

Data-Driven Evidence-Based Practices Reduce Clostridioides Difficile Infections



HEALTHCARE ORGANIZATION

Community Hospital

PRODUCTS

- Health Catalyst® Data Operating System (DOS™) Platform
- Hospital-Acquired Infection Analytics Accelerator

SERVICES

- Professional Services

EXECUTIVE SUMMARY

Causing nearly 500,000 infections and an estimated 15,000 deaths annually, Clostridioides difficile (C. diff) is a significant cause of infectious disease in the U.S. Thibodaux Regional Medical Center's chief executive officer recognized a negative trend in its C. diff infection rate and worked with its Board, organized medical staff, leaders, and frontline caregivers to reduce the rate and improve patient safety. If the organization did not reduce its standardized infection ratio (SIR), quality of care would be negatively impacted and the hospital would face financial penalties from Medicare.

To improve the care of patients with C. diff, Thibodaux Regional used an analytics accelerator to monitor C. diff process and outcome measures. Its multidisciplinary team is able to monitor completion of early recognition screening, protocol compliance, antimicrobial stewardship rounds, and probiotic administration. Thibodaux Regional's leadership, culture, evidence-based practices, and data-driven improvement approach have positively impacted its patients with the following results:

- 33.3 percent relative decrease in the C. diff SIR rate for hospitalized patients, with the current SIR at 0.46.
- 51.9 percent relative decrease in C. diff cases among hospitalized patients—14 fewer patients had C. diff.

CONFRONTING C. DIFF—A SIGNIFICANT CAUSE OF INFECTIOUS DISEASE

C. diff is a significant cause of infectious disease in the U.S., responsible for nearly 500,000 infections and an estimated 15,000 deaths annually.¹ C. diff is a common hospital-acquired infection (HAI). Overprescribing of antibiotics and lacking contact isolation practices place patients at risk for C. diff infections.²

Thibodaux Regional is a hospital with strong leadership that starts with its CEO, Greg Stock. A cultural foundation of patient-centered excellence is at its core mission to provide the highest quality, most cost-effective healthcare services possible to the people of



Thibodaux Regional has a strong culture and commitment to patient-centered excellence. I have personally engaged physicians, department managers, hospital leaders, and staff in our 'War on Infections.' We have made great strides in reducing hospital-acquired infections and have continued to improve the quality of care delivered to our patients.

Greg Stock
Chief Executive Officer
Thibodaux Regional
Medical Center

Thibodaux and the surrounding areas. Thibodaux Regional is committed to implementing actions that will reduce the incidence of HAIs and improve the safety of its patients.

HOSPITAL TARGETS C. DIFF TO DRIVE DOWN STANDARDIZED INFECTION RATIO

After reviewing its negative trend in its C. diff infection rate, Stock developed an aggressive campaign to reduce it to improve patient safety. The organization's standardized infection ratio (SIR)—a summary measure used by the National Healthcare Safety Network to track HAIs—for C. diff was greater than 1.0. If the organization did not reduce its SIR, quality of care would be negatively impacted and it would face financial penalties from Medicare. Initial improvement efforts, which focused on education and updated policies, were not effective in reducing the incidence of C. diff.

Stock brought the problem to its Board of Commissioners, the organized medical staff, and all of Thibodaux Regional's leaders. He achieved buy-in for a data-driven improvement plan that would enable it to identify and implement evidence-based interventions to drive down the number of C. diff infections.

A DATA-DRIVEN APPROACH FOR REDUCING C. DIFF

Leveraging learnings from the Health Catalyst® Accelerated Practices program and under Stocks' leadership, Thibodaux Regional assembled a multidisciplinary team to use a data-driven approach to improve the care of patients with C. diff. An infectious disease physician leads the improvement team, with support from medical staff including hospital services, general surgery, gastroenterology, and the emergency department and team members from pharmacy, laboratory, housekeeping, nursing, infection prevention, and quality improvement.

The team developed and implemented evidence-based interventions for reducing C. diff, including timely recognition and screening for C. diff, appropriate testing and infection prevention practices, antibiotic stewardship, and education.

Implementing regular screening and a hand hygiene campaign

Thibodaux Regional screens every patient for C. diff, and tests those identified as being at risk for C. diff using the standard testing protocol recommended by the Centers for Disease Control. The team also completes confirmation toxin testing on every patient with a positive C. diff polymerase chain reaction lab test. Providers are



Executive and physician engagement are essential in successful outcomes improvement initiatives. A crucial element in our success is that this improvement effort was spearheaded by our executive and physician leadership with a true desire to improve the quality of care given to our patients. This level of leadership and commitment to quality healthcare is what sets us apart from the rest.

Danna Caillouet, RN
Director of Quality Improvement
Thibodaux Regional
Medical Center

notified of positive results, and patients with C. diff are placed on contact plus isolation.

Thibodaux Regional implemented a hand hygiene campaign, kicking off the campaign with a personal letter from the CEO to each employee on the importance of reducing HAIs. Hand hygiene ambassadors learned the processes for appropriate hand hygiene and how to perform hand hygiene surveillance, observing and providing feedback to their peers about their hand hygiene practices. The ambassadors recognize employees who perform proper hand hygiene and educate employees and medical staff when there are opportunities for improved hand hygiene.

As a visual reminder that employees needed to wash their hands, rather than using alcohol-based hand sanitizers when caring for patients with C. diff, Thibodaux Regional covers the hand sanitizer dispensers in the rooms of patients with C. diff.

In addition, Thibodaux Regional improved its room and equipment cleaning practices. To raise awareness on the differences in isolation and cleaning techniques for patients with C. diff., the hospital changed from yellow to blue isolation caddies to clearly identify C. diff isolation rooms. It changed personal protective equipment to blue impermeable gowns and added bleach wipes to the caddies for cleaning of minor equipment.

Employees are empowered to hold each other, medical staff, and patients' visitors accountable to evidence-based isolation practices. Once a patient isolated for C. diff has discharged or transferred and a terminal cleaning is complete, staff use a disinfection system that generates a peroxide based turbulent aerosol to kill a broad spectrum of germs that may remain in the room.

Providing infection prevention education

Infectious disease (ID) physicians and clinical pharmacists round daily on patients prescribed two or more antibiotics, patients on antibiotics for greater than 72 hours, and/or patients on protected antibiotics. The ID physician and clinical pharmacist ensure appropriate antibiotic stewardship, consulting and offering suggestions to improve, and in some cases reduce, the use of antibiotics. To prevent antibiotic-associated diarrhea (AAD) and C. diff, pharmacists initiate orders for probiotics for adult patients receiving antibiotics.



The ability to sustain the gains we made was a concern from the very beginning. Maintaining the momentum can be challenging at times, but our dedicated team is committed to sustaining our results and have succeeded in maintaining the level of energy it takes to achieve long term improvement.

Cindy Poiencot, RN
 Director of Quality
 Resource Management
 Thibodaux Regional
 Medical Center

Thibodaux Regional provided infection prevention education to employees, medical staff, patients, visitors, and the community. Medical staff received education and feedback via peer-to-peer learning at medical staff meetings and through one-on-one conversations. Leaders provided an overview of C. diff infection prevention to their employees. The hospital assigns all employees mandatory online training regarding C. diff. Registered nurses and infection preventionist educated, and continue to educate, patients and families regarding infection prevention and the necessity of adhering to isolation precautions. The hospital delivered community education through a series of informational posts on its social media platforms.

Enabling daily monitoring of C. diff using the analytics accelerator

Thibodaux Regional leveraged the Health Catalyst® Data Operating System (DOS™) and a robust suite of analytics applications, deploying a Hospital-Acquired Infection Analytics Accelerator. The analytics accelerator allows for daily monitoring of C. diff process and outcome measures. The team is able to monitor completion of early recognition screening, protocol compliance, antimicrobial stewardship rounds, and probiotic administration (see Figure 1).

Thibodaux Regional employees and medical staff have easy access to data and visualizations of performance, enabling them to effectively identify where the team should focus its improvement efforts. The improvement team uses the analytics accelerator to monitor performance and to provide timely feedback to employees and medical staff, guiding practice changes where needed.

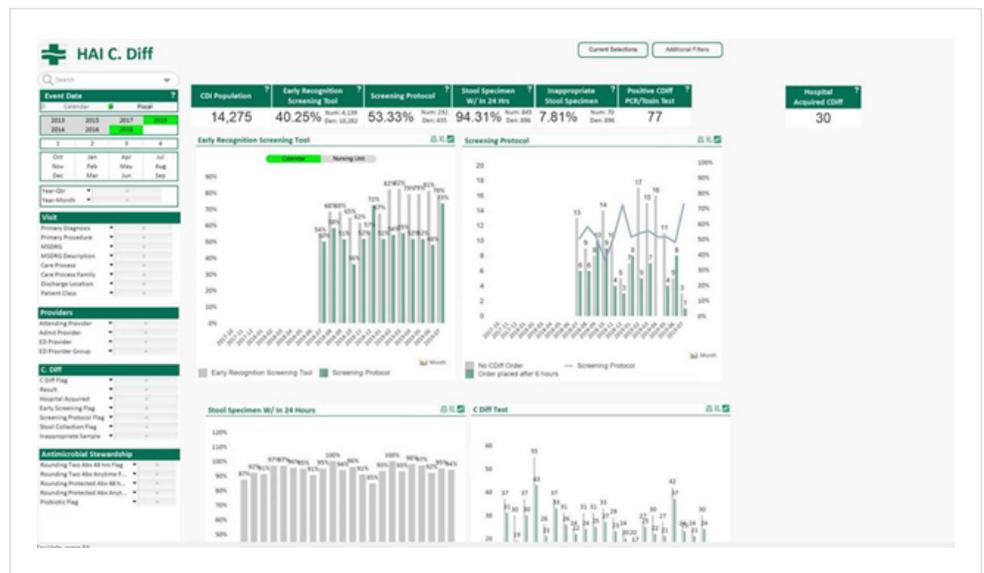


Figure 1: Hospital-Acquired Infection Analytics Accelerator visualization

RESULTS

Thibodaux Regional's leadership, culture, evidence-based practices, and data-driven improvement approach have positively impacted its patients. Results include:

- 33.3 percent relative decrease in the C. diff SIR rate for hospitalized patients, with the current SIR at 0.46.
- 51.9 percent relative decrease in C. diff cases among hospitalized patients—14 fewer patients had C. diff.
- 10 percent relative decrease in overall antibiotic use.
- 24 percent relative decrease in antibiotic cost.
- 99 percent of patients started on an antibiotic receive probiotics.

WHAT'S NEXT

Thibodaux Regional established the expectation that even when interventions have been implemented, and improvements are realized, the work is not concluded. Maintaining momentum can be challenging, but its dedicated team is committed to sustaining the results. The team continues to meet quarterly to review and analyze data and address any concerns or issues with implemented interventions. 🌟

REFERENCES

1. Centers for Disease Control and Prevention. (2015). *Healthcare-associated infections. Clostridioides difficile infection*. Retrieved from https://www.cdc.gov/hai/organisms/cdiff/cdiff_infect.html
2. Centers for Disease Control and Prevention. (2018). *Clostridioides difficile (C. diff). Information for Clinicians about C. diff*. Retrieved from <https://www.cdc.gov/cdiff/clinicians/index.html>

ABOUT HEALTH CATALYST

Health Catalyst is a leading provider of data and analytics technology and services to healthcare organizations, committed to being the catalyst for massive, measurable, data-informed healthcare improvement. Our customers leverage our cloud-based data platform—powered by data from more than 100 million patient records, and encompassing trillions of facts—as well as our analytics software and professional services expertise to make data-informed decisions and realize measurable clinical, financial, and operational improvements. We envision a future in which all healthcare decisions are data informed. Learn more at www.healthcatalyst.com.

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