Short Course Antimicrobial Therapy in Adults

BOTTOM LINE: Use of short course antimicrobial therapy is effective, reduces antimicrobial overuse and cost, and reduces risk of antibiotic-associated harms to patients.

Many randomized controlled studies have shown that short course antimicrobial treatment is non-inferior to longer courses of treatment (see Table 1). Short course therapy is also endorsed by various guidelines.[1,4,8,12,20,25,31-33,38-40,49,56]

Table 1[†]. Short course duration of therapy recommendations for common infections

Infection	Duration of Therapy (days)[‡]		Comments
	Short*	Long	
Cellulitis/Abscess[2-4]	**5-6**	10-12	• Assumes source control achieved. • Residual inflammation after 5-6 days of antimicrobial therapy will resolve with time and does NOT require prolongation of antimicrobials.
Native hand/wrist septic arthritis[5]	**14**	28	• Assumes source control achieved.
Osteomyelitis[6-8]	**42**	84	• Applies to osteomyelitis associated with diabetic foot infection and vertebral osteomyelitis.
AECOPD/Sinusitis[9-20]	**≤ 5**	≥ 7	• Applies to mild-moderate AECOPD and acute bacterial sinusitis.
CAP[21-26]	**3-5**	≥ 7	• Excludes hospitalized patients with severe CAP. • Treat until clinically stable: temp ≤ 37.8°C, HR < 100 bpm, RR < 24 breaths per minute, arterial O_2 sat ≥ 90% on room air (or the patient's baseline level of home O_2), SBP ≥ 90mm Hg, and normal mental status; and for a minimum of 3 days.
HAP/VAP[27-33]	**7-8**	14-21	• In patients infected with non-fermenting Gram negative bacilli (e.g. *P. aeruginosa*), short course therapy may be associated with increased recurrence BUT NOT decreased clinical cure, or increased hospital or ICU days, mechanical ventilation, or mortality.[34,35]
Intra-abdominal infection[36-40]	**4-8**	10-15	• Assumes source control achieved.
Complicated UTI[α]/ Uncomplicated pyelonephritis[41-49]	**5 or 7**	10 or 14	• Limited data for shorter duration for non-fluoroquinolone antibiotics NB: For empiric therapy, do not use fluoroquinolones due to increasing resistance, rare but serious adverse effects, and significant association with CDI.**
Gram negative bacteremia[50-56]	**7**	> 10	• Assumes source control achieved and infection not associated with a clinical syndrome requiring longer therapy, such as osteoarticular or endovascular infections. • For *Pseudomonas aeruginosa* bacteremia, there are three retrospective studies that found short course therapy (6-10 [avg. 8] days[57] and 7-11 days[58,59]) as effective as longer courses (11-15 [avg 13] days[57] and 12-21 days[58,59]).

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†Adapted from https://www.bradspellberg.com/shorter-is-better ‡Duration of therapy includes both IV and oral therapy, and starts after source control, where required, is achieved.

αComplicated UTI - associated with functional and/or anatomical abnormalities of the urinary tract. See Bugs & Drugs Complicated UTI/Males for more details.

*Refer to https://www.bugsanddrugs.org/ for detailed treatment recommendations.

**Refer to Antimicrobial Stewardship Backgrounder April 2022: Avoid Fluoroquinolones as First-line Therapy for more details.

AECOPD=acute exacerbation of chronic obstructive pulmonary disease, avg=average, CAP=community-acquired pneumonia, CDI=*C. difficile* infection, HAP=hospital-acquired pneumonia, VAP=ventilator-associated pneumonia, UTI=urinary tract infection

Background: Avoiding unnecessarily long durations of antibiotic therapy is one way to address antimicrobial overuse. Limiting antibiotic exposure prevents antibiotic resistance and reduces the likelihood of a patient developing adverse effects or *C. difficile* infection.[60,61] With each excess day of antibiotic use, there is a 4-5% increased odds of a patient experiencing an antibiotic-associated adverse event.[60,62]

Table 2. Duration of antimicrobial therapy – THEN & NOW

THEN	NOW
Shorter courses of antibiotics are less effective	***Shorter courses are non-inferior to longer duration of therapy*** • 54 RCTs, including ~19,000 patients, have compared the efficacy of short versus traditional, longer duration therapies for the infections listed in Table 1 and shorter treatment was shown to be non-inferior. • Non-inferiority was measured by rates of clinical and microbiological cure, survival, and bacterial recurrence.
Antibiotic courses should be completed as prescribed despite resolution of symptoms	***Shorter courses reduce risk of selective pressure for resistant organisms*** • There is no evidence that taking antibiotics beyond symptom resolution reduces antimicrobial resistance. There is evidence however that longer durations of therapy drive resistance by increasing selective pressure.[62,63] • Symptoms can persist due to inflammation and not bacteria. ***Shorter courses reduce antimicrobial cost*** • Drug-acquisition cost savings are estimated to be $678–798 million CAD/year in North America if treatment was shortened from 14 days to 7 days for Gram negative bacteremia.[64] There would be additional cost savings with shorter duration treatments of other infections.
There is no harm in taking an antimicrobial for a longer duration	***Shorter courses reduce patient exposure to antibiotics and risk of associated adverse events, and shorten hospital length of stay*** • Longer durations of antibiotic therapy put patients at increased risk of adverse events including *C. difficile* infection, which is associated with significant morbidity and mortality.[60-62] • There is a 4-5% increased odds of a patient experiencing an antibiotic-associated adverse event with each excess day of antibiotic use.[60,62]

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