Child Health

Antibiotic prescribing for upper respiratory tract infections in children: how can we improve?

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Key messages

- Despite little evidence of benefit, antibiotic prescribing for children with upper respiratory tract infection (URTI) is widespread in the UK
- There is strong population-based evidence against prescribing antibiotics for uncomplicated URTI
- Tailoring evidence to the individual, applying prescribing criteria and using clinical decision support systems may make prescribing more relevant to each patient
- Offering patient information leaflets and more opportunities for clinical review may help GPs reduce their prescribing. Ultimately it may take financial incentives to make a real difference

Why this matters to us

We know we shouldn't be prescribing antibiotics for children with uncomplicated URTIs. But in the real surgery situation, prescribing sometimes seems the sensible option. Debating the pros and cons of prescribing with an insistent parent, we can see how side effects might seem rare and trivial and antibiotic resistance seems a small and distant risk. Certainly if one's own child is up at night with an earache and heavy cold, the temptation to prescribe can be overwhelming. We wanted to look at the evidence again, and try to apply it to the real world of the consulting room. We wanted to know if there are any new approaches we could try that might help us do the right thing more often.

ABSTRACT

Upper respiratory tract infection (URTI) in children is one of the most common problems that general practitioners (GPs) see. Although complications from URTIs are rare, and antibiotics offer little or no benefit in uncomplicated cases, antibiotic prescribing has increased in recent years following a decline in the late 1990s. This article explores possible reasons for the increase, weighs the evidence on withholding antibiotics and asks

how GPs will interpret recent National Institute for Health and Clinical Excellence (NICE) guidelines when dealing with URTI in children. We review some of the latest approaches to help implement antibiotic prescribing guidelines and suggest some practical solutions to help busy GPs.

Keywords: antibiotics, children, guidelines, prescribing, upper respiratory tract infection

Upper respiratory tract infection (URTI) is the most common reason for patients to consult with their GP, and children consult more than any other age group.¹ In the UK, nearly all pre-school children consult a doctor at least once a year, for upper respiratory tract

symptoms such as cough, cold, earache and high temperature.²

General practitioners (GPs) know that URTIs are usually self-limiting and uncomplicated viral illnesses (see Box 1). Yet in the UK a high proportion (33%) of

childhood consultations for URTI result in an antibiotic prescription³ compared with some European countries (for example the Netherlands, where the proportion is nearer to 25%).⁴ And although antibiotic prescribing for children in UK primary care declined in the late 1990s, it has increased again in recent years (by 10% between 2003 and 2006); this increase is particularly associated with non-specific URTI diagnoses.⁵ It has been suggested that GPs may be side-stepping formal guidance not to prescribe antibiotics for specific diagnoses such as tonsillitis and otitis media by reclassifying them as non-specific URTIs.⁶

Box 1 Upper respiratory tract infections

Upper URTIs include:

- common cold
- laryngitis
- pharyngitis/tonsillitis
- acute rhinitis
- acute rhinosinusitis
- acute otitis media

So are we simply not yet convinced that we need to reduce antibiotic prescribing for URTIs in children – will we choose to ignore the recent NICE guidelines?⁶ Or do we just need help in bridging the gap between evidence and practice?

Doctors now have clear NICE guidance on prescribing antibiotics for self-limiting respiratory tract infections in adults and children over three months old.⁶ The three main options are:

- 1 no antibiotic prescribing
- 2 delayed (deferred) prescribing, in which a prescription is written for use at a later date if symptoms worsen or do not start to settle within the expected timescale; and
- 3 immediate prescribing in certain situations or groups, for example those who are systemically unwell.

Evidence from a randomised controlled trial (RCT) of adults presenting with uncomplicated lower respiratory tract infection suggests that no antibiotics or delayed antibiotics made little difference in symptom resolution and were likely to considerably reduce antibiotic use and belief in the effectiveness of antibiotics.⁷

The absence or presence of clinical symptoms may help prescribing decisions: for example the NICE guidelines suggest using the Centor criteria to decide when to prescribe antibiotics for pharyngitis, sore throat or tonsillitis likely to be due to Group A beta haemolytic streptococcus.⁶ They suggest considering immediate antibiotic prescribing where three or more of the Centor criteria are present: tonsillar exudate,

tender anterior cervical lymphadenopathy or lymphadenitis, history of fever and absence of cough.

But perhaps GPs feel they have reduced antibiotic prescribing as far as is reasonably safe? After all, just as there have been consequences during the past 50 years from increasing the use of antibiotics without supporting evidence, there may be unintended consequences of cutting back on antibiotic use beyond a certain point without adequate evidence.⁸ Faced with an ill child and an insistent parent, and no point of care rapid testing, GPs have many pros and cons to weigh up in their minds before prescribing (see Figure 1), not least the worry of rare but serious complications.

There is certainly a large body of evidence from placebo controlled RCTs that there is little benefit in prescribing antibiotics for most URTIs,^{9,10} including using antibiotics for non-severe acute otitis media, sore throat, the common cold, acute purulent rhinitis and acute maxillary sinusitis.¹⁰ In children with URTI, antibiotics have little significant impact on either the course of illness or the likelihood of suffering complications.⁹ It is estimated, for example, that GPs would need to treat almost 4800 children with otitis media in order to prevent one case of mastoiditis.¹¹ This was confirmed by Peterson *et al*, who suggested that the overall number of courses of antibiotics needed to prevent one serious complication is over 4000.¹² UK surveillance shows the incidence of serious bacterial infections is now very low (www.hpa.gov.uk), and with the switch to a much wider-hitting 13 valent pneumococcal vaccination for the primary vaccination schedule from 1 April 2010 this is set to reduce further.

As well as a lack of efficacy, there are other important consequences of unnecessary antibiotic prescribing. It can promote the development of antibiotic resistance^{13–15} and increases the risks of harm to patients through adverse effects.¹⁶ There is also evidence

Figure 1 GPs have plenty to weigh up in their minds

that prescribing antibiotics for a self-limiting viral URTI may increase patient expectation for re-attendance and antibiotic treatment for future episodes.^{15,17} Reducing unnecessary antibiotic prescriptions could help to cut NHS spending on antibiotics; annual prescribing costs for acute cough alone exceed £15 million.¹⁸

Nevertheless, however sound the research evidence against prescribing, in the consulting room there are powerful pressures in its favour. Many GPs remember a time when antibiotic prescribing for sore throats, earache and cough was the norm, and prescribing behaviour is hard to change. GPs may be sceptical of evidence and feel that it may not apply to the needs of individual patients.¹⁹ Most doctors already know what the guidelines advise, but don't always follow them, possibly because of nagging worries about possible complications in the individual, and the ever-present threat of litigation.²⁰ Then there is the drive to maintain relationships with patients in time-pressured consultations²¹ and fluctuations in patients' concerns and expectations.²²

So can anything be done to help us to implement prescribing guidelines for children's URTIs? When it comes to implementing guidelines, most systematic reviews conclude that a multifaceted approach seems to work better than any single intervention.²³ There is broad agreement, however, that reminders about guidelines may be among the most effective interventions, especially if they are an integral part of the face-to-face consultation, for example electronic prompts or algorithms in clinical settings.²⁴ However, over time reminders lose much of their effectiveness.²⁵ A Cochrane systematic review found mixed results on the efficacy of reminders,²⁶ although it suggested they could be effectively combined with information on risk to give to the accompanying adult.

During the last few years, healthcare organisations have become increasingly interested in clinical decision support systems (CDSSs), which give clinicians patient-specific recommendations to help with clinical decision making.²⁷ There is no clear definition of a CDSS; most of the relevant research refers to computer software, but it could equally be a paper-based decision support system. CDSSs have been hailed for their potential to reduce medical errors²⁸ and to increase the quality of health care,²⁹ but how effective are they in influencing antibiotic prescribing?

A consistent concern about CDSSs in the literature is that doctors' and patients' attitudes towards them can make the difference between the success and failure of a system. Personal experience in the surgery of 'pop-up' prescribing reminders suggests that they can be an annoyance and are often ignored.

There is also evidence from a RCT that multiple intervention strategies can reduce antibiotic prescribing

for respiratory tract symptoms in primary care.³⁰ The intervention in this trial had four elements:

- 1 a group education meeting with a consensus procedure on type of antibiotics and indications, along with communication skills training
- 2 monitoring and feedback on prescribing behaviour
- 3 group education for GP assistants and pharmacists
- 4 education material for patients.

The control group did not receive any of these elements. Prescribing rates for respiratory infections fell by 12% compared with the control group, and the intervention did not affect patient satisfaction or hospital referral rates. The authors point out the need for further research looking at how sustainable and cost effective these interventions are.

More recently a cluster randomised trial has shown that using an interactive booklet on respiratory tract infections in children within the consultation can reduce antibiotic prescribing by around two-thirds.³¹ This was an eight page booklet on respiratory tract infections in children with online training for clinicians in its use; the booklet was designed to be used within the consultation and then provided to patients as a take-home resource. The booklet acted as an evidence-based information resource for parents, an aide-memoire for clinicians and a prompt to enhance communication within the consultation.

So could any of these approaches really help a busy London GP to stick more closely to prescribing guidelines?

Giving us communication training, monitoring our prescribing and handing out patient educational material may work well in trials, but seems likely to be costly and time consuming in practice. Clinical decision support systems – whether computerised or in booklet form – look promising, particularly the sort that can be used as a trigger for a discussion during the consultation. But again, there is a danger that GPs will find them too intrusive and or will simply ignore the prompts.

A more practical approach may be to offer balanced information about the pros and cons of prescribing for uncomplicated URTIs in children, backed up by a simple patient leaflet about antibiotic prescribing, perhaps including a simple 'number needed to treat' diagram. From experience this often helps to head off a confrontation (for example, a leaflet from Patient UK has basic advice on how to treat simple URTI and when to seek further help www.patient.co.uk/showdoc/23068999).

Pointing to a chart on the wall showing the NICE guidance on average total illness durations for common URTIs (see Box 2) can be helpful too. It's also crucial to try to tailor the general message and population-based evidence to the individual child in front

Box 2 Average total illness length of common illnesses

Acute otitis media	4 days
Acute sore throat/acute pharyngitis/acute tonsillitis	1 week
Common cold	1½ weeks
Acute rhinosinusitis	2½ weeks
Acute cough/acute bronchitis	3 weeks

From NICE clinical guideline 69

of you, for example spelling out the nature of possible side effects versus any possible shortening of symptom duration.

The delayed prescription option seems sensible in practice because it does not feel like complete capitulation, it avoids confrontation and it acknowledges the patient's concerns. It has also been shown to reduce antibiotic consumption and future consulting while maintaining patient satisfaction.²¹ And for reassurance in individual cases, it is worth more explicitly considering prescribing guidelines such as the Centor criteria, along with thorough safety netting, including clear instructions to patients on when they should return for review (see Box 3).

Box 3 Some practical options to help reduce unnecessary prescribing

- Consider delayed or deferred prescriptions
- Offer reliable patient information leaflets to back up your message
- Consider using prescribing guidance such as Centor criteria
- Offer balanced information on pros and cons of prescribing
- Try to tailor the evidence to the individual patient
- Have a list of common illness durations to refer to
- Consider arranging a clinical review appointment

There is evidence that by linking performance to pay, the Quality and Outcomes Framework (QOF) has resulted in significant improvement in targeted clinical outcomes and quality of care since it was introduced in 2004.³² Perhaps one day soon we will see some sort of clinical decision support system as part of a new antibiotic prescribing QOF indicator.

ETHICAL APPROVAL

Not required.

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CONFLICTS OF INTEREST

None.

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