Improving Documentation and Coding for Acute Organ Dysfunction Biases Severe Sepsis Surveillance Over Time

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633. Improving Documentation and Coding for Acute Organ Dysfunction Biases Severe Sepsis Surveillance Over Time
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**Background.** Claims-based analyses suggest that sepsis-associated organ dysfunction is increasing yet case fatality rates are decreasing. It is unknown whether these trends are affected by changing coding practices.

**Methods.** We assessed trends from 2005 to 2013 in the annual sensitivity and incidence of discharge ICD-9-CM codes for organ dysfunction (shock, respiratory failure, acute kidney failure, acidosis, hepatitis, coagulopathy, thrombocytopenia) relative to standardized clinical criteria (vasopressors/inotropes, mechanical ventilation, rise in baseline creatinine, low pH, elevated transaminases, abnormal international normalized ratio or low fibrinogen, and low platelets) in adult patients with suspected infection (defined by ≥1 blood culture order) at 2 US academic hospitals.

**Results.** Acute organ dysfunction codes were present in 57,273 of 191,695 (29.9%) hospitalizations with suspected infection, most commonly acute kidney failure (60.2% of cases) and respiratory failure (28.9%). The sensitivity of all organ dysfunction codes except thrombocytopenia increased significantly, particularly for acute kidney failure which increased from 59.3% in 2005 to 87.5% in 2013 (P = .019 for linear trend) (figure 1). The mean number of dysfunctional organs increased from 0.32 to 0.59 (P < .001 for linear trend) using discharge codes but only from 0.66 to 0.76 (P < .001) using clinical data. The annual incidence of hospitalizations with suspected infection and any organ dysfunction rose an average of 5.9% per year (95% confidence interval [CI], 4.3%–7.4%) using discharge codes versus only 1.7% (95% CI, 0.7%–2.6%) using clinical data (figure 2). The mortality rate of patients with any organ dysfunction decreased from 16.0% to 13.6% (fitted annual decrease of 0.3%; 95% CI, 0.2%–0.4%) using discharge codes, but was stable when using clinical data (14.2% in 2005 versus 14.1% in 2013, fitted annual decrease of 0.1%; 95% CI, 0.0%–0.2%) (figure 3).

**Conclusion.** Coding for acute organ dysfunction is becoming more sensitive over time. This accounts for some of the observed rise in severe sepsis incidence and mortality decline imputed from claims data. Standardized, objective surveillance tools are necessary to reliably track trends in severe sepsis burden over time.