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Where Next with Antibiotics and Respiratory Tract Infections?

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Three papers in this issue of *JFP* highlight some of the key points in the management of respiratory tract infections (RTIs). RTIs are not only the most common condition managed in affluent societies, but microorganisms are increasingly demonstrating the ability to outstrip technological developments. Few new classes of antibiotics have been developed in the last 30 years. Antibiotic resistance is a growing problem internationally, particularly in countries with high antibiotic use. The very real danger is that many life-threatening infections may become untreatable.¹

What is the overall effect of antibiotics in RTIs? De Sutter and colleagues show that amoxicillin has little effect in patients with presumptive rhinosinusitis (purulent rhinorrhea). This finding is consistent with systematic reviews of antibiotics for sore throat,² sinusitis,³ the common cold,⁴ otitis media,⁵ and bronchitis,⁶ all of which document the modest effect of antibiotics for most patients. Thus, for most patients antibiotics will not help, may cause adverse effects, and add to the cost of an episode. Perhaps most important, prescribing will encourage a belief in antibiotics by the patient and by his or her family and friends. We have shown that this “medicalization” of RTI encourages a cycle of return visits to the doctor for future episodes, which in turn further fuel expectations.^{7,8} If the physician feels it is important to use an antibiotic, unless there is clear evidence to the contrary, then well-established antibiotics for short courses are likely to minimize the likelihood that antibiotic resistance will develop.¹ The article in this issue by Hopstaken and colleagues illustrates this point by demonstrating that the macrolide roxithromycin is no more effective than amoxicillin for patients with acute lower RTI.

If the evidence does not support the immediate use of antibiotics for most patients with RTI, what are the alternatives? If patients do not have systemic symptoms, there is enough evidence to support symptomatic management, particularly for upper RTIs.⁹ It is also important to provide patients with information about the natural history, because RTIs

are symptomatic for a surprisingly long period. This is highlighted by both Hopstaken and De Sutter in this issue of *JFP*: most patients were still symptomatic 10 days after seeing the doctor, even if they received an antibiotic. Providing information about natural history not only helps patients but also can significantly reduce reattendance rates for the same illness.¹⁰ Too often a return visit results in an additional prescription for an antibiotic, when reassurance, a renewed focus on symptomatic management, reevaluation of the initial diagnosis, and vigilance for “red flags” are more appropriate.

Most patients wish for reassurance and help rather than an antibiotic; doctors tend to overestimate the proportion of patients who expect an antibiotic.¹¹ We are also not good at identifying exactly which patients do expect an antibiotic. However, if physicians perceive a strong patient desire for an antibiotic, they may find it very difficult not to prescribe, given the importance attached to the doctor–patient relationship.¹² In this situation the use of a delayed prescription—asking the patient to wait a few days before considering using an antibiotic—may help. In this issue of *JFP*, Arroll and colleagues show that the use of antibiotic can be cut by half even if a delayed prescription is given to such patients. This supports previous studies suggesting that the delayed approach is acceptable to patients, modifies beliefs and expectation, and reduces subsequent reattendance with RTIs.^{7,8,13}

But which approach to delayed prescribing is best? Previous studies have asked patients to collect a prescription from the physician’s office (with collection rates of 25%),^{8,13} whereas when patients are given a prescription at the first visit but instructed to hold it, as in the report by Arroll, 50% use it. More evidence is needed to clarify this point, since the differences may be explained by different patient

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expectations in the different cohorts or by creating the minimal hurdle of asking the patient to pick up the prescription at their physician's office.

If most patients do not benefit from antibiotics, then who does? Targeting antibiotics to patients who are shown by microbiological samples to have bacterial infections is logical but not practical in the management of most RTIs, since awaiting the test results delays treatment by several days. Office-based tests are currently possible only for sore throat and suspected influenza, but there are concerns about the validity of rapid tests. They also create the perception in the patient's mind that they must see the doctor for an investigation, further medicalizing a self-limiting illness.^{14,15}

Targeting antibiotics according to validated clinical scores is perhaps the most promising approach, but much work remains. For sore throat the "Strep Score" is simple (fever, cervical nodes, purulent exudate, absence of cough) and probably identifies a group of

individuals who will benefit more than others from antibiotics.^{14,16} However, there are concerns about the validity of these criteria,¹⁴ since they are based on the throat swab as a gold standard, which does not distinguish carriage from infection. Nor are there estimates from reliable primary care cohorts with secure denominators of the net benefit to patients from using the criteria: do they feel better faster and do they avoid complications? For otitis media, sinusitis, and bronchitis there is very little published evidence to help clinicians decide on clinical grounds which patients will particularly benefit from antibiotics. This then is the major challenge to our profession in the management of RTIs: to provide a secure evidence base to inform the selective targeting of antibiotics in RTIs. Until then, for patients who are not systemically unwell, clinicians should probably negotiate symptomatic management and either not use antibiotics or use a delayed prescription.

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