

# ANTIMICROBIALS

## How should they be used in primary care?

Contributed by **Dr Rosemary Ikram**, Clinical Microbiologist, MedLab South

The first article in this series (BPJ 30, Aug 2010) outlined the problem of antibiotic resistance in the community. This article considers what interventions could lead to improved use of antimicrobial agents and allow the best chance of slowing the spread of resistant bacteria.

Ideally antibiotics should be reserved for the treatment of known bacterial infection but it is well recognised that they are often prescribed empirically “just in case” or inappropriately when the infection is highly likely to be viral. For a specific infection, the antibiotic with the narrowest useful spectrum should be selected and the entire treatment course should be taken. To accomplish this, in some cases it may be appropriate to take a sample for testing or consult antibiotic susceptibility guidelines.

### Is this a bacterial infection?

Deciding whether a patient has a bacterial infection can sometimes be challenging. The difficulties and uncertainties are partly reflected by the variability in microbiology test ordering patterns in primary care. A United Kingdom based study investigated microbiology test ordering rates for different practice localities and found a 200% variation in rates for urine samples and an 800% variation for wound swabs.<sup>1</sup> This suggests that more education is required to guide practitioners on appropriate microbiological testing along with the

implementation of guidelines. In this era of increasing antibiotic resistance it may be necessary to re-evaluate some of the current practices. For example, we know that more resistant bacteria will be isolated from patients who have had previous antibiotic treatment<sup>2</sup> and the antibiotic susceptibility of organisms such as *E. coli* is less predictable in those who have travelled to or lived in areas with high levels of endemic resistance.<sup>3</sup>

A useful approach is to ask the question; “How likely is this to be a viral infection?” It is clear that most respiratory tract infections such as sore throats, acute bronchitis, acute otitis media and coryza are usually viral in origin. There may be uncertainty as to the likelihood of a bacterial infection as well as an expectation from the patient or parent/caregiver that an antibiotic should be prescribed. The United Kingdom National Institute of Health and Clinical Excellence (NICE) recently published a short clinical guideline on antibiotic prescribing for respiratory tract infections.<sup>4</sup> After a face-to-face consultation, including patient history and an examination, patients can be categorised into three different management groups - antibiotics are not recommended, a delayed (“back pocket”) prescription is given or antibiotics are prescribed.

 Prescribers are encouraged to download a copy of the NICE guideline and use it to help inform their prescribing decisions: [www.nice.org.uk/nicemedia/live/12015/41322/41322.pdf](http://www.nice.org.uk/nicemedia/live/12015/41322/41322.pdf)

## Interventions to improve prescribing – what works?

There is currently insufficient research to determine which single approach to rational use of antimicrobials is the most effective. A recent Cochrane review suggests that multifaceted approaches and interventions targeting patients show the most promise. The main conclusions were that:<sup>5</sup>

- Patient based interventions including information, education and delayed or “back-pocket” prescriptions, consistently decreased patient antibiotic use (a patient information pamphlet is available from [bpac<sup>nz</sup>](#))
- Multifaceted interventions which combined education for doctors and patients with public information campaigns consistently reduced antibiotic prescribing for inappropriate conditions
- Educational outreach including reminders to doctors and audits had mixed effects on prescribing practices
- Educational meetings improved antibiotic prescribing, but effects were variable and generally modest
- Printed educational material such as flyers or leaflets had little effect on prescribing behaviour

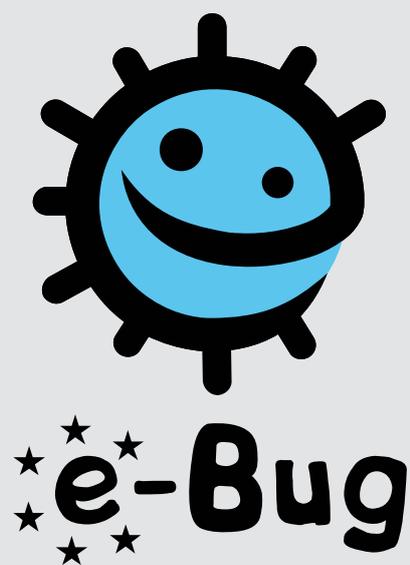
The authors suggested that the most effective interventions are likely to be those that address local prescribing behaviours and barriers to change, and include patients and the public in the educational programme. Local barriers should be addressed before major educational efforts are implemented. An example of this is the variable rate of rheumatic fever in New Zealand – some areas, particularly in Northland, have very high rates but in the South Island much lower rates occur. Therefore a protocol implemented across the whole population will be neither the most appropriate nor worthwhile intervention.

## Should children be educated about antimicrobial use?

In some countries children are taught the fundamentals of antimicrobial use at primary and secondary school level. The main issues covered are resistance and appropriate use, e.g. antibiotics are ineffective for colds and influenza. Finland and Moldova were the first countries to implement this as part of the school curriculum and a positive effect on parent knowledge and education about antibiotics has been observed.

These initiatives have recently been expanded in Europe with the development of a web site for school educational use (e-bug). Teaching children about antibiotic use would seem a logical approach given the need for wider public knowledge of the issues. Several pilot studies have been carried out in New Zealand, but the concept is not yet widespread. [Bpac<sup>nz</sup>](#) supports this initiative.

 [www.e-bug.eu](http://www.e-bug.eu)



## Delayed prescriptions

A study in Auckland reported that delayed (“back pocket”) antibiotic prescriptions effectively reduced antibiotic use.<sup>6</sup> Interestingly, GPs valued empowering patients to be more involved in decision making about their health care management more than patients did. GPs generally viewed the strategy as providing reassurance to patients and meeting their expectations. Both patients and physicians agreed that delayed prescribing is not appropriate for everyone, but currently no consistent criteria have been established.

## Antibiotic choice and use

When prescribing antimicrobial treatment it is important that a narrow spectrum antibiotic is chosen in most cases and the length of treatment is kept as short as possible. Antibiotic treatment affects both the pathogen it is targeted against, and the whole bacterial flora of the patient. There is evidence that antibiotic treatment leads to the presence of more resistant bacteria in the normal flora and also in subsequent infections.<sup>2</sup> In general practice it has been shown that this effect is prolonged and can also be related to the length of treatment. Broad spectrum antibiotics have more effect on the flora than narrower spectrum agents.

It is necessary to provide local antibiotic susceptibility data to the primary sector to allow antibiotic guidelines to be

formulated locally. To enable this to happen there needs to be communication between the laboratories testing microbes from the community, referrers and local experts in the treatment protocols relevant to specific geographical areas. In the United Kingdom the Health Protection Agency have produced a document: “Management of Infection Guidance for Primary Care for Consultation and Local Adaptation”.<sup>7</sup> Using this document and other guidelines it should be possible to develop a similar document for New Zealand primary care.

## In Summary...

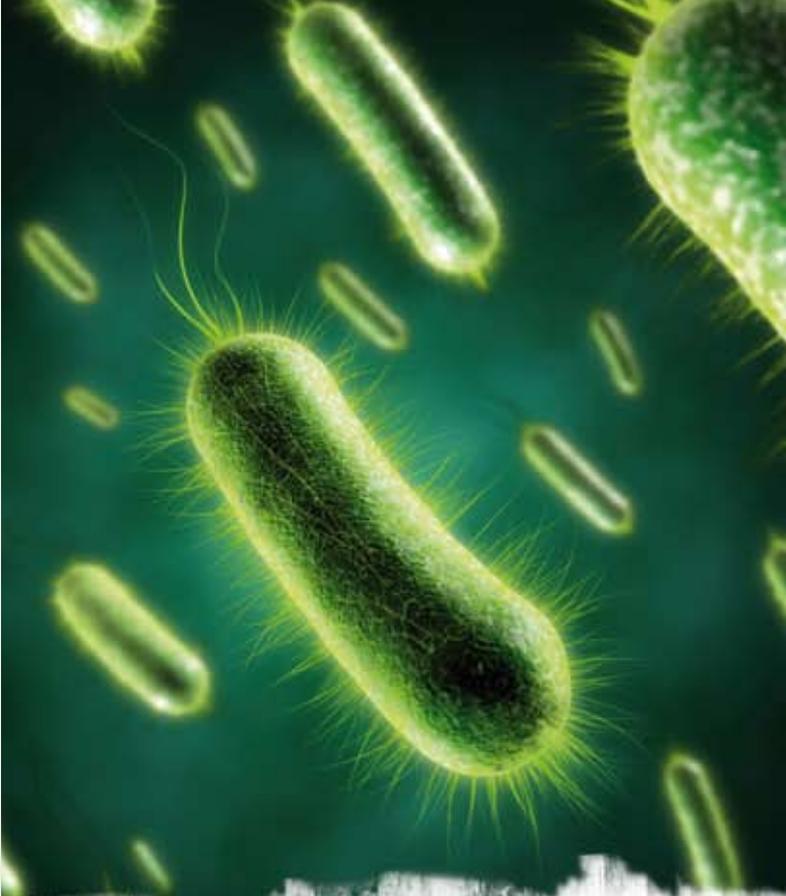
Both health professionals and patients need to review how antimicrobials are currently being used. This involves being aware of the susceptibility of bacteria locally, having a clear understanding of when antimicrobials are not indicated and using resources such as education for both prescribers and patients to enable optimal use of these valuable medicines. If this can be achieved we shall be on the way to at least slowing the spread of antimicrobial resistance in New Zealand.

**ACKNOWLEDGMENT** Thank you to **Associate Professor Mark Thomas**, Infectious Disease Specialist, University of Auckland for his contributions to this article.



## References:

1. Smellie WSA, Clark G, McNulty CA. Inequalities of primary care microbiology testing between hospital catchment areas. *J Clin Pathol* 2003;56:933-6.
2. Costello C, Metcalfe C, Lovering A, et al. Effect of antibiotic prescribing in primary care on antimicrobial resistance in individual patients: systemic review and meta-analysis. *BMJ* 2010; 340:c2096.
3. Freeman JT, McBride SJ, Heffernan H, et al. Community onset genitourinary tract infection due to CTX-M-15 producing *Escherichia coli* among travelers to the Indian subcontinent in New Zealand. *Clin Infect Dis* 2008;47(5):689-92.
4. National Institute for Health and Clinical Excellence (NICE). Use of antibiotics for respiratory tract infections in adults and children. Clinical guideline 69. NICE, 2008. Available from: [www.nice.org.uk](http://www.nice.org.uk)
5. Arnold SR, Straus SE. Interventions to improve antibiotic prescribing practice in ambulatory care. *Cochrane Database Syst Rev* 2005;4:CD003539.
6. Arrol B, Goodyear-Smith F, Thomas D, Kerse N. Delayed antibiotic prescriptions: what are the experiences and attitudes of physicians and patients? *J Fam Pract* 2002;51:954-9.
7. Health Protection Agency UK. Management of infection guidance for primary care for consultation and local adaptation. 2001. Reviewed July 2010. Available from: [www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/PrimaryCareGuidance/](http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/PrimaryCareGuidance/)



# RESISTANCE TO ANTIMICROBIALS

is an increasing problem in  
our community

We challenge you to examine the use of antimicrobials in your practice and to consider ways in which you may contribute to reducing resistance in our communities.

Prescribers are invited to complete a questionnaire about antimicrobial use in primary care. This is available online at:

[www.bpac.org.nz](http://www.bpac.org.nz)

### Antimicrobial use in Primary Care: Questionnaire for prescribers



1. How often do you use data on local resistance patterns to guide antimicrobial choice?

Always  Most of the time  About half of the time  Rarely  Never

2. For the antimicrobials you commonly prescribe, how aware are you of the pathogens they are active against?

Very aware  Mostly aware  Somewhat aware  Not very aware  Not at all aware

3. How often do you find it difficult to avoid prescribing antimicrobials for patients who most likely have a viral infection (e.g. common cold, acute bronchitis)?