



POC Advisor:[®] Halifax Health take an Integrated Approach to Sepsis Mitigation

Customer Profile: Halifax Health

Halifax Health is a two-hospital, 678-bed health system that is the largest medical provider in East-Central Florida. Based in Daytona Beach, Fla., its main facility is also a safety net hospital that has one of Florida's busiest emergency departments, with more than 115,000 visits annually.

The award-winning health system was recognized in 2017 for the second consecutive year by The Joint Commission as a Top Performer on Key Quality Measures. It offers the area's only Level II Trauma Center, Comprehensive Stroke Center, Neonatal and Pediatric Intensive Care Units, Pediatric Emergency Department, Child and Adolescent Behavioral Services, complete Neurosurgical Services and OB Emergency Department.

Challenge: Advancing Sepsis Reduction Strategies

Halifax had identified sepsis as a focused quality initiative to achieve clinical excellence by transforming from volume- to value-based care. It was designation driven by the deadly

—and costly—nature of sepsis and by an examination of our historical data that revealed several opportunities to improve quality metrics. These included earlier and more accurate identification, decreased length of stay (LOS) and readmissions, and reduced mortality and morbidity.

“With sepsis, the likelihood of death increases by 8% for every hour that passes before treatment begins. However, early diagnosis is hampered by difficulties aggregating and analyzing siloed data to accurately identify at-risk patients, and rapidly and meaningfully communicating actionable recommendations to frontline clinicians,” said Dr. Ginny Kwong, MD, Vice President and Chief Medical Information Officer at Halifax Health.

To overcome these barriers and drive down sepsis rates, the health system sought implemented a sepsis pathway centered on an EHR-based screening tool that would enable early and accurate identification and initiate prompt intervention of the 3- and 6-hour sepsis bundles.

The over-arching goals were to:



Improve patient quality and safety outcomes



Enhance communication and care coordination between clinicians



Initiate process redesign and engineering to improve efficiencies



Improve care value using the evidence-based guidelines from the Surviving Sepsis Campaign

The sepsis initiative was directed by a multidisciplinary clinical innovation committee comprising physician champions, emergency department (ED) leadership, hospitalists, intensivists, nursing leadership, champions and educators, pharmacists, medical and clinical informaticists, and ancillary support staff. This team was tasked with designing protocols, mapping out evidence-based clinical pathways, and updating sepsis order sets.

A sepsis screening tool was deployed at multiple points of entry into the Emergency Department (ED), where most sepsis cases first present. The tool used Systemic Inflammatory Response Syndrome (SIRS) criteria for suspicion of infection to trigger passive clinical decision support (CDS) to the ED tracker. There, a nurse-driven sepsis work-up protocol was activated to initiate blood cultures, labs, and lactic acids and communicate with ED clinicians to initiate appropriate interventions (broad spectrum antibiotics, weight-based fluid boluses, vasopressors, central line placement) and ICU transfers, including communication with intensivists.

“In one year, we realized a 33 percent decrease in mortality of the sickest patients on the sepsis spectrum and a 12.1 percent improvement in CMS Sepsis Bundle reporting,” said Dr. Kwong.

“We also identified several significant areas for improvement, most centered around our reliance on the incumbent passive CDS alerting system, which many considered to be ill-suited for the hectic ED workflow.”

Specifically, the passive system was unable to keep pace with our ED nurses’ critical thinking capabilities, resulting in alerts being triggered long after the sepsis work-up protocol had been activated. In other instances, nurses were bypassing the 10-question screening process in cases where they knew there was no suspicion or exposure to infection despite meeting SIRS criteria.

A separate issue was the need to continuously monitor the EHR for passive sepsis screening alerts—a near impossibility in an ED environment where clinicians were constantly in motion, triaging and stabilizing critically ill patients.

“Our assessment of the passive system’s gaps led us to seek out ways to integrate a real-time active CDS sepsis alerting system into the ED workflow in a way that allowed our clinicians to carry out actionable interventions, particularly the time-sensitive sepsis recognition and treatment necessary to decrease risk of organ failure and mortality,” said Tom Stafford, CIO, Halifax Health. “The decision was made to identify a third-party sepsis solution that could leverage our existing technology investments by integrating with the internal screening tool as well as our EHR and other existing clinical information and communication systems.”

Halifax Health ultimately selected POC Advisor® from Wolters Kluwer, a HIPAA-compliant clinical intelligence platform that uses real-time clinical surveillance and analytics to deliver timely and accurate sepsis alerts and advice. Hundreds of rules built into the platform account for possible comorbidities and medication abnormalities, and trigger alerts that have demonstrated unprecedented levels of sensitivity (95%) and specificity (82%) as published in a peer-reviewed study in the Journal of American Medical Informatics Association (JAMIA). That study also found that POC Advisor reduced sepsis mortality and sepsis-related 30-day readmissions by 53 percent and 30 percent, respectively.

POC Advisor[®]



The Solution: POC Advisor[®]

Along with its demonstrated outcomes, POC Advisor checked off a number of other boxes for Halifax Health. It enabled an active system that included an easy override to document acknowledgement of a potential false positive alert, eliminating the workflow inefficiencies related to documenting completion of the screening tool. Sufficiently specific alerts to minimize false positives were also required, as was limiting alerts to cases that were not already known to the bedside clinician.

POC Advisor leverages an HL7 interface to continuously aggregate and analyze real-time data (vital signs, lab results and nursing assessment notes) from the EHR. To increase alert sensitivity and specificity, disease- and medication-specific rules take into consideration comorbidities such as chronic renal disease, COPD and cirrhosis. Lab abnormalities are accounted for and the analysis adjusted, creating patient-specific alerting. The prescriptive analytics rules fires alerts that are received via ED nurses' mobile Vocera badges—completing a process that takes place in under one minute.

There were some initial challenges stemming from the ground-breaking integration of POC Advisor with multiple clinical and communications systems. During the initial deployment, alerts were again fired on sepsis cases for which ED nurses had already launched the protocol. The culprit was the ability of the experienced nursing staff to quickly assess, identify suspicion for infection, and initiate the sepsis protocol, eliminating the need to complete the screening tool.

Additionally, the analytics engine was “assuming” all cases went through the screening tool and required staff to log into a computer to view the information and recommendations that led to the alert. This was particularly problematic when nurses had to enter the EHR to acknowledge or override alerts while moving from room to station to room to care for their patients.

The Results: Further Reduction in Sepsis Impacts

“Enhancements were made to ensure alerts fired at the right time, in the right place, to the right provider and with the right information, creating a sophisticated, active CDS system for sepsis alerting that avoids alert fatigue and accelerates diagnosis and treatment,” said Stafford.

For example, nurses can now acknowledge or override alerts directly from their Vocera badge. Alerts are also suppressed if the sepsis protocol orders have been selected and entered by the nursing staff. We are also sending reminders to repeat lactate acid draws if the first levels are greater than two, which will assist with severe sepsis and septic shock bundle compliance.

Though the enhancements are too recent for publishable results, Halifax Health is already realizing a reduction in mortality and LOS, as well as an increase in sepsis bundle compliance.

“Time and complexity are the enemies of effective sepsis mitigation strategies,” said Dr. Kwong. “By integrating POC Advisor with our existing technologies and into our clinical workflows, we are optimizing sepsis care and improving quality outcomes.”

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