Sarah Bush Lincoln Hospital’s Safety Strategy Helps Stop Sepsis in Its Tracks

By Audrey Doyle

With the help of hands-on simulations based on safety science, the emergency department at Sarah Bush Lincoln Hospital (SBL) in central Illinois has improved its sepsis outcomes and its compliance with the CMS Core Measure for sepsis (SEP-1).

True sepsis is a medical emergency, but its symptoms often mimic other conditions, making it a challenge to diagnose. In 2015, leaders at SBL launched an initiative to develop a clinical pathway in the facility’s ED that would expedite the identification and treatment of sepsis. Key to developing this new sepsis pathway were hands-on simulations designed to educate and train the hospital’s ED providers and staff on the use of timely, evidence-based medical interventions that improve sepsis patient outcomes. Playing a prominent role in the simulations are HPI/Press Ganey safety behaviors, leadership methods and Collegial Interactive Team skills that SBL had begun implementing hospitalwide earlier that year.

The new sepsis pathway has led to earlier diagnosis and treatment of sepsis patients in SBL’s ED, according to Nancy Wurtsbaugh, RN, administrative director of Safety, Quality & Risk at the 140-bed facility. This, in turn, has resulted in improved sepsis outcomes and compliance with the CMS Core Measure for sepsis.

“Any delay in the care of a patient with sepsis is a critical safety issue,” said Wurtsbaugh. “The sepsis simulations and safety methods were essential in helping us develop a clinical pathway that helps our ED physicians and staff better identify and manage sepsis cases before patients’ conditions have a chance to deteriorate.”

Combating a Silent Killer

Frequently referred to as a silent killer, sepsis is a serious and highly unpredictable syndrome that can occur in people of all ages. Because many of the symptoms of sepsis in its initial stages are vague and can be confused with or related to patients’ existing medical conditions, dangerous delays in the diagnosis and treatment of the infection are common. According to the National Institutes of Health, mortality from sepsis increases 8% for every hour in which treatment is delayed. That’s a pretty sobering statistic, especially considering the fact that between 28% and 50% of the more than 1 million Americans who develop severe sepsis die each year, far more than the number of U.S. deaths from prostate cancer, breast cancer and AIDS combined, according to the NIH.

Sepsis also exacts a heavy financial toll. The Agency for Healthcare Research and Quality identified sepsis as the most expensive condition treated in U.S. hospitals, costing more than $20 billion in 2011 and increasing by more than 10% on average each year. To address these burdens, CMS developed Core Measure SEP-1: Early Management Bundle, Severe Sepsis/Septic Shock as part of its Hospital Inpatient Quality Reporting program. The SEP-1 guidelines require that, within three hours of patient presentation, a lactate level is measured, blood cultures are obtained, and broad-spectrum antibiotics and IV fluids bolus are administered. The guidelines also require that, within six hours of presentation, volume status and tissue perfusion are reassessed, vasopressors are applied for hypotension that doesn’t resolve after the initial IV fluid bolus, and lactate measurement is repeated if the initial lactate was elevated.
According to CMS, the purpose of the SEP-1 measure is to make it easier for hospitals to diagnose sepsis quickly so that they can deliver high-quality care to patients efficiently and effectively, thereby reducing resource use and lowering complication rates. CMS began requiring that hospitals collect and submit SEP-1 performance measurement data on Oct. 1, 2015.

While SBL was reviewing its sepsis identification and treatment approach in preparation for the SEP-1 launch, the facility noticed a trend regarding its sepsis patients. As Wurtsbaugh explained, during this time the hospital was working with HPI/Press Ganey to enhance its patient safety culture and reduce its Serious Safety Event Rate.

“When we were analyzing our prior two and a half years’ worth of safety data as part of that work, we saw that there was a delay in our recognition of sepsis patients who were deteriorating to severe sepsis, and that we were undertreating our sepsis patients with IV fluids and antibiotics,” she said. “We wanted to get a handle on these issues to eliminate preventable harm, and we felt that a structured, systematic process—a new clinical pathway for sepsis that everyone would be able to follow—would be the best way to do that.”

SBL adopted a three-pronged strategy when developing its sepsis pathway. First, the facility worked with HPI/Press Ganey on new processes designed to improve patient outcomes through more efficient and effective identification and treatment of sepsis in the ED. The new processes were developed as an adjunct to Team Up for Safety, SBL’s existing safety and High Reliability culture that includes such practices as weekly meetings for monitoring and managing reported safety events, daily safety huddles, and the use of root cause analysis to better understand why a safety event occurred and how to prevent it from recurring. Branching off of this culture, the new processes incorporate HPI/Press Ganey safety behaviors and leadership methods that encourage teamwork, accountability and improved communication.

Second, SBL began adopting the Collegial Interactive Team (CIT) approach to safety and High Reliability. CIT training, which was originally developed by the airline industry to improve airline safety, is based on crew resource management strategies that focus on group dynamics, leadership, interpersonal communication and decision making. The standard CIT tools are fully compatible with HPI/Press Ganey’s safety behaviors and leadership methods and include such techniques as Communicate Clearly with Three-Way Repeat-Backs and SBAR (Situation, Background, Assessment, Request), Practice with a Questioning Attitude Using Validation and Verification, and Speak Up for Safety Using ARCC (Ask a question, Request a change, voice a Concern, invoke the Chain of command).

Lastly, SBL brought in an outside team to facilitate on-site, hands-on training sessions. The organization they selected specializes in reviewing health care facilities’ protocols, procedures and teams in action and then delivers post-simulation data and recommendations for improvement.

A key benefit of the training is the fact that the simulations incorporated SBL’s existing safety methods. “Our ED staff was already familiar with our safety tools and safety lingo through the work we had done with HPI up to this point,” said Wurtsbaugh. “Because the simulations were customized to reflect our safety culture, the training was not only true to life, but also true to us and the way we work, which made it very effective.”

Simulating Sepsis in the ED

For its training sessions, SBL chose to simulate a patient whose aggressive immune response to pneumonia had resulted in sepsis. Thirteen 3-hour training sessions were conducted over the course of four days in April 2016. All of the ED’s physicians, nurses and technicians, as well as the facility’s respiratory therapists and hospitalists, participated in the drills, which were videotaped and took place in one of the rooms in SBL’s ED.

After a discussion about safety, High Reliability, sepsis and the new sepsis pathway, the hands-on training began. Acting as the patient was a computer-controlled mannequin that can blink, sweat, bleed and cry, and also has a pulse in all eight of the main pulse points in the human body. A trainer, seated at the back of the room, provided the patient’s voice and controlled vital signs, including respiratory rate, heart rate and temperature.

At the start of each simulation, the mannequin told the staff what prompted the visit to the ED. The staff then began treating the mannequin as though it were a real patient, ordering tests and conducting procedures based on the mannequin’s symptoms and vital signs. The mannequin, manipulated by the trainer, would respond to the treatment appropriately, and the staff would determine their next steps based on the responses.

At the end of each simulation, the participants gathered for a debriefing, after which they and the trainers viewed the videotaped footage and discussed what was done correctly and where there were opportunities for improvement. The trainers also reviewed how the ED staff practiced the safety behaviors, team communication, lines of authority and overall workflow.
At the conclusion of the training period, the simulation team conducted a detailed analysis of all the simulations and shared their observations and recommendations with SBL. Because SBL's goal was to improve patient outcomes by expediting the diagnosis and treatment of sepsis in the ED, particular emphasis was placed on developing best practices that would “make our sepsis diagnosis process more accurate and bring care to patients more quickly and with more standardization,” said Wurtsbaugh.

Toward that end, some best practices that arose from the simulation training include consistent use of repeat-backs and read-backs for IV fluid type, IV fluid rate, antibiotic type, antibiotic dosing and antibiotic rate to prevent potential errors. In addition, SBL now conducts mock “code sepsis” drills to ensure that a team of care providers—including the ED provider, technician and nurses, as well as a respiratory therapist and pharmacist—mobilize quickly to the bedside of suspected sepsis patients.

Another best practice concerns the screening method used to identify sepsis in patients. Previously, the ED screened patients for sepsis by following the Systemic Inflammatory Response Syndrome (SIRS) criteria. Now it screens patients using SIRS and qSOFA. A simplified version of the Sepsis-related Organ Failure Assessment (SOFA), qSOFA (the “q” stands for “quick”) assesses three symptoms in patients with suspected sepsis: altered mental status, fast respiratory rate and low blood pressure. Patients showing at least two of these three symptoms are considered likely to be septic and at greater risk of a poor outcome.

According to Wurtsbaugh, the ED added qSOFA to its screening method as an initial way to identify patients at high risk for poor outcomes with an infection. “With SIRS, you can measure the patient’s core body temperature, heart rate and respiratory rate when they come in, but you need to wait for lab work to come back to see whether the patient has an infection,” she said.

“For sepsis to be diagnosed, infection must be present, but with sepsis, time is of the essence,” she continued. “qSOFA gives us a layer of diagnostic criteria that doesn’t require labs, so we can quickly place septic patients in our sepsis pathway.”

In addition to enabling SBL to identify and treat sepsis earlier, the sepsis pathway also has improved the facility’s compliance with CMS’s SEP-1 bundle, Wurtsbaugh said.

Buoyed by the success it has achieved thus far, SBL has developed its own simulations to provide ongoing staff development and new-employee training, as well as to train its inpatient and critical care units on the new sepsis pathway. “When it comes to safety education, it’s never ‘one and done,’” Wurtsbaugh noted. “We feel that, for it to be effective, it has to be ongoing.

“It also has to be patient-focused,” she added. “We took this on because we want to eliminate preventable harm and improve patient outcomes. Sepsis is a very volatile syndrome, but now we’re better equipped to stop it before it has a chance to progress.”