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Prevalence, Mortality of Sepsis Using Adult Sepsis Event

Sepsis is a life-threatening organ dysfunction caused by a dysregulated response to infection. It is responsible for approximately 50 million cases and 11 million deaths worldwide, accounting for about 20% of all global deaths. The challenge in accurately estimating sepsis and its associated mortality stems from varying definitions, diagnostic criteria, and coding practices.

The understanding of sepsis has evolved over time. Initially defined in 1991 using the systemic inflammatory response syndrome criteria, the definition was revised in 2001. The latest consensus, Sepsis-3, introduced in 2016, defines sepsis based on an increase in the Sequential Organ Failure Assessment (SOFA) score by two or more points due to infection. However, calculating the SOFA score can be complex, often requiring manual review of electronic health records (EHRs) or the use of various coding combinations.

In 2018, the CDC introduced the Adult Sepsis Event (ASE) criteria, which utilise EHR data for sepsis surveillance. The ASE criteria provide an objective measure of sepsis prevalence and mortality compared to claims-based data. However, only a few studies have compared the diagnostic accuracy of ASE with Sepsis-3 criteria.

A recent study aimed to validate the diagnostic accuracy of the CDC's ASE criteria against the Sepsis-3 criteria and assess the prevalence and mortality of sepsis using the ASE definition. The study was conducted at a teaching hospital in South Korea with 2,732 beds, including 221 ICU beds.

Phase 1 of the study focused on validating the ASE criteria against the Sepsis-3 criteria. A total of 6,186 patients were included. Specificity, sensitivity, positive predictive value (PPV), and negative predictive value (NPV) were evaluated for ASE compared to Sepsis-3. ICD-10-coded sepsis cases were also identified. Phase II was an epidemiologic analysis of sepsis and assessed the prevalence and mortality of sepsis using ASE criteria in 126,988 patients.

The ASE criteria demonstrated a sensitivity of 91.6%, specificity of 98.3%, PPV of 57.4%, and NPV of 99.8% compared to the Sepsis-3 definition. Out of 126,998 adult patient hospitalisations, 6,872 cases were diagnosed with sepsis using the ASE criteria (5.4% annual prevalence), while 893 cases were identified using ICD-10 codes (0.7% annual prevalence). The hospital mortality rate was 16.6% for ASE-diagnosed cases and 23.5% for ICD-10-coded sepsis. The monthly prevalence and hospital mortality rates of sepsis showed less variation with ASE compared to ICD-10 coding.

The ASE criteria showed high sensitivity and moderate PPV compared to the Sepsis-3 criteria. The annual prevalence of sepsis defined by ASE was 5.4%, comparable to U.S. estimates. The prevalence of sepsis identified by ASE was eight times higher than that based on ICD-10 codes and demonstrated less monthly variability.

Source: Critical Care Medicine
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