Door-to-antibiotic time associated with one-year mortality among sepsis patients

By **Acp Hospitalist Weekly Staff**, acphospitalist.org
February 27th, 2019

Faster antibiotic initiation was associated with improved one-year survival among patients who came to an ED with sepsis, according to a new study.

The retrospective cohort study included 10,811 adult ED patients admitted with clinical sepsis to any of four U.S. hospitals from 2013 to 2017. The patients' median door-to-antibiotic time was 166 minutes (interquartile range, 115 to 230 minutes), and one-year mortality was 19%. The study found that, after adjustment, each additional hour from ED arrival to antibiotic initiation was associated with a 10% (95% CI, 5% to 14%; $P<0.001$) increased odds of one-year mortality. Results were published by *CHEST* on Feb. 16.

The association between earlier antibiotics and better survival remained linear when each one-hour interval of door-to-antibiotic time was compared to an hour or less. The association was also found on the outcomes of mortality in the hospital and at 30 and 90 days. One-year mortality was higher among patients with a door-to-antibiotic time over three hours compared to three hours or less (adjusted odds ratio, 1.27; 95% CI, 1.13 to 1.43), but the study did not find a significant mortality difference between patients who received antibiotics in under an hour versus those who received them at an hour or more (adjusted odds ratio, 1.26; 95% CI, 0.98 to 1.62).

Based on the results, the study authors calculated that delays in antibiotic administration for sepsis are associated with a 1.1% per hour increase in risk-adjusted absolute mortality. If this is confirmed, “decreasing average door-to-

antibiotic time to 1.5 hours could prevent one death per 61 ED sepsis patients, or over four deaths per month just in the EDs included in this study," they wrote. The linearity of the results also suggests that the improvement in sepsis outcomes associated with early antibiotics may be continuous, rather than equivalent for treatment within any specified time window.

Potential explanations for the apparent long-term effects of later antibiotic therapy could include more severe or enduring sepsis-associated organ failure, increased persistent inflammation, recurrent infection, or worse deconditioning, the authors suggested. They cautioned that the study, which they believe to be the first to analyze the impact of antibiotic timing on longer-term mortality, should be considered hypothesis-generating and will require confirmation and mechanistic investigation. As a retrospective observational study, it is subject to the risk of residual confounding, despite the authors' efforts at adjustment. They called for trials to confirm the findings, which they suggested could randomize patients to prehospital antibiotics or randomize EDs to interventions designed to accelerate sepsis care.