

Electronic medical record automated alerts notify physicians when patients at risk of death

May 17 2016

Hospitalized patients can deteriorate quickly, requiring prompt identification and treatment, especially since each hour of treatment delay can increase the risk of mortality. In a new study published in the *American Journal of Medicine*, researchers have implemented an automated process that continuously samples electronic medical record (EMR) data in real time and triggers an alert to the physician at the patient's bedside to warn of potential clinical decline.

Using a sophisticated algorithm that looks for at least two of the four systemic inflammatory response syndrome (SIRS) criteria plus at least one of 14 acute organ dysfunction (OD) parameters, the alert was implemented in a real-world setting across 24 Banner Health hospitals, which include small critical access facilities to medium sized community hospitals as well as academic teaching centers. These predictive analytics were able to clearly identify a majority of the high-risk patients within 48 hours of admission and enabled early and targeted medical intervention.

"This study highlights our experience at Banner Health in using EMR to successfully identify patients with potential for clinical deterioration. This has also helped in the early identification and appropriate treatment of life-threatening conditions like sepsis," commented lead author Hargobind Khurana, MD, of the Banner Health System. "We believe this approach applied consistently across our hospitals is one of the reasons

why our sepsis mortality rate at Banner is much better than what is expected nationally."

The study shows the experience of implementing an automated SIRS/OD alert system in a large health care system over a span of 1.5 years, and involving more than 300,000 hospitalized patients. The results revealed that this alert identified, early during hospital stay, a small group of patients (1 in 5 [hospitalized patients](#)) that were responsible for the majority of hospital deaths (about 90% of all cause hospital mortality). Patients who triggered the alert had a significantly higher chance of dying (hazards ratio of 4) in that hospital stay when compared to [patients](#) who did not trigger the alert.

"Clearly there are many impressive benefits that an EMR can bring to a health system that has significantly invested in this technology," emphasized Dr. Khurana. "EMR-based alerts bring these benefits directly to a patient's bedside where they are needed the most. Predictive analytics used in a systematic manner, are no longer just inert computerized algorithms, but are invaluable tools in the hands of an organized health care system that has learned how to apply them consistently. This is technology in action, helping improve patient outcomes, and it only promises to become more precise in the very near future."

More information: Hargobind S. Khurana et al, TEMPORARY REMOVAL: Real-time Automated Sampling of Electronic Medical Records Predicts Hospital Mortality, *The American Journal of Medicine* (2016). [DOI: 10.1016/j.amjmed.2016.02.037](https://doi.org/10.1016/j.amjmed.2016.02.037)

Provided by Elsevier

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