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Sepsis Bundles and Mortality Among Pediatric Patients

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To the Editor Dr Evans and colleagues demonstrated that delivery of bundled care within 1 hour was associated with a significant reduction in pediatric sepsis mortality in 59 hospitals in New York State, although individual bundle elements were not.¹ Prior pediatric studies have similarly shown that timely bundled sepsis care was associated with improved outcomes, despite differences in bundle components and population.^{2–4} These studies together suggest that delivery of locally defined best care, including timely fluid and antibiotics, improves outcomes, even when bundle details differ.

In this study, patients were identified in 3 ways by contributing hospitals: clinical criteria, laboratory criteria, or an institutionally defined code or sepsis response. Time zero occurred when one of these criteria was met. Inconsistency in the definition of time zero among patients included in the study may have contributed to the finding that completion within 1 or 3 hours similarly decreased mortality risk (odds ratio for 1 hour: 0.59 [95% CI, 0.38–0.93]; odds ratio for 3 hours: 0.64 [95% CI, 0.42–0.96]). Heterogeneity among included patients also makes it difficult to implement these findings, with the optimal population and time zero for performance measurement unclear. Standardized pediatric sepsis and time zero definitions that can be operationalized in clinical care and efficiently measured for quality benchmarking remain elusive yet necessary to the progress of broad pediatric sepsis quality improvement efforts.⁵

In this study, 24.9% of patients received the 1-hour bundle within 1 hour, and 44.9% received it within 4 hours. Performance was better at high-volume pediatric centers, which do not represent most sites where children receive care. Although the study focused on the associations with the 1-hour bundle, that most patients did not receive the sepsis care bundle within even 4 hours may be of greater importance. Understanding why adherence was low, especially in comparison with adherence with adult sepsis protocols in the same state, is an important next step.

This study illuminates which interventions were associated with improved outcome, but the questions of who requires a sepsis bundle and when it is most effective remain unanswered.

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Perhaps most important is the question of how. Even with a legislative mandate to improve pediatric sepsis care, less than 25% of patients received the recommended 1-hour bundle. How to translate knowledge into successful implementation of time-sensitive pediatric sepsis resuscitation in diverse settings represents an important next step for clinicians, researchers, and policy makers committed to improving outcomes from pediatric sepsis.

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