
Data to Track Incidence, Mortality for SARS-CoV-2–Associated Sepsis



Sepsis is a life-threatening condition resulting from a dysregulated response to infection, historically associated with bacterial infections. However, viral infections are increasingly recognised as significant contributors to sepsis, especially with events like the SARS-CoV-2 pandemic and surges of respiratory viruses like RSV and influenza. Despite this, comprehensive data on the incidence and mortality of viral sepsis are lacking due to inconsistent terminology and limited studies. Most studies assessing the prevalence and outcomes for SARS-CoV-2-associated sepsis have small sample sizes and are single-centre designs and/or heterogeneous definitions of organ dysfunction. Most also use data from early in the pandemic.

This study sought to address this gap by developing and validating an electronic health record (EHR)-based definition for SARS-CoV-2-associated sepsis. The goal was to describe the incidence and outcomes of SARS-CoV-2-associated sepsis vs bacterial sepsis. The study included adult patients admitted to five Massachusetts hospitals between March 2020 and November 2022.

SARS-CoV-2-associated sepsis was defined as a positive SARS-CoV-2 polymerase chain reaction test with concurrent organ dysfunction requiring oxygen support beyond a simple nasal cannula, vasopressors, elevated lactate levels, increased creatine or bilirubin levels, or a decline in platelet count. Presumed bacterial sepsis was defined using modified criteria from the Centers for Disease Control and Prevention. This definition included ordering blood cultures, sustained antibiotic treatment, and organ dysfunction assessed using the same thresholds as those for SARS-CoV-2-associated sepsis.

Study researchers analysed trends in the quarterly incidence and in-hospital mortality rates for SARS-CoV-2-associated sepsis and presumed bacterial sepsis. Data from 431,017 hospital encounters involving 261,595 patients was evaluated. Among these encounters, 5.4% were associated with SARS-CoV-2, 1.5% had SARS-CoV-2-associated sepsis, and 7.1% had presumed bacterial sepsis without SARS-CoV-2 infection. In-hospital mortality for SARS-CoV-2-associated sepsis decreased from 33.4% in the first quarter to 14.9% in the last quarter, while presumed bacterial sepsis had a stable mortality rate of 14.5% across quarters. Medical record reviews confirmed that the EHR-based criteria for SARS-CoV-2-associated sepsis performed well compared to established sepsis-3 criteria, with high sensitivity and specificity.

This study demonstrated that SARS-CoV-2 was responsible for about 1 in 6 cases of sepsis during the first 33 months of the COVID-19 pandemic. In-hospital mortality rates for SARS-CoV-2-associated sepsis were initially high but decreased over time and eventually became similar to presumed bacterial sepsis. These findings highlight the burden of SARS-CoV-2-associated sepsis and show the effectiveness of EHR-based algorithms for monitoring viral and bacterial sepsis.

Source: [JAMA](#)

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