Abstract

Introduction: Rapid administration of intravenous (IV) antibiotics is critical for reducing sepsis-related mortality. IV push (IVP) administration is faster than utilizing IV piggyback (IVPB) administration and may be a useful administration technique when administering the first antibiotic to free up IV lines for other medications. Current published literature has shown that giving the first dose of antibiotic via IVP does not result in decreased effectiveness or an increase in hypersensitivity reactions. Carlinville Area Hospital is a rural-critical access facility with limited resources and reducing antibiotic administration time may improve patient outcomes while also decreasing nursing workload.

Methods: This was a single-center retrospective chart review conducted at a rural critical access hospital from October 2024 – August 2025 that included patients with a sepsis diagnosis in the emergency department that were >18 years of age and treated with IV antibiotics. Time from sepsis diagnosis to antibiotic administration, antibiotics received, infusion time for each antibiotic, number of IV lines available, and patient age were collected. The primary endpoint was the percentage of antibiotics that could be transitioned from IVPB to IVP, and the secondary endpoints were the impact of patient age on the number of IV lines, percentage of patients who met the goal of antibiotic administration within one-hour of sepsis diagnosis, and amount of IV line time that could be saved.

Results: There were 142 patients included in the study and 205 total antibiotics administered. For the primary endpoint, it was found that 60.9% of antibiotics were eligible for transition to IVP. For the secondary endpoints, it was found that most patients had only 1 IV line that was accessible, 86 (60.5%) patients received their first antibiotic within 60 minutes of diagnosis being made, and an average of 33 minutes could be saved from transitioning eligible antibiotics

to IVP.

Conclusion: The data supports consideration of transitioning to IV push administration for eligible antibiotics to improve the time to first antibiotic in sepsis management and optimize IV line use in a resource limited emergency department.