# Is it time to stop counselling patients to "finish the course of antibiotics"?

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How many times have you advised patients to "make sure you finish the course of antibiotic treatment, even if you feel better"? By far one of the most common counselling points in community pharmacy practice, finishing the prescribed course of antibiotics has been engrained upon generations of pharmacists and other health care professionals. Pharmacists certainly play a key role in encouraging patients' adherence to medication regimens, but the emphasis on finishing the course is unique to antibiotics and goes beyond adherence.

In 1945, Alexander Fleming's Nobel Prize acceptance speech for his penicillin discovery warned about the dangers of antimicrobial resistance.[1] We are now facing antimicrobial resistance on a global scale some 70 years later. With 700,000 deaths annually (and rising) due to antimicrobial-resistant organisms, we are up against one of the biggest public health threats of our time.[2] Now, more than ever, antibiotics must be viewed as a shared *nonrenewable* precious resource. As a result, in the past few years, a number of organizations, including the World Health Organization,[3] United Nations[4] and the Public Health Agency of Canada,[5] have highlighted the threat of antimicrobial resistance and the role of antimicrobial stewardship in mitigating this problem.

In his Nobel lecture, Fleming spoke of a hypothetical situation where a person self-treats a sore throat with antibiotics, "He buys some penicillin and gives himself, not enough to kill the streptococci but enough to educate them to resist penicillin." He advised, "If you use penicillin, use enough."[1] Although he was likely alluding to the risks of inadequate dosing, his quote has been construed to mean that inadequate durations of antibiotic therapy breed resistance. This belief, coupled with the underestimated risks of antibiotics and commercial disincentives to use less antibiotics, has shaped modern-day thinking about antibiotics. In fact, "finish the course" is based on 2 ideas about shorter courses of antibiotics that are unsupported by current evidence: 1) they are less effective, and 2) they lead to more resistance.

## Myth 1: Shorter courses of antibiotics are less effective

Most clinicians tend to prescribe a fixed duration of antibiotic therapy (e.g., 7, 10, 14 days) for common community-acquired bacterial infections, without taking into account the patient's clinical response. However, as more data informing duration of therapy accumulate, clinicians are learning that short courses of antibiotics are usually equally effective (in terms of clinical cure and relapse) as longer courses for most common uncomplicated infections treated in the community setting.[6] Recent clinical trials have challenged the dogma that antibiotic therapy cannot be stopped earlier. Studies show that for community-acquired pneumonia, 5 days are as good as 7 to 10[7]; for pyelonephritis, 7 days are as good as 10 to 14[8]; and for cellulitis, 5 days are as good as 10.[9] It should be noted, however, that there are some exceptions where longer courses may be preferred: streptococcal pharyngitis[10] and otitis media in children under 2 years[11] may require longer courses of treatment, as do deep-seated or chronic infections.[12,13] Also, there is limited evidence examining duration of treatment for infections occurring in severely immunocompromised patients. Regardless, shorter courses of antibiotics can be safely used for the majority of uncomplicated community-acquired infections.

## Myth 2: Shorter courses of antibiotics lead to more resistance

Most of us were taught that terminating antibiotics prematurely can lead to the development of bacterial resistance. This has proven to be a myth as mounting evidence supports the opposite. In fact, it is prolonged exposure to antibiotics that provides the selective pressure to drive antimicrobial resistance; hence, longer courses are more likely to result in the emergence of resistant bacteria.[14,15] Additionally, long durations of therapy put patients at increased risk for adverse effects,[16,17] including the development of *Clostridium difficile* infection,[18] which is associated with significant morbidity and mortality.

As trusted health care professionals, pharmacists are in a unique position to help fight antimicrobial resistance and improve patient safety by dispelling the myth that "more is always better" when it comes to antibiotics. Discussing the benefits of short-course antibiotic therapy with prescribers is an opportunity to improve dialogue about appropriate antibiotic use and provide more optimal care for our patients.

When discussing antibiotic duration with patients, rather than simply applying a blanket statement, a more tailored approach considering the patient, reason for antibiotics and prescribed duration compared to best available evidence is needed. Some experts have suggested counselling the patient to contact his or her prescriber if symptoms have improved prior to completing the course in order to discuss the possibility of an abbreviated course.[6] As always, patients should be instructed not to share or save antibiotics for later use and to return any unused antibiotics to the pharmacy for disposal.

A recent commentary by Llewelyn et al.[19] echoes the concept that the "finish the course" message is counterproductive to antibiotic stewardship. While acknowledging that further research is needed to determine the optimal duration of treatment for many infections, the authors encourage policy makers, educators and physicians to drop the "finish the course" message in favour of emphasizing the harms of antibiotic overuse and a shift towards more patient-centred decision making.

It is clear that telling every patient to "finish the course of antibiotic therapy, even if you feel better" is outdated. It perpetuates a false belief that shorter courses of antibiotics are harmful and lead to antibiotic resistance. Instead, our focus should shift to ensuring appropriate antibiotic use as well as improving dialogue with prescribers and patients about the harms of antibiotic overuse. The time has come to challenge the maxim "finish the course." ∎

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