Antibiotic prescribing for upper respiratory-tract infections in primary care

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Abstract

The use and overuse of antibiotics in humans is a major contributor to the selection of antibiotic resistance organisms. Recent evidence has shown that primary care prescribing selects for resistances of clinical importance. The National Prescribing Service runs both educational and audit activities. The latter provide some insight into general practice attitudes toward antibiotic prescribing. *Commun Dis Intell* 2003;27 Suppl:S39–S41.

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Introduction

The use and overuse of antibiotics in humans is a major contributor to the selection of antibiotic resistant organisms. Recent evidence has shown that primary care prescribing selects for resistances of clinical importance.[1]

Managing upper respiratory-tract infections (URTIs) in general practice is very common; second behind hypertension as the most frequently managed problem and the most common 'new problem' seen by general practitioners (GPs).[2] Many URTIs and acute bronchitis are viral in origin and of a self-limiting nature. However, data from the *Bettering the evaluation and care of health* study indicate that antibiotic prescribing for URTIs is inappropriately high: around 50 per cent of patients who present with an URTI to their GP receive an antibiotic, a rate of prescribing which has remained virtually unchanged in the last few years.[3]

The National Prescribing Service (NPS) is an independent organisation promoting quality use of medicines in Australia. To encourage rational antibiotic prescribing, the NPS provides both educational and audit activities to primary care practitioners and has conducted an antibiotics program each year during the winter months from 1999 to 2001. These programs have offered an insight into general practice attitudes and barriers to optimising antibiotic prescribing for URTI and acute bronchitis.

Methods

In addition to print materials circulated to GPs (e.g., *NPS News, Prescribing Practice Review*, individual prescribing feedback, and educational visits), the NPS has offered case studies and clinical audits to GPs as part of their professional development. Participation by GPs in these activities assists them in satisfying the requirements for payment under the Practice Incentives Program for the Commonwealth Government's Quality Prescribing Initiative.

Hypothetical case scenarios were provided for GPs on otitis media in 1999 and sinusitis in 2001. The responses to the case study questions were aggregated and, together with expert commentary discussion of the results, supplied in a report to participating GPs.

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Clinical audits have been offered each winter in 1999, 2000 and 2001. An audit form was designed allowing GPs to record their own prescribing for 20 patients presenting with any of the following: common cold; sore throat; acute otitis media; otitis media with effusion; acute sinusitis; acute bronchitis; or chronic bronchitis. Prescribing was measured for concordance with recommendations in the *Therapeutic guidelines: antibiotic* for the various conditions. A report containing individual responses, together with aggregated results and an expert commentary, was provided to participating GPs.

Results

A small number of GPs (n=107) responded to the first case study on otitis media in 1999. Ninety-two per cent of GPs chose to prescribe an antibiotic in a case which the microbiologist's expert commentary described as not requiring antibiotic therapy. Eighty-six per cent of the prescriptions written were intended for immediate use. Furthermore, while 73 per cent chose amoxycillin as their first-line agent (in line with *Therapeutic guidelines* recommendations), some antibiotics selected were inappropriate for the likely causative pathogens, including cephalexin, co-trimoxazole, penicillin V, and roxithromycin.

In 2001, GP participation in NPS case studies had increased such that 962 responses had been received for the study on sinusitis; the responses from a sample of 150 participants were analysed. Ninety per cent of GPs considered an antibiotic was required; some of this prescribing was accompanied by symptomatic treatments such as a decongestant and an analgesic. Amoxycillin was the first-choice antibiotic in 77 per cent of cases in accordance with *Therapeutic guidelines* recommendations.

The antibiotic clinical audits measured concordance with *Therapeutic guidelines* recommendations. Overall, concordance included occasions when an antibiotic was not indicated and was not prescribed, or when an antibiotic was indicated and the appropriate first-line agent was selected.

Concordance for all conditions (common cold, sore throat, acute otitis media, otitis media with effusion, acute sinusitis, acute bronchitis and chronic bronchitis) was moderately good (around 70%) for the three audits. Certain conditions were managed in accordance with recommendations better than others: that common colds are viral and do not require antibiotics was recognised by over 90 per cent of respondents, yet acute bronchitis was poorly managed with around 50 per cent of respondents prescribing antibiotics despite this condition viral most often having a viral cause.

In general, the levels of antibiotic prescribing were high, particularly for sore throats, acute sinusitis, acute otitis media, and acute bronchitis. The overall amount of antibiotic prescribing was 42.6 per cent, 50.3 per cent, and 50.9 per cent for 1999, 2000, and 2001, respectively. With respect to antibiotic selection, although higher use of the first-line agents amoxycillin and penicillin V, is promising in comparison with other agents, inappropriate choices for treating URTIs such as cephalexin, cefaclor, and macrolides, continues.

Discussion

Results from the case studies and clinical audits are not comparable as some data are derived for hypothetical cases whereas the clinical audits are self-reported with no assurance of standardised diagnostic labelling. However, they do provide an insight into conditions for which GPs are more likely to prescribe antibiotics.

Overall, the antibiotic prescribing rate of around 50 per cent still allows room for improvement given that these conditions are primarily viral or self-limiting in nature. Antibiotic prescribing for these conditions remains high and with only moderate accord with national best practice guidelines. This is despite mounting evidence from systematic reviews and meta-analyses that prescribing antibiotics does little to affect the course of many URTIs.

Some areas pose greater diagnostic and therapeutic dilemmas for prescribers. GPs are aware of the evidence regarding antibiotic prescribing for otitis media and there appears to be a willingness to delay antibiotic use (around 10% of antibiotic prescriptions in the audits were to be filled at a later date), yet there is still an inappropriate level of prescribing for acute bronchitis which is almost always viral in nature. Similarly, acute sore throat was treated with antibiotics too frequently for what is most often a viral infection; an antibiotic is indicated in severe tonsillitis only. Perhaps some conditions present greater diagnostic ambiguity, for example concern that acute bronchitis may be pneumonia, and this concern drives antibiotic prescribing outside evidence-based recommendations.

The NPS receives feedback on GP perceptions of antibiotic prescribing for URTIs via activity reports submitted by NPS facilitators following educational visits and small-group peer discussions with GPs. Through these reports, the NPS has become aware that focusing on resistance patterns can divert the emphasis away from the self-limiting nature of most URTIs and the limited benefit of antibiotics. However, practitioners often receive information concentrating on bacterial sensitivities and resistance to primary care antibiotics, either through pharmaceutical industry detailing or the data presented in product information documents.

An overemphasis on increasing rates of resistance for common respiratory pathogens deflects from the issue of judiciousness in the decision to prescribe (if at all) and can prompt inappropriate responses, for example, selecting second-line antibiotics as first-line choices or using antibiotics in conditions where they are of limited benefit.

Another problem for GPs is reconciling the public health necessity of reduced antibiotic resistance through less prescribing with the potential individual benefits of prescribing antibiotics for the patient before them. GPs need to be able to offer patients alternatives to antibiotics in the management of their URTI to help find this balance should prescribing be deemed unnecessary.

Consequently, the NPS has provided tools for GPs to facilitate alternative approaches to managing URTIs, including symptomatic management 'non-prescription' pads, patient materials on sore throats and acute bronchitis, as well as consumer campaigns (such as the *Common colds need common sense* campaign) that raise community awareness of the limitations of antibiotics for certain infections and highlight the possible side-effects of antibiotics.

In conclusion, activities to address excessive antibiotic use need to include primary care settings as there is evidence that the management of URTIs by this group is less than optimal. However, global arguments on developing resistance can sometimes overwhelm quality issues surrounding antibiotic prescribing in this arena. Messages for general practitioners must focus on the benefits and risk to the patient which can be applied in daily practice. Promoting appropriate prescribing for URTIs will in itself contribute to reducing antibiotic resistance as there is room for improvement in the current attitudes toward the management of these conditions.

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References:

1. Nasrin D, Collignon PJ, Roberts L, Wilson EJ, Pilotto LS, Douglas RM. Effect of beta lactam antibiotic use in children on pneumococcal resistance to penicillin: prospective cohort study. *BMJ* 2002;324:28–30.

2. Britt H, Miller GC, Knox S, Charles J, Valenti L *et al*. General practice activity in Australia 2000–01. AIHW Cat. No. GEP 8. Canberra: Australian Institute of Health and Welfare (General Practice Series No. 8).

3. National Prescribing Service. Antibiotics in primary care. Prescribing Practice Review May 2002;18:2–3.