

New pediatric protocol reduces missed sepsis diagnoses by 76 percent

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Study published in *Annals of Emergency Medicine* shows new protocol reduces missed sepsis diagnoses by 76 percent in children. Credit: American College of Emergency Physicians

An electronic sepsis alert using a combination of vital signs, risk factors

and physician judgment to identify children in a pediatric emergency department with severe sepsis reduced missed diagnoses by 76 percent. The results of the study, along with an accompanying editorial, were published online Friday in *Annals of Emergency Medicine*.

"Sepsis is a killer and notoriously difficult to identify accurately in [children](#), which is why this alert is so promising," said lead study author Fran Balamuth, MD, PhD, MSCE, of Children's Hospital of Philadelphia, in Philadelphia, Pa. "Identifying the rare child with severe [sepsis](#) or septic shock among the many non-septic children with fever and tachycardia in a pediatric ER is truly akin to finding the proverbial 'needle in a haystack.' This alert, especially with the inclusion of physician judgment, gets us much closer to catching most of those very [sick children](#) and treating them quickly."

Researchers built a two-stage alert (ESA) and implemented it into the hospital's electronic health record (EHR). The first-stage alert is triggered when an age-based elevated heart rate or hypotensive blood pressure is documented in the EHR at any time during the emergency visit. If the patient also has a fever or risk of infection, the alert triggers a series of questions about underlying high risk conditions, perfusion and mental status. The second-stage alert triggers if there is an affirmative answer to any of these questions. When patients have positive first- and second- stage alerts, a "sepsis huddle" is triggered, which is a brief, focused patient evaluation and discussion with the treatment team, including the emergency physician.

"Clinical identification remains critically important to making this protocol successful in identifying and treating these sick children," said Dr. Balamuth.

Of the 1.2 percent of the patients with positive ESAs, 23.8 percent had positive huddles and were placed on the sepsis protocol. The protocol

missed 4 percent of patients who later went on to develop [severe sepsis](#), which researchers attribute to "patient complexity," especially among [patients](#) with developmental delays.

The accompanying editorial, by Andrea Cruz, MD, MPH of the Baylor College of Medicine in Houston, Texas states: "This ESA advances the field of sepsis recognition by integrating vital sign anomalies, comorbidities that increase a child's risk for sepsis, and clinical judgment into a tool that is both more sensitive and specific than prior alerts as well as less prone to alert fatigue."

More information: Fran Balamuth et al, Improving Recognition of Pediatric Severe Sepsis in the Emergency Department: Contributions of a Vital Sign–Based Electronic Alert and Bedside Clinician Identification, *Annals of Emergency Medicine* (2017). [DOI: 10.1016/j.annemergmed.2017.03.019](#)

Provided by American College of Emergency Physicians

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