

Technology to Alert Staff About Sepsis is Saving Lives

Last year, Licking Memorial Health Systems (LMHS) began a campaign to significantly reduce the mortality rate from sepsis. By using new technologies, standardizing care and raising awareness among the staff, an estimated 62 lives were saved in 2016. Much of the success of the campaign is credited to collaboration among a newly created sepsis team that includes physicians, nurses, pharmacy and laboratory personnel, and members of the Process Improvement and Information Systems Departments. The team identified ways to recognize patients at risk for sepsis to ensure a quick response.

Sepsis is a body's overwhelming and life-threatening response to an initial infection of bacterial, viral, or fungal microbes. Sepsis occurs when chemicals released into the bloodstream to fight infection trigger inflammatory responses throughout the body. This inflammation can trigger a cascade of changes that can damage multiple organ systems, leading to internal complications. Nationally, 750,000 cases and 258,000 deaths are reported annually – which is approximately 700 deaths per day. More people die from sepsis than breast, prostate and lung cancers combined. Eighty percent of sepsis-related deaths can be prevented with rapid diagnosis and treatment.

In 2015, the mortality rate for Sepsis at Licking Memorial Hospital (LMH) was 27.1 percent – above the statewide average of 19.4 percent. LMH joined the Ohio Hospital Association's Institute for Health Innovation and the Sepsis Alliance to sharply reduce the number of sepsis-related deaths by 30 percent in two years. Just one year after the start of the campaign, the mortality rate from sepsis dropped to 8.9 percent – nearly a 70 percent decrease.

Leveraging data stored in the Hospital's advanced electronic health record (EHR), relevant clinical data about a patient is compiled into a single location – the Sepsis Visual Smart Board – and then categorized and color coded based on the person's risk for sepsis. An algorithm within the smart board, which is based on the Surviving Sepsis Campaign framework, monitors the electronic health record for signs of possible infection, vital signs and laboratory values in real-time so that nurses and physicians can see a patient's current condition. If a patient meets the criteria for severe sepsis or septic shock, an alert is automatically sent to the physician using a HIPAA-compliant secure text messaging system and the nursing staff is alerted within the EHR.

Treatment can be started right away using protocols and orders put into place. Within three hours, staff is expected to administer broad spectrum antibiotics to fight infection. Specific tests are sent to the laboratory to identify possible causes for the infection. Within six hours, if the patient meets certain clinical criteria, more tests are administered to ensure the patient is responding to treatment or to determine if vasopressors – medicines that contract blood vessels and raise blood pressure – are needed.

The Sepsis Visual Smart Board is only one of a number of technical initiatives being used to reduce the mortality rate from sepsis. All inpatients and observation patients are monitored using EarlySense – a contact-free device placed under the mattress that tracks heart and respiratory rates. The EHR also is leveraged in multiple ways including a sepsis-specific nursing

assessment, sepsis-specific order sets for ease of physician ordering and sepsis-specific progress notes for physician documentation.

The sepsis team continues to review the processes already put in place. Education also has played a large part in the success of the campaign to date. The team urges everyone to recognize the symptoms of sepsis.