Initiatives to improve appropriate antibiotic prescribing in primary care

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Influencing clinicians’ prescribing behaviour is important because inappropriate use and overuse of antibiotics are major drivers of antibiotic resistance. A systematic review of interventions for promoting prudent prescribing of antibiotics by general practitioners suggests that multifaceted interventions will maximize acceptability. This article reports how this type of approach has been used successfully in Derbyshire, UK over the last 4 years. The range of interventions that have been used includes educational meetings (both open group events and others targeted at higher prescribers in the surgery) using a supportive and guiding ethos; the provision of support materials aimed at empowering avoidance or delayed antibiotic prescribing, where appropriate, and improving patients’ knowledge and confidence in self-management; and the production of different treatment guidelines incorporating key messages with evidence, indicating where antibiotics are unlikely to be of benefit. Education on antibiotics in schools was a novel approach, which was developed in North Derbyshire to increase public awareness of the appropriate treatment for common illnesses without using antibiotics.

Keywords: GPs, education, guidelines, schools

Introduction

Antibiotic resistance and healthcare-associated infections pose a significant threat to public health. This threat is magnified by a declining number of new antimicrobial agents entering clinical practice. Broad-spectrum antibiotics (quinolones and cephalosporins) should be avoided when narrow-spectrum antibiotics remain effective, as they increase the risk of Clostridium difficile infection (CDI), methicillin-resistant Staphylococcus aureus and resistant urinary tract infections (UTIs). The Chief Medical Officer has highlighted the need for clinicians to preserve the effectiveness of antibiotics by giving clear evidence-based guidance on their appropriate use. Inappropriate prescribing increases resistance, wastes valuable resources, puts patients at risk of adverse effects and increases patient readmission.

It has been estimated that there are ~120 million cases of respiratory tract infection (RTI) each year in the UK, with one-quarter of the population visiting their general practitioner (GP) with RTI symptoms, often expecting an antibiotic. However, RTIs are usually self-limiting, thus withholding antibiotic treatment rarely leads to serious complications. Despite this, 60% of all antibiotic prescriptions in primary care are for RTIs. A systematic review of research on interventions for promoting prudent prescribing for acute RTIs by GPs suggests that multifaceted interventions will maximize acceptability. Such interventions should allow GPs to reflect on their own prescribing, help reduce uncertainty about appropriate RTI management, educate GPs about appropriate prescribing, facilitate patient-centred care and be beneficial to implement in practice. This article reports how this type of approach has been successfully used in the Derbyshire region of England over the last 4 years.

Initiatives to improve antibiotic prescribing

A range of interventions were introduced with the aims of reducing the prescribing of antibiotics, particularly quinolones and cephalosporins, and increasing public awareness of the appropriate treatment for common illnesses, particularly coughs and colds.

Education and support for GP practices

Between April 2009 and December 2012, GPs, non-medical prescribers, out-of-hours and other clinical staff across Derbyshire were invited to attend education sessions on healthcare-associated infections and evidence-based antibiotic prescribing. Sessions involved presentations from the local microbiologist, an antimicrobial pharmacist and an infection control nurse. GPs’ protected learning time was utilized to ensure high attendance. Graphs of antibiotic prescribing rates for all GP practices were circulated, followed by group discussions.

Various key resources were issued to all attendees, including the National Institute for Health and Care Excellence quick reference guide on antibiotic prescribing for RTIs, local treatment guidelines, other evidence-based summaries (e.g. National Prescribing Centre rapid reviews on the treatment of upper RTIs and simple UTIs) and an article written by a GP practice on implementing change when managing infections in primary care.

Subsequently, GP education and support visits were undertaken, either based on targeted prescribing performance or at the request of the practice. They were followed by further assistance, such as (i) conducting antibiotic audits, with the analysed results being fed back to the practice; (ii) providing support materials comprising posters and leaflets, including disease-specific (e.g.
sore throat) leaflets produced by GPs at a Shropshire practice that were adaptable for other practices; and (iii) providing standard operating procedures for delayed prescribing in dispensing and non-dispensing practices.

**Treatment guidelines**

Evidence-based treatment guidelines were developed, based on Public Health England guidance, covering antimicrobial treatment; appropriate antibiotic prescribing and learning from local CDI cases; diagnosis and management of lower UTIs; and management of CDI. The link to the CDI guidance has been included on all positive laboratory reports for CDI so that GPs can access the guidance promptly.

**Antibiotic Prescribing Lead GPs**

Four GPs agreed to be Antibiotic Prescribing Leads (Champions), in order to have one lead for each of the four local [now Clinical Commissioning Group (CCG)] areas in Derbyshire. They help to promote the key antibiotic prescribing messages to practices; promote and assist with education sessions; and assist with press releases, as appropriate. One of these GPs has agreed to present at local education sessions to explain how their practice implemented change and reduced the prescribing of antibiotics.

**Other initiatives**

Other initiatives aimed at improving prescribing in primary care and raising awareness of CDI are shown in Figure 1.

**Antibiotic education in schools**

Trained school health assistants delivered education on antibiotics across 180 primary schools in North Derbyshire as part of the hand hygiene lesson for children aged 7–9 years. The children completed a quiz on antibiotics (Figure 2) and also took home items with key messages on the appropriate use of antibiotics, including a bookmark showing ‘Gerald the Giraffe’ who has a cold (available as Supplementary data at JAC Online), a certificate of attendance (available as Supplementary data at JAC Online) and a patient leaflet for their parents entitled ‘Get Well Soon’.

- **Messages included on urine sensitivity reports**, reminding prescribers that co-amoxiclav, cephalosporins and ciprofloxacin may be associated with an increased risk of CDI.
- **Local radio interviews by antimicrobial pharmacist for European Antibiotic Awareness Day.**
- **Paper on CDI and how community rates may be reduced circulated to GPs.**
- **Four Commissioning for Quality and Innovation indicators for prescribing developed for staff that provide primary healthcare out of hours.** They included quality indicators for:
  - prescribing broad-spectrum antibiotics
  - total antibiotic items
  - proton pump inhibitors
  - prescribing of anti-diarrhoeal medication (designed to check whether the patient may have CDI and arranging a test, as appropriate, instead of prescribing these medicines)
- **Three monthly review of prescribing data for GP practices for:**
  - total antibiotic items
  - broad-spectrum antibiotics
  - proton pump inhibitors
- **Reports and graphs of prescribing data sent to GP practices, so they could monitor their progress in comparison with their peers.** Antibiotic prescribing data were collected, via Electronic Prescribing Analysis and Cost, Items/STAR PU, as advised by the Antimicrobial Stewardship in Primary Care group.
- **Education sessions on appropriate prescribing of antibiotics provided for dentists.**
- **Training sessions on the diagnosis and management of UTIs provided for district nurses.**
- **Education sessions on prescribing of antibiotics and healthcare-associated infections, including appropriate treatment of diarrhoea, provided for community pharmacists**
- **New antimicrobial treatment guidance is sent to community pharmacists to promote consistent advice to patients requesting treatment for common illnesses.**

**Figure 1.** Other local initiatives implemented in Derbyshire aimed at improving antibiotic prescribing in primary care.
Without Antibiotics’. Furthermore, every child entering school undergoing health screening checks (with parental consent) was asked to colour in the picture of Gerald the Giraffe, which they were given along with the patient leaflet for their parents.

Discussion
Following these initiatives, the prescribing of cephalosporins and quinolones decreased over 3 years (2009/10 to 2012/13), and is currently at least one-third less than the national average for
cephalosporins and one-quarter less for quinolones. Feedback from clinicians who attended the education sessions was positive and included a variety of actions that they planned to undertake, including: ‘Use delayed prescriptions’; ‘Change prescribing for UTIs’; ‘Be more confident about not giving antibiotics’; and ‘Use leaflets’. Among the things the clinicians stated they had learnt were: ‘Evidence regarding using delayed prescriptions’; ‘Choice of antibiotic for UTIs in pregnancy’; ‘Urine sampling and testing’; and ‘Risk of CDI with different antibiotics’. This indicates that prescribers had enhanced their knowledge and found the sessions beneficial.

The education on antibiotics in schools was well received. The younger children enjoyed colouring in Gerald the Giraffe, whilst the older children enjoyed doing the quiz and there were open discussions about antibiotics. Although public awareness was not measured, it is hoped that the outcome was increased awareness of appropriate treatment for common illnesses such as coughs and colds, as the children took home various materials with key messages for their parents, including a leaflet on antibiotics.

This initiative in schools is due to be started in southern Derbyshire in September 2013. Considerations for developing the initiative further include school nurses speaking to parents at parent evenings and giving them the leaflet on antibiotics, educating teachers about the topic so they can include it within ‘personal, social, health and economic’ lessons and using social media such as Twitter or Facebook to advertise the key messages to parents on getting well soon without using antibiotics.

In summary, this was a multifaceted approach aimed at improving the appropriateness of antibiotic prescribing. Although it was a local initiative the interventions described could readily be implemented or adapted for use in other areas.

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Transparency declarations
None to declare.

Supplementary data
Supplementary data are available at JAC Online (http://jac.oxfordjournals.org).

References
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