When to "CAP" Off Pneumonia Treatment

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

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

STRENGTH OF RECOMMENDATION
B: Based on a single, good-quality randomized controlled trial.[1]

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

In 2007, the Infectious Diseases Society of America (IDSA) and the American Thoracic Society (ATS) created consensus guidelines for the treatment of CAP.[3] These guidelines recommend a minimum five-day course of antibiotics if the patient is clinically stable (defined as afebrile for 48 h; heart rate $\leq$ 100 beats/min; respiratory rate $\leq$ 24 breaths/min[-1]; systolic blood pressure $\geq$ 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 (eg, if 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] 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- and long-course antibiotic therapy in CAP ($\leq$ 7 d vs > 7 d, respectively).[8,9] Both meta-analyses found no difference in efficacy or safety between shorter and longer courses of antibiotics for CAP. Secondary outcomes noted a trend toward decreased antibiotic-associated adverse events with shorter courses of therapy.[8,9]

However, there are limitations to broad implementation. Studies included in these analyses utilized a variety of antibiotic treatment regimens and longer courses (7 d vs 5 d) 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 five-day course of antibiotics for hospitalized patients with CAP.[1]

STUDY SUMMARY
No differences in clinical outcomes
This multicenter, double-blind, noninferiority randomized trial compared short-term

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antibiotic treatment duration (5 d) to physician-discretion antibiotic treatment duration among 312 patients (ages 18 and older) admitted for CAP to one of four 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]

After receiving a minimum of five days of antibiotics, patients were randomly assigned 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 questionnaire scored 0-90, with higher scores indicative of greater severity). Secondary outcomes included duration of antibiotic use, time to clinical improvement, mortality, hospital re-

admission, hospital length of stay, and CAP recurrence.[1]

Of the 312 participants, 162 were randomized to the intervention group and 150 to the control group. Mean age of patients in the intervention and control groups was 66.2 and 64.7, respectively. Other baseline demographics were similar between the groups. Nearly 80% of patients received quinolone treatment; < 10% received a ß-lactam plus a macrolide.[1]

Clinical success rates were similar for the control and intervention groups at day 10 (49% vs 56%, respectively) and day 30 (89% vs 92%). Median antibiotic treatment duration was shorter in the intervention group than in the control group (5 d vs 10 d); the intervention group also had a lower rate of 30-day hospital readmissions (1.4% vs 6.6%). 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 five-day course of antibiotic therapy for hospitalized adults with CAP is effective and without increased risk for adverse events.

CAVEATS
Generalizability 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 (eg, fever or low oxygen saturation on room air) after five days of antibiotics, 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 five days of antibiotics.

CHALLENGES TO IMPLEMENTATION
Antibiotics end before clinical improvement
In this study, it took an average of 12 days in both groups for patients to achieve clinical

improvement, and 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.　**CR**

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