



When to “CAP” off treatment for pneumonia

Is 5 days of antibiotic therapy really sufficient for adults hospitalized with community-acquired pneumonia?

PRACTICE CHANGER

Prescribe 5 days of antibiotic treatment for inpatients with community-acquired pneumonia because it produces the same clinical success rates as longer treatment regimens, but is associated with fewer negative patient outcomes.¹

STRENGTH OF RECOMMENDATION

B: Based on a single, good-quality randomized control trial.

Uranga A, España PP, Bilbao A, et al. Duration of antibiotic treatment in community-acquired pneumonia: a multicenter randomized clinical trial. *JAMA Intern Med.* 2016;176:1257-1265.¹

ILLUSTRATIVE CASE

A 65-year-old woman is admitted to your inpatient service from your family health center. She is diagnosed with community-acquired pneumonia (CAP) based on a 5-day history of cough and fever and a positive chest x-ray. She now requires oxygen at rest. She has a past medical history of hypertension and diabetes, both of which have been controlled on oral medications. Antibiotic therapy is initiated for the treatment of the pneumonia, but what treatment duration is ideal?

The World Health Organization estimates that pneumonia is the third most common cause of mortality worldwide, causing 3.2 million deaths per year.² Appropriate prescribing of antibiotics is critical for the successful treatment of CAP.

The Infectious Diseases Society of America (IDSA) and the American Thoracic Society (ATS) created consensus guidelines,

published in 2007, for the treatment of CAP.³ These guidelines recommend a minimum 5-day course of antibiotics if the patient is clinically stable, which is defined as: afebrile for 48 hours, heart rate ≤ 100 beats/minute, respiratory rate ≤ 24 respirations/minute, systolic blood pressure ≥ 90 mm Hg, oxygen saturation $\geq 90\%$, normal mental status, and able to tolerate oral intake. Longer antibiotic treatment durations are recommended on an individualized basis, if, for example, the isolated pathogen is not susceptible to the initial antibiotic or if the infection was caused by an extrapulmonary source.

However, these recommendations are not routinely followed. Practitioners often make it their custom to prescribe longer courses of antibiotics.⁴ And yet we know that there are several reasons to consider shorter courses of antibiotics, including lower health care costs, fewer adverse effects, and lower rates of bacterial resistance.⁵⁻⁷

Two meta-analyses were performed to compare the safety and efficacy of short- (≤ 7 days) vs long-course (> 7 days) antibiotic therapy in CAP.^{8,9} Both meta-analyses found no difference in efficacy or safety between shorter and longer courses of antibiotic treatment regimens for CAP. Secondary outcomes noted a trend toward decreased antibiotic-associated adverse events with shorter courses of therapy.^{8,9}

While these meta-analyses supported shorter courses of antibiotics for CAP, there are limitations to the broad implementation of their findings. Studies included in these analyses utilized a variety of antibi-

Gregory Castelli, PharmD; Jennie B. Jarrett, PharmD, BCPS, MMeEd
University of Pittsburgh Medical Center St. Margaret, Pa (Dr. Castelli); University of Illinois at Chicago (Dr. Jarrett)

DEPUTY EDITOR

Corey Lyon, DO
University of Colorado Family Medicine Residency, Denver

➤ This is the first study to support the efficacy of the 5-day course of antibiotics for hospitalized CAP patients recommended by IDSA/ATS guidelines.

otic treatment regimens and longer courses (7 days vs 5 days) that are not recommended by the IDSA/ATS guidelines. Additionally, studies included both inpatient and outpatient treatment groups, so findings may not apply to an exclusively inpatient CAP population.^{8,9}

This study sought to validate the IDSA/ATS guidelines recommending a 5-day course of antibiotics for hospitalized patients with CAP.¹

STUDY SUMMARY

No differences in clinical outcomes between 5 days of Tx—and longer

This multicenter, double-blind, noninferiority randomized trial compared short-term antibiotic treatment duration (5 days) to physician-discretion antibiotic treatment duration among 312 patients ≥ 18 years of age admitted for CAP to one of 4 teaching hospitals in Spain.¹ Pneumonia was diagnosed on chest radiograph with at least one symptom: cough, fever, dyspnea, or chest pain. Patients were excluded if, among other things, they had an immunocompromising condition, lived in a nursing home, had a recent hospital stay, used antibiotics within the previous 30 days, or had an uncommon pathogen, such as *Pseudomonas aeruginosa* or *Staphylococcus aureus*.¹

Patients were randomized after receiving a minimum of 5 days of antibiotics to an intervention group (where, if clinically stable, no further antibiotics were given) or a control group (where physicians determined antibiotic duration).¹ Primary outcomes were clinical success rate at Days 10 and 30 from admission, defined as resolution of signs and symptoms of CAP without further antibiotics, and improvement of CAP-related symptoms as determined by an 18-item CAP symptom questionnaire. This questionnaire was scored 0 to 90, where higher scores indicated greater severity. Secondary outcomes included: duration of antibiotic use, time to clinical improvement, mortality, hospital readmission, hospital length of stay, and CAP recurrence.¹

A total of 312 patients were randomized with 162 patients in the intervention group and 150 patients in the control

group. The mean age of patients in the intervention and control groups was 66.2 and 64.7 years, respectively. Other baseline demographics were similar between the groups. Nearly 80% of patients received quinolone treatment; <10% received a beta-lactam plus a macrolide.¹

Clinical success rates were similar for the control and intervention groups, respectively, at Day 10 (49% vs 56%; $P=.18$) and Day 30 (89% vs 92%; $P=.33$). There was shorter median treatment duration with antibiotics in the intervention group compared with the control group (5 days vs 10 days; $P<.001$) and fewer 30-day hospital readmissions (1.4% vs 6.6%; $P=.02$). There were no differences for other secondary outcomes.¹

WHAT'S NEW

Clinical support for 2007 guidelines

This is the first study to clinically support the IDSA/ATS guidelines, which state that a 5-day course of antibiotic therapy for hospitalized adults with CAP is effective and without increased risk of adverse events.

CAVEATS

Generalizability to other meds and settings is unclear

This study focused on antibiotic duration for the treatment of CAP in hospitalized patients and mainly used quinolone antibiotics. It remains unclear if duration of therapy is as effective in the outpatient setting or when using alternative antibiotic regimens.

If patients continued to have symptoms (such as fever or low oxygen saturation on room air) after 5 days of antibiotic treatment, antibiotic treatment was continued in the study. Thus, patients in real life who continue to have symptoms may need individualized therapy and may require more than 5 days of antibiotics.

CHALLENGES TO IMPLEMENTATION

Antibiotics end before clinical improvement occurs

This study noted an average of 12 days in both groups for patients to achieve clinical

improvement, with upwards of 15 to 18 days for patients to return to normal activity. Patients and providers may be dissatisfied if the treatment course ends days before clinical improvement of symptoms. This may cause prescribers to lengthen the duration of antibiotic therapy inappropriately. **JFP**

ACKNOWLEDGEMENT

The PURLs Surveillance System was supported in part by Grant Number UL1RR024999 from the National Center For Research Resources, a Clinical Translational Science Award to the University of Chicago. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Center For Research Resources or the National Institutes of Health.

Copyright © 2017. The Family Physicians Inquiries Network.

References

1. Uranga A, España PP, Bilbao A, et al. Duration of antibiotic treatment in community-acquired pneumonia: a multicenter randomized clinical trial. *JAMA Intern Med.* 2016;176:1257-1265.
2. World Health Organization. The top 10 causes of death. Available at: <http://www.who.int/mediacentre/factsheets/fs310/en/index.html>. Accessed September 5, 2017.
3. Mandell LA, Wunderink RG, Anzueto A, et al. Infectious Diseases Society of America/American Thoracic Society consensus guidelines on the management of community-acquired pneumonia in adults. *Clin Infect Dis.* 2007;44(suppl 2):S27-S72.
4. Aliberti S, Blasi F, Zanaboni AM, et al. Duration of antibiotic therapy in hospitalised patients with community-acquired pneumonia. *Eur Respir J.* 2010;36:128-134.
5. Guillemot D, Carbon C, Balkau B, et al. Low dosage and long treatment duration of β -lactam: risk factors for carriage of penicillin-resistant *Streptococcus pneumoniae*. *JAMA.* 1998;279:365-370.
6. Opmeer BC, el Moussaoui R, Bossuyt PM, et al. Costs associated with shorter duration of antibiotic therapy in hospitalized patients with mild-to-moderate severe community-acquired pneumonia. *J Antimicrob Chemother.* 2007;60:1131-1136.
7. File TM Jr. Clinical efficacy of newer agents in short-duration therapy for community-acquired pneumonia. *Clin Infect Dis.* 2004;39(suppl 3):S159-S164.
8. Li JZ, Winston LG, Moore DH, et al. Efficacy of short-course antibiotic regimens for community-acquired pneumonia: a meta-analysis. *Am J Med.* 2007;120:783-790.
9. Dimopoulos G, Matthaiou DK, Karageorgopoulos DE, et al. Short- versus long-course antibacterial therapy for community-acquired pneumonia: a meta-analysis. *Drugs.* 2008;68:1841-1854.

VISIT US ONLINE
@JFPONLINE.COM



3 IN 3
VIDEO
3 take-home points
in 3 minutes (or less)

How to protect your patient—and yourself—when prescribing opioids

Edwin A. Salsitz, MD



Statins for primary prevention of CVD: To start or not to start?

Doug Campos-Outcalt, MD, MPA



INSTANT POLL

How confident are you when it comes to prescribing medications for obesity?

ONLINE EXCLUSIVES

- APPLIED EVIDENCE
Effectively engaging patients in everyday health-care decisions
- CASE REPORT
Fever, rash, and leukopenia in a 32-year-old man • Dx?

PHOTO ROUNDS FRIDAY

Test your diagnostic skills at www.jfponline.com/articles/photo-rounds-friday.html

PLUS

Today's headlines in family medicine

GET UPDATES FROM US ON

FACEBOOK



TWITTER



GOOGLE+



www.facebook.com/JFamPract <http://twitter.com/JFamPract> http://bit.ly/JFP_GooglePlus