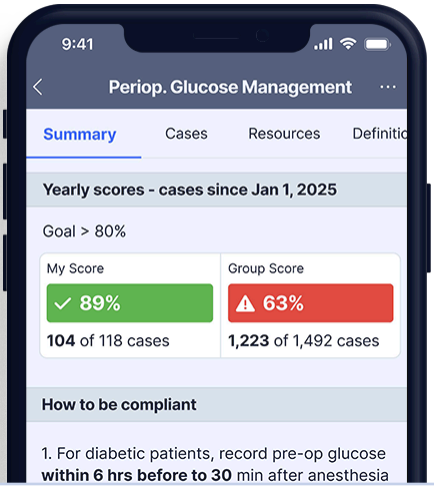
C8 Health

Case Study: UTMB Health

Improving Perioperative Quality at Scale using AI-Enabled Performance Feedback



Background

Improving adherence to evidence-based perioperative practices is a shared priority across the US health system, with initiatives supporting patient safety and responsible resource allocation. Yet, meaningful improvement often stalls due not to a lack of evidence, but rather, gaps in implementation. Although leadership can track performance in dashboards, it lacks scalable tools that allow automatic and continuous quality interventions. Additionally, individual clinicians frequently lack timely visibility into their own performance and actionable, point-of-care guidance on how to comply.[1-3] In fact, more than 60% of quality interventions become unsustainable after six months.[4, 5]

The financial impact of this gap is substantial: hospital-acquired conditions such as surgical site infections (SSIs) cost on average $28,219 per incident[7, 8], while each additional day of hospitalization adds approximately $3,000 in avoidable costs.[9] On the other hand, making performance metrics and "how-to-comply" guidance available within clinicians' routine workflows provides real-time and personalized insights that helps translate evidence into practice.[1, 6] For instance, improving compliance with perioperative glucose testing was shown to reduce the risk of SSI by 54%.[10] Similarly, improved compliance with multimodal analgesia (MMA) protocols has been associated with reduced postoperative opioid consumption and an approximately 0.7-day reduction in length of stay (LOS) per incident across multiple surgical populations.[11-13]

When considering this data, it's easy to understand why healthcare leadership is increasingly prioritizing adherence to quality standards: not only to improve patient outcomes, but also to reduce avoidable provider utilization and cost. Consistent with this, US reimbursement models have expanded the use of value-based and pay-for-performance programs (such as CMS MIPS and payer initiatives) that link financial incentives to performance on predefined quality metrics at the health-system, departmental, and clinician levels.[14-16]

The University of Texas Medical Branch (UTMB) is all too familiar with the challenges of improving adherence to evidence-based protocols. This comprehensive academic health system has over 1,000 beds across four campuses. It employs approximately 1,500 providers, including 180 in the Department of Anesthesiology.

THE CHALLENGE

UTMB's Department of Anesthesiology recognized that traditional retrospective performance reviews were insufficient for driving real-time quality improvements. Without direct, individualized feedback, clinicians lacked the necessary visibility into their own compliance.

> "The vision was [to] bring performance data directly into a platform where everyone was already working daily...Providers would see their metrics in the same place they were already going for clinical needs, making it front and center rather than buried in a separate system."[17]

Dr. Brian Masel
Quality Director & Chief Of Pediatric Anesthesia, UTMB Health

Study design

To overcome this challenge, UTMB deployed C8 Health's AI-enabled performance feedback platform to support clinician engagement with perioperative quality metrics. The implementation included an in-app dashboard displaying individual and department-level compliance, in-app metric education including a short explanation of how to comply with each metric, linkage to the relevant local best practices, and twice-weekly individualized notifications tailored to each clinician's performance trends. In addition, a monthly compliance analysis highlighting procedure types, locations, and services that significantly contribute to noncompliance was sent to all users. This digital workflow complemented UTMB's existing performance-based incentive structure to align individual provider goals with departmental quality targets.

> "What makes it effective is the system doesn't wait for providers to check in. The intervention combines an in-app dashboard displaying individual and departmental compliance, monthly summaries highlighting trends and drivers, and twice-weekly individualized notifications comparing each clinician's performance against prior periods and departmental goals."[17]

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UTMB prospectively evaluated changes in metric adherence following deployment of C8's performance-feedback workflow, tracking multiple perioperative measures: perioperative glucose testing, glucose management, multimodal analgesia (MMA), perioperative hypothermia management (PHM), antibiotic (ABX) redosing and avoiding mean arterial pressure (MAP) under 65 for 15 minutes or more. The team hypothesized that individualized, automated, and repeated feedback paired with point-of-care guidance would be associated with improved adherence compared with baseline performance. Between-period differences in adherence rates were evaluated using two-proportion z-tests.

In addition, UTMB conducted a prospective three-month evaluation of perioperative glucose-testing adherence comparing C8 users (clinicians who were actively using the platform) versus non-C8 users (people within the department without access to the platform), using two-proportion z-tests for between-group differences.

Findings

At six months following deployment of C8 Health's performance feedback workflow, provider-level performance improved across the perioperative measures with clinician-level tracking available (Table 1).

TARGET METRIC	ABSOLUTE IMPROVEMENT (%)	IMPROVED PROVIDERS (N)	PROVIDERS BECAME COMPLIANT (N)
Perioperative Glucose Testing	+9.1 %***	136	34
Glucose Management	+37.5%***	143	90
MMA	+1.9%***	75	21
PHM	+0.1%	37	31
ABX	+1.8%	81	55
MAP	+2.0%***	104	43

TABLE 1

Department-Level Changes in Perioperative Metrics Six Months Post-Deployment

Multimodal analgesia (MMA), perioperative hypothermia management (PHM), antibiotic (ABX) redosing, and avoiding mean arterial pressure (MAP) <65 for ≥15 minutes. *** p<0.001.

On average, 96 providers per metric showed improvement, and 46 providers per metric moved from noncompliant to compliant status. For example, for perioperative glucose testing, 136 providers improved their performance and 34 transitioned to become compliant. For MMA, 75 providers improved and 21 transitioned to compliance.

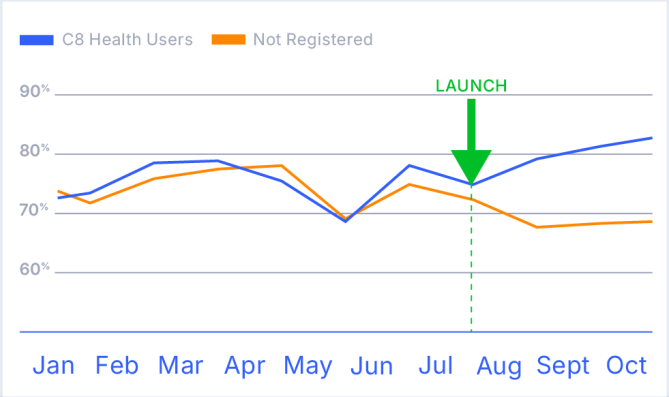

FIGURE 1

Prospective 3-Months Comparison of Perioperative Glucose Testing Compliance: C8 Health Users vs Non-Users

> "Over a three-month evaluation period, our department achieved a 9.1% absolute increase in perioperative glucose testing compliance, moving from 72.2% to a projected annual rate of 81.3%. What's particularly striking is that 39% of previously noncompliant providers became compliant within just three months."[17]

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Conclusion

In this prospective, real-world evaluation, deployment of an AI-enabled performance platform correlated with significant improvements across six perioperative quality measures. Department-level gains were accompanied by clinician-level performance improvement and movement from being noncompliant to compliant, consistent with a behavior-change mechanism enabled by individualized dashboards, repeated feedback, and point-of-care access to local guidance. A prospective three-month comparison further showed higher perioperative glucose-testing adherence among C8 users than non-users, supporting the role of workflow-integrated feedback in improving metric adherence. Future multi-site studies should evaluate generalizability, sustainment, and downstream clinical and economic outcomes.

> "I am proud to say our department has hit every goal and achieved 100% of available incentives every quarter. This demonstrates that when you give people clear visibility into their performance and timely feedback paired with actionable guidance, they respond."[17]

Dr. Brian Masel

Quality Director & Chief Of Pediatric Anesthesia, UTMB Health

About C8 Health

C8 Health is an AI platform for implementing best practices in healthcare. By activating hospital-approved knowledge in key workflows, C8 empowers clinical teams to standardize care, improve patient outcomes, and drive financial performance. Founded by an anesthesiologist and deployed across 100+ US hospitals, C8 is bridging the gap between protocol and practice. Learn more at c8health.com.

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NOTES

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