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Shifting the mindset regarding adherence to antibiotic use for respiratory tract infections

Carl Llor [a,b,c,*]

[a] Primary Care Research Institute Jordi Gol (IDIAP), Barcelona, Spain
[b] CIBER Enfermedades Infecciosas, Instituto de Salud Carlos III, Madrid, Spain
[c] Research Unit for General Practice, Department of Public Health, University of Southern Denmark, Odense-Esbjerg, Denmark

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ABSTRACT

Some papers emphasize adherence to antibiotic therapy, but a paradigm shift is needed. While nonadherence may impact chronic conditions, it has not been proven to affect community respiratory tract infections outside of tuberculosis. Respiratory infections, which account for most community antibiotic prescriptions, often involve inappropriate antibiotic use, even in developed countries, with up to 80 % of consultations resulting in prescriptions. Over-the-counter sales of antibiotics further exacerbate this issue. Research should explore whether stopping antibiotics after symptom resolution, rather than completing the full course, is feasible for non-severe infections. Shorter antibiotic courses have shown similar effectiveness with fewer side effects, aligning with the "shorter is better" principle. The idea that completing the entire antibiotic course prevents antimicrobial resistance remains unproven. Instead, longer exposure to antibiotics increases resistance. A patient-centered approach, focusing on outcomes, is essential for the future of antibiotic stewardship.

Commentary

With regard to the recent paper by Al Masud et al.[1] on encouraging adherence in community antibiotic use published in your journal, the scientific community should consider a paradigm shift for several reasons. The authors point out that the misuse and overuse of antibiotics, coupled with patient nonadherence to antibiotics, significantly contribute to antimicrobial resistance. Although there is compelling evidence linking antibiotic overuse to antimicrobial resistance, the causal effect of patient nonadherence to antibiotic courses on antimicrobial resistance remains unclear. They also mention that antibiotic nonadherence significantly affects treatment outcomes, resulting in effectiveness being reduced by up to three times, and contributing to increased illness, higher mortality rates, and greater healthcare burdens and costs. While this is certainly true for chronic conditions, it has not been proven for community respiratory tract infections other than tuberculosis.[2]

The overuse of antibiotics worldwide is a great concern. Approximately half of general practice consultations for respiratory tract infections result in the prescription of an antibiotic, with an enormous variation ranging from 20 % to 80 % across countries.[3] This high percentage of antibiotics used for these infections is further aggravated by the widespread over-the-counter utilization of antibiotics in many parts of the world, as pointed out by the authors.[4,5] Unless it is tuberculosis, the respiratory tract infection is considered potentially very severe, or in some particular infections, such as otitis media in young children and acute streptococcal pharyngitis,[6,7] when managing patients with a fixed antibiotic duration, new research shows that stopping the treatment after symptom resolution—before completing the full course—is feasible. Clinical trials have shown that most bacterial respiratory tract infections can achieve similar effectiveness with fewer side effects when treated with shorter antibiotic courses compared to the standard duration.[8] This approach is based on the 'shorter is better' principle, which was proposed a decade ago.[9] Furthermore, only about one-third of patients adhere to completing the full course of antibiotics. Studies using medication event monitoring systems have found that, in real-world settings, only a third of patients follow the prescribed antibiotic regimen.[10]

The commonly cited advice to 'complete the entire course' of antibiotics to prevent antimicrobial resistance—by eradicating all bacteria that could lead to future relapses—remains unproven. Conversely, extended exposure of patients to antibiotics increases the selective pressure that drives the development of antimicrobial resistance. This is especially clear in patients with pneumonia, as several randomized

clinical trials have shown that shorter treatment durations in the hospital setting result in similar clinical outcomes to longer courses, but with lower rates of infection recurrence and antimicrobial resistance.[11,12] Despite the lack of studies in primary care, it would not be unreasonable to think that the percentage of patients with pneumonia who need standard antibiotic course duration would be even lower. Although the recommended course for pneumonia in Bangladesh is 7 to 14 days,[13] some recent clinical guidelines, such as the World Health Organization (WHO) AWaRe antibiotic book, advocate five-day courses of antibiotics, not only for pneumonia but also for acute rhinosinusitis, and acute exacerbations of chronic obstructive pulmonary disease.[14] Some other guidelines, such as the latest update of the UK NICE and the Australian guidelines also advocate shorter durations of antimicrobial therapy for pneumonia in primary care.[15,16]

In recent years, an increasing number of independent organizations, scientific academies, and institutions have moved away from the principle of always completing the full course of antibiotics.[17] Most respiratory tract infections, irrespectively of whether they are viral or bacterial, are self-limiting, and standard antibiotic courses should no longer be the matter of course. This issue is particularly pronounced in primary healthcare settings, in which most infections are viral. However, this is not limited to infections of the respiratory tract. A useful online tool summarizes the benefits of using short courses for 22 different infectious conditions, based on more than 130 clinical trials, most of which are managed in the hospital setting.[18]

Continuing to consider adherence to antibiotic therapy as a strong indicator of antimicrobial stewardship is a misconception, as it is often linked to negative effects on antimicrobial resistance without a positive impact on clinical outcomes. We must shift our mindset regarding the need for fixed durations and adopt a patient-centered approach.

CRediT authorship contribution statement

Carl Llor: Writing – review & editing, Writing – original draft, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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