

A Shift in the Paradigm:

Shorter Antimicrobial Treatment Courses with Equal Effectiveness

Treating bacterial infections for only as long as necessary to attain microbiologic and clinical cure has been widely accepted as the safest and most achievable means to reduce unnecessary antimicrobial use.^{1,2} Over the past decade, multiple reports have been published by the Infectious Disease Society of America (IDSA) and other infectious disease organizations outlining many traditional antimicrobial courses are unnecessarily long. Many clinicians utilize 7 day (1-week) and 14-day (2-weeks) courses of antimicrobial treatment without a rationale.³ There have been over 40 randomized controlled trials (RCT) comparing short course vs traditional courses of antimicrobials for a wide variety of bacterial infections, and many of these studies have shown that shorter course were equally effective.² The aim of this brief article is to outline some of the bacterial infections in which literature supports adequate microbiologic and clinical cure with shorter courses of antimicrobial treatment.

Clinical treatment decision making for treating children with infectious diseases is challenging. Many clinicians not trained in pediatric infectious diseases tend to be overly conservative with treatment durations and treat children for longer periods than necessary. The literature provides ample evidence that shorter antimicrobial courses are equally effective for treating acute bacterial infections. Bacterial infections for which there is evidence to support that shorter treatment courses are as effective as traditional courses are outlined in Table 1. Incorporating appropriate antimicrobial duration into clinical practice is a vital step to augment existing Antimicrobial Stewardship Program (ASP) efforts.

The utilization of evidence based medicine when approaching infectious disease management is vital to reduce unnecessary antimicrobial use augment the efforts of Antimicrobial Stewardship Programs (ASP). The practice of medicine is constantly evolving as the results of new research becomes available, and as trends change over time.² Decreasing the duration of antimicrobial treatment is one of the effective strategies to decrease antimicrobial exposure. In addition, antimicrobial exposure early in life has been identified as a risk factor for developing asthma, allergic rhinitis, childhood obesity, eczema and multi-drug resistant (MDR) infections later in life.⁴⁻⁷ Therefore, shortening the duration of antimicrobial treatment courses whenever possible is important not only in reducing the development antimicrobial resistance but also to avoid other short- and long-term consequences of antimicrobial exposure.

Table. 1*

Disease	Length of Therapy
Community Acquired Pneumonia	5-7 days
Nosocomial Pneumonia	7-10 days (14 days if pseudomonas)
Complicated Pneumonia**	2-4 weeks
Acute Bacterial Rhinosinusitis	5-7 days

Asymptomatic bacteriuria	DO NOT TREAT***
Uncomplicated cystitis	3-5 days
Complicated cystitis	5-7 days
Acute pyelonephritis	7-10 days
Cellulitis	5-7 days
Otitis Media	<u>≤ 7 days</u>

* These are adapted from the IDSA practice guidelines by organ system. These are specific guidelines by organism as well. https://www.idsociety.org/practiceguidelines#/date_na_dt/DESC/0/+/

**Complicated pneumonia – empyema, necrosis, chest tube placement

***Only screen and treat patients who are pregnant, severely neutropenic > 7 days, or undergoing endourological procedure

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References

1. Rice LB. The Maxwell Finland Lecture: for the duration-rational antibiotic administration in an era of antimicrobial resistance and *Clostridium difficile*. Clin Infect Dis 2008; 46:491-6
2. Wald-Dickler, Noah, and Brad Spellberg. "Short Course Antibiotic Therapy—Replacing Constantine Units with “Shorter Is Better”." Clin Infect Dis (2019).
3. Spellberg B. The new antibiotic mantra – “shorter is better.” JAMA Intern Med 2016; 176:1254-5\
4. Tsakok, T., et al. "Does early life exposure to antibiotics increase the risk of eczema? A systematic review." British Journal of Dermatology 169.5 (2013): 983-991.
5. Ahmadizar, Fariba, et al. "Early-life antibiotic exposure increases the risk of developing allergic symptoms later in life: A meta-analysis." Allergy 73.5 (2018): 971-986.
6. Shao, Xiaoqing, et al. "Antibiotic exposure in early life increases risk of childhood obesity: a systematic review and meta-analysis." Frontiers in endocrinology 8 (2017): 170.
7. Yamamoto-Hanada, Kiwako, et al. "Influence of antibiotic use in early childhood on asthma and allergic diseases at age 5." Annals of Allergy, Asthma & Immunology 119.1 (2017): 54-58.