



Antimicrobial Stewardship: Every Dose Matters

Antimicrobials are life-saving medications with significant benefits when used appropriately. However it is reported that up to 30% of antimicrobials are used inappropriately.¹ Often, providers prescribe antibiotic courses of therapy that are longer than recommended durations. This may be related to the use of a few more days “just-in-case” propelled by the thought that extra antibiotics are safe.² But are antibiotics really that safe?

How frequent are antimicrobial adverse events?

Antimicrobials are the second most frequent cause of medication related adverse drug event leading to emergency department visits.³ In hospitalized patients who receive **≥ 24 hours** of parenteral or oral antibiotics, 1 in 5 will experience and adverse event. It has been noted that approximately 1 in 3 adverse events will occur after hospital discharge heightening the importance of close examination of duration of antibiotic prescriptions.⁴

Just a few more days... what’s the harm?

Emergence of antimicrobial resistant organisms

In a study of ICU patients, **each additional day** of an anti-pseudomonal beta-lactam antibiotic (cefepime, piperacillin/tazobactam, or meropenem) resulted in a 4% increased risk of developing a new resistant organism.⁵

Acute kidney injury and *C. difficile* infection

A study examined risk for acute kidney injury (AKI) and *C. difficile* infection (CDI) in surgical patients based on the duration of postoperative antibiotics. The three groups compared were patients that received post-op antibiotics for **24 - < 48 hours**, **48 – 72 hours**, and **≥ 72 hours**. The unadjusted number needed to harm for AKI was 9, 6, and 4, after postoperative prophylaxis durations of 24 - < 48 hours, 48 – 72 hours, and ≥ 72 hours, respectively. Numbers needed to harm for CDI were 2000, 90, and 50, after postoperative prophylaxis durations of 24 - < 48 hours, 48 – 72 hours, and ≥ 72 hours, respectively.⁶

Key Take-away: Even a single day of extra antibiotics increases the risk for antimicrobial resistance and adverse events. Judicious antimicrobial use is needed to prevent harm.

Reference

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