

Measuring sepsis incidence and trends in US hospitals using clinical data

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Sepsis, the syndrome of life-threatening organ dysfunction caused by infection, is a major cause of death, disability, and cost. Many studies suggest that the incidence of sepsis is increasing over time, while mortality rates are decreasing. However, reliably measuring sepsis incidence and trends is challenging because clinical diagnoses of sepsis are often subjective and claims data, the traditional method of surveillance, can be affected by changing diagnosis and coding practices over time.

New research led by investigators at Brigham and Women's Hospital estimates the current U.S. burden of sepsis and trends using [clinical data](#) from the electronic health record systems of a large number of diverse hospitals. The findings, published today in *JAMA*, challenge the use of claims data for sepsis surveillance and suggest that clinical surveillance using electronic health record data provides more objective estimates of sepsis incidence and outcomes.

The research team, led by Chanu Rhee, MD, MPH, a critical care and infectious disease physician at BWH, developed a new strategy to track sepsis incidence and outcomes using electronic clinical data instead of insurance claims. Sepsis was identified if a patient had concurrent indicators of infection (blood culture draws and antibiotic prescribing) and [organ dysfunction](#) (initiation of vasopressors, mechanical ventilation, and/or changes in laboratory tests). The researchers applied this definition to electronic health record data from nearly 3 million patients admitted to 409 US hospitals in 2014. They found that sepsis was present in six percent of all hospitalizations and in more than one in three hospitalizations that ended in death. These data were used to project the total burden of sepsis in hospitalized patients in 2014. They estimated that there were approximately 1.7 million sepsis cases nationwide in 2014, of whom 270,000 died.

In addition, the researchers assessed whether sepsis incidence and outcomes have been changing over time. In contrast to prior claims-based estimates, they found no significant changes in adult sepsis incidence or in the combined outcome of hospital death or discharge to hospice between 2009 and 2014.

"Sepsis is challenging to track because it is a complex syndrome without a single confirmatory diagnostic test," says Dr. Rhee, who has been investigating sepsis epidemiology and publishing widely on the topic for years. "Tracking sepsis using hospital claims data is problematic because sepsis tends to be under-recognized by clinicians, while coding can be influenced by reimbursement and policy incentives. Our research shows that widespread sepsis surveillance using clinical data is feasible and correlates well with expert physicians' diagnoses."

Rhee further emphasizes that the findings do not decrease the importance of sepsis. "On the contrary, it demonstrates that the burden of sepsis is very high and may contribute to many deaths in the United States. More work needs to be done to better prevent and treat this condition. Our study also shows that we need objective and efficient surveillance methods to direct and understand the impact of our efforts."

Dr. Rhee and colleagues recommend that sepsis surveillance efforts shift from claims data to the clinical method they used in their study in order to help health professionals, hospitals, and policy makers gain a better understanding of [sepsis](#) incidence, outcomes, and trends. This knowledge is essential to inform better treatment and prevention policies.

More information: Rhee et al. "Incidence and Trends of Sepsis in US Hospitals Using Clinical vs Claims Data, 2009-2014". The *Journal of the American Medical Association*, [DOI](#):

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