

Implementing “smart” electronic alerts for sepsis identification

UNIVERSITY OF MASSACHUSETTS MEMORIAL MEDICAL CENTER

The University of Massachusetts Memorial Medical Center Emergency Department, located in Worcester, is comprised of two busy emergency departments that managed nearly 135,000 visits in 2017. As the flagship hospital of the UMass Medical System, UMass Memorial partners with three community hospitals – Clinton Hospital, Marlborough Hospital and Health Alliance Leominster Hospital – to deliver emergency care to residents of the Greater Worcester area and beyond.

Challenge

Symptoms of sepsis are often vague, and diagnosing and treating the condition requires completing multiple steps within a limited timeframe. For these reasons, timely recognition and treatment of sepsis can often be improved by leveraging the electronic health record (EHR) to identify sepsis and alert providers. At the same time, using EHR alerts can increase the burden on the clinical team if the alerts are poorly timed or poorly calibrated.

Beginning in January 2018, the UMass Memorial ED decided to take steps to optimize their use of their hospital EHR for sepsis. When the UMass Memorial ED team decided to develop a sepsis alert, known as a Best Practice Advisory (BPA), in their EHR, they knew that the alert would have to be “smart.” Alerts that fail to take the clinical environment into account risk becoming a barrier to care by burdening the clinical team and impeding patient flow. The development team, led by Drs. Alexandra Sanseverino, Kevin Kotkowski and Connie Nichols, started the process by looking at the existing sepsis BPA templates available through the EHR provider Epic, using a compilation of ideas used by other sites using the Epic system.

The UMass provider BPA, which went “live” in September 2018, is programmed to detect signs of sepsis, based on SIRS criteria, while suggesting next steps for treatment.

The UMass provider BPA is unique in that it is programmed to search a patient’s chart to determine which diagnostic tests and treatments the patient has already received so that it only recommends that the remaining tests or treatments be ordered. The EHR also prompts the clinician to order those treatments directly from the alert screen. The system helps reduce the risk of missed or duplicative orders, and also reduces the cognitive burden on the frontline provider in ordering the appropriate treatments.

Outcomes

In order to develop the smart alert system, the UMass team had to create 27 separate provider BPAs to allow for every possible combination of completed tests and treatments – a build that was time consuming. In all, the build process took roughly nine months, and the efforts of multiple IT analysts as well as a physician builder to guide the progress. The development process has also been iterative, requiring several adjustments since the go-live date. While the upfront investment of time and energy has been significant, the clinical team thinks it was worth it and the early data suggests that they are right.

Ultimately, UMass expects that the alert will lead to marked improvements in early identification of sepsis, and improved compliance with SEP-1, while also making the process easier for its ED clinicians.

Tool for this Project

- [UMASS Sepsis Best Practice Alert Example](#)