Abstract:

Objectives: Timeliness of antibiotic administration is recognized as an important factor in reducing mortality associated with sepsis. According to guidelines, antibiotics should be administered within 1 hour of sepsis presentation and the Centers for Medicare & Medicaid Services mandates administration within 3 hours. This study evaluates the difference in time from sepsis diagnosis to first-dose completion of β-lactam antibiotics between IV push and IV piggyback administration.

Design: Single-center, retrospective analysis.

Setting: Urban, tertiary-care emergency department.

Patients: Inclusion criteria were as follows: 1) adult patients (n = 274) diagnosed with severe sepsis or septic shock per Sepsis-2 criteria from September to November 2016 and from September to November 2017 and 2) received β-lactam antibiotic.

Interventions: Initial β-lactam agent administered as either IV push or IV piggyback.

Measurements and main results: Median time (interquartile range) from sepsis diagnosis to administration of a β-lactam antibiotic was 48 minutes (19-96 min) versus 72 minutes (8-180 min) and to administration of the complete broad-spectrum regimen was 108 minutes (66-144 min) versus 114 minutes (42-282 min) in the IV push (n = 143) versus IV piggyback (n = 131) groups, respectively. When controlling for time to sepsis diagnosis and other factors, IV push was associated with approximately 32-minute time savings to β-lactam (β = -0.60; 95% CI, -0.91 to -0.29) and approximately 32-minute time savings to broad-spectrum (β = -0.32; 95% CI, -0.62 to -0.02) antibiotic administrations. The IV push group was less likely to fail the goal of β-lactam antibiotics within 1 hour (44.6% vs 57.3%; odds ratio, 2.27; 95% CI, 1.34-3.86) and 3 hours (7.6% vs 24.5%; odds ratio, 4.31; 95% CI, 2.01-10.28) of sepsis diagnosis compared with IV piggyback. The IV push strategy did not affect mortality, need for ICU admission, or ICU length of stay. No adverse events, including infusion reactions, were found in either arm.

Conclusions: Use of an IV push strategy may safely facilitate more rapid administration of β-lactam antibiotics and may allow for better compliance with sepsis management guidelines.

Reference:

https://doi.org/10.1097/CCM.0000000000004430. (epub ahead of print).