Admission Date	July 2021 Onward By Admission Date
	Sample Size 898	Sample Size 832
LOS average	15.89	12.09
LOS variance to GM LOS	8.75	5.69
CMI (Case mix index)	4.14	3.50

Sampling of patients with central lines from start of intervention, and from later in implementation of intervention, as seen in Jefferson PHILI app.

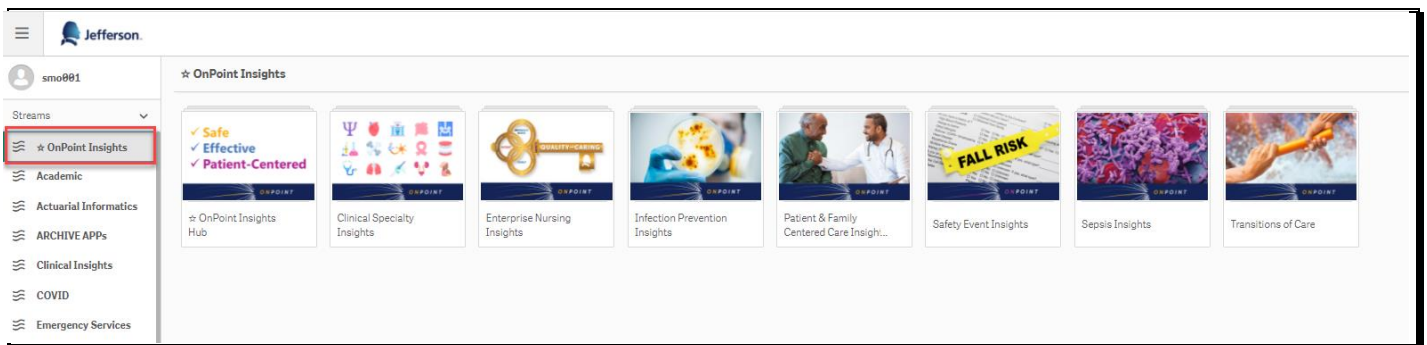


Above: left shows readmission trends for sample from July 2020 on; right shows readmission trend for sample from July 2021 on

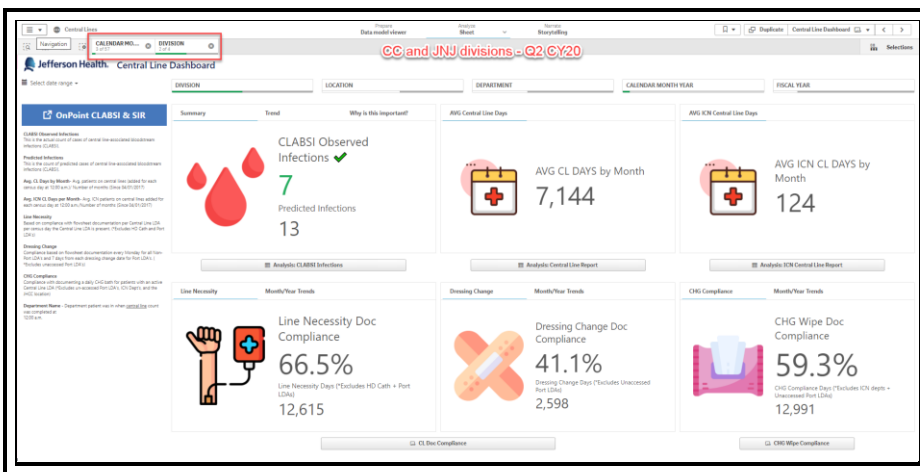
These improvements provide strong encouragement to continue this work and push for greater improvements, always with the goal of zero patient harm in mind. Every step taken to improve the standard of care and, in turn, patient outcomes, is a step in the right direction.

Accountability and Driving Resilient Care Redesign

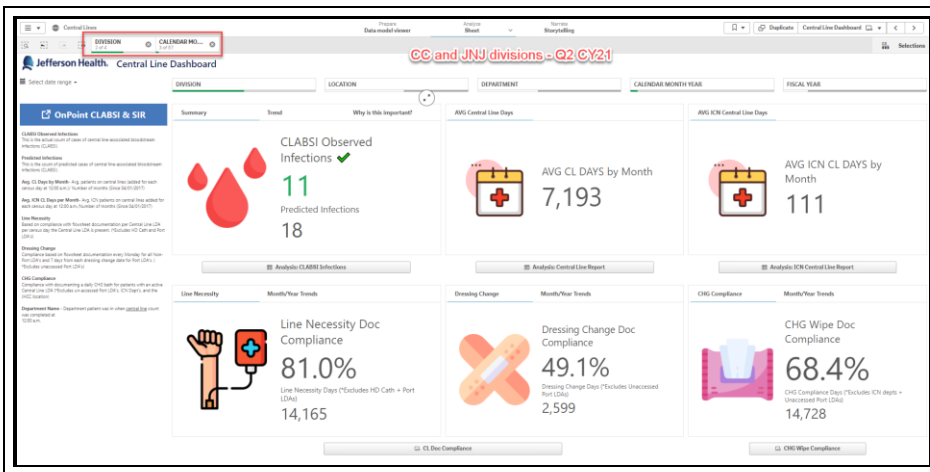
Jefferson Health is a *mission-driven* and *data-informed* organization. Our vision to reimagine healthcare delivery to create unparalleled value is directly fueled by the real-time tools in our Epic EMR (such as the dashboard and reports presented in this case), which places the right data, at the right time, into the hands of those best positioned to take action on it. Every level of the organization is increasingly embracing the power of technology and data to drive improvements in patient care. This is seen in the escalating huddle process, as well as the commitment of quality and safety teams across all divisions coming together weekly, quarterly, and annually—to keep accountability for pursuing higher levels of quality and safety for our patients at the fore. It can also be seen in the growing number of Jefferson's OnPoint applications that focus on key quality and safety areas and how we, as a health enterprise, are performing in them.



The real-world impact of these technologies can be seen in the following snapshots, which show a direct comparison of central line management process measures across the first two divisions to implement the *OnPoint Quality & Safety Huddle Dashboard*. In just one year between Q2 CY20 and Q2 CY21, there was substantial improvement in line necessity documentation (22.8% improvement), dressing change documentation (12.2% improvement), and CHG wipe documentation (15.3% improvement). These improvements directly impact care quality and safety and empower the health system to continually elevate the standard of care across the entire enterprise.



Above: Center City and JNJ divisions' central line management compliance Q2 CY20



Above: Center City and JNJ divisions' central line management compliance Q2 CY21

HIMSS Global Conference Audience Guidance

Topic Guidance: Check three that apply to this case study:

Clinical Informatics and Clinician Engagement	Healthy Aging and Technology
Clinically Integrated Supply Chain	✓ Improving Quality Outcomes
Consumer/Patient Engagement and Digital/Connected Health	Innovation, Entrepreneurship, and Venture Investment
Consumerization of Health	Leadership, Governance, and Strategic Planning
Culture of Care and Care Coordination	Population Health Management and Public Health
✓ Data Science/Analytics/Clinical and Business Intelligence	Precision Medicine and Genomics
Disruptive Care Models	✓ Process Improvement, Workflow, and Change Management
Grand Societal Challenges	Social, and Behavioral Determinants of Health
Health Informatics Education	Telehealth
Health Information Exchange	User Experience (UX)
Interoperability	Usability
Data Integration, and Standards	User-Centered Design
Healthcare Applications and Technologies	
Enabling Care Delivery	

References

- 1 <https://www.cdc.gov/hai/data/portal/progress-report.html>
- 2 Infections Avoided, Excess Costs Averted, and Changes in Mortality Rate. Content last reviewed January 2013. Agency for Healthcare Research and Quality, Rockville, MD. <https://www.ahrq.gov/hai/cusp/clabsi-final-companion/clabsicomp4c.html>
- 3 Bell, T., & O'Grady, N. P. (2017). Prevention of central line-associated bloodstream infections. *Infectious Disease Clinics of North America*, 31 (3), 551–559. <https://doi.org/10.1016/j.idc.2017.05.007>

4 The NHSN Standardized Infection Ratio (SIR), A guide to the SIR. Updated February 2021; chrome-extension://efaidnbnmnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fwww.cdc.gov%2Fnhsn%2Fpdfs%2Fps-analysis-resources%2Fnhsn-sir-guide.pdf&clen=985343&chunk=true