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## Commentary: What is the optimal duration of antibiotic therapy?

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For some infections, such as *Staphylococcus aureus* bacteraemia or enterococcal endocarditis, clear evidence favours prolonged treatment to prevent relapse. Conversely, for some situations such as surgical prophylaxis and the treatment of gonorrhoea and of uncomplicated urinary tract infections in women, roles for short courses of antibiotics are well established. In this issue, El Moussaoui et al present evidence in favour of a total of three days' treatment for uncomplicated cases of community acquired pneumonia.<sup>1</sup> This suggests that current guidelines recommending 7-10 days should be revised.<sup>2</sup> In fact, the lack of evidence to support short course therapy for many common infections is surprising, and it has become accepted practice to continue treatment for days after symptoms have improved.

How can we improve our knowledge? This is an important question: antibiotics may be associated with adverse reactions, and prolonged exposure to antibiotics may encourage the development or acquisition of antibiotic resistant organisms. Also, antibiotic treatment is expensive and problems may occur with compliance. Comparative outcome studies provide a solution but require large numbers to provide the statistical power for significance. Pooling of multiple studies may be affected by inconsistencies in study design but may still yield clues—for example, a recent meta-analysis showed a five day course of cephalosporin to be superior to 10 days of penicillin for streptococcal pharyngitis.<sup>3</sup> However, as a secure evidence base for clinical decision making, prospective multicentre trials probably provide the most definitive results.

El Moussaoui et al compared outcomes for cases of mild to moderate-severe community acquired pneumonia after treatment with antibiotics for three or eight days.<sup>1</sup> The study involved nine hospitals in the Netherlands and was carried out as a randomised, double blind, placebo controlled non-inferiority trial. Patients who met entry criteria were treated with intravenous amoxicillin. Those who showed significant improvement after 72 hours were switched to either

oral amoxicillin or placebo for five days. Clinical and radiological outcomes assessed at days 10 and 28 were not significantly different.

Not only does the study yield strong evidence in favour of short course therapy for a subset of patients with community acquired pneumonia, but also shows how centres can cooperate to tackle longstanding areas of uncertainty in clinical microbiology and infectious diseases. Many other common clinical situations would repay the efforts of comparable approaches. An example would be the treatment of vascular catheter related *S aureus* bacteraemia.<sup>4</sup> The literature suggests a minimum treatment period of 10-14 days, but some clinicians argue from experience that shorter periods are adequate: it would be good to know what the minimum treatment period should be, especially for methicillin resistant staphylococci and in patients whose long term prognosis is poor.

When optimising therapy for an infection, a lot of variables have to be juggled, including choice of antibiotic, the patient's immune status, the infecting agent, and the nature of the septic focus. Despite such difficulties, El Moussaoui et al show that by careful selection of case definition and comparison of standardised regimens it is possible to make medicine into more of a science.

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