

# Time to **reduce antibiotic prescribing** – **NOW**

Contributed by: Associate Professor Mark Thomas, Faculty of Medical and Health Sciences, University of Auckland.

New Zealand is awash with antibiotics. Each year, per head of population, we swallow more antibiotic syrups and pills, and smear more antibiotic creams on our skin, than people in most similar developed countries. A recent study of antimicrobial prescribing in Te Tairāwhiti found that during a one year period, more than 50% of the population received at least one prescription for an antibiotic.<sup>1</sup> In 2012, across the whole of New Zealand, there were approximately 180 antibiotic prescriptions dispensed for every 100 children aged less than five years. In adults aged 25–29 years (the age group with the lowest level of antibiotic prescribing) there were more than 60 antibiotic prescriptions dispensed per 100 people.<sup>2</sup> In New Zealand, in every year since 2006, at least one person in 20 has been dispensed a tube of either Bactroban® or Fucidin® antibiotic ointment.<sup>3</sup> These levels of community antibiotic consumption greatly exceed those in the Netherlands, Sweden or Germany, and are slightly higher than those in Spain. Of the large European countries only Italy, France, Belgium and Greece have higher levels of antibiotic consumption than New Zealand.<sup>2</sup> Unfortunately, not enough attention has been focused on the excessive prescribing of antibiotics in New Zealand, and on developing strategies to reduce this prescribing.

The high level of antibiotic consumption in New Zealand will inevitably have a long-term environmental impact. The situation can be likened to other problems arising from excessive consumption, such as global warming secondary to

excessive energy consumption, waterway pollution secondary to excessive deposition of nitrogenous fertilisers on farmland and depletion of marine fish reserves through overfishing. The common resource that we are depleting through our excessive antibiotic use is the ecosystem of antibiotic susceptible microbes that previously colonised our mouths, intestines and skin.

Each episode of antibiotic use may (or may not) hasten the resolution of the illness for which it was prescribed, but also will inevitably exert a selective pressure on the countless organisms colonising the patient. This selective pressure favours the survival and proliferation of antibiotic resistant microbes in the patient's mouth, intestines and skin, and these resistant organisms also colonise their close contacts. The change in the microbes colonising the patient, and their family, commonly persists for months to years. Because a high proportion of common infections arise from colonising microbes, infections that occur in the months after an antibiotic course are very likely to be due to antibiotic resistant bacteria. For example, the risk that a respiratory tract infection is due to an antibiotic resistant strain of *Streptococcus pneumoniae* remains elevated for at least six months following brief treatment with a macrolide antibiotic. Similarly the risk that a urinary tract infection is due to an antibiotic resistant strain of *Escherichia coli* remains elevated for up to twelve months following brief treatment with trimethoprim or amoxicillin.<sup>4</sup>

Most antibiotic consumption occurs in the community, and approximately 50–80% is for patients with self-limiting respiratory tract infections. The lack of evidence for a significant patient benefit from antibiotics in patients with self-limiting respiratory tract infections led the National Institute for Health and Care Excellence (NICE) in the United Kingdom to advise in 2008, that an antibiotic should not be prescribed for the overwhelming majority of patients with acute otitis media, a common cold, acute rhinosinusitis or acute cough/bronchitis.<sup>5</sup> Despite this advice, which is echoed by a variety of other similar advisory panels, surveys of general practitioners in New Zealand, Australia, the United Kingdom and elsewhere, indicate that a very high proportion of patients with these infections are unnecessarily prescribed an antibiotic.<sup>6–8</sup>

Doctors have a long history of prescribing medicines that turn out not to have been in the best interests of their patients: barbiturates, benzodiazepines and opiate analgesics are some well-recognised historic and recent examples.<sup>9</sup> Doctors commonly place the blame for such harmful prescribing on their patients – the patients “demand” the treatment and the doctors feel compelled to comply with these “demands”. However, doctors have a much better understanding than their patients about the potential harms that may arise from unnecessary antibiotic prescribing and therefore are responsible to lead the changes in antibiotic consumption that our society needs. As with other harmful drugs, doctors need to have the strength to “just say no”.<sup>10</sup>

We also need to lift our game in terms of our decisions about which antibiotics are sensible choices for the treatment of common infections. We all know that when a range of medicines are likely to be effective in treating a bacterial infection we should generally select the most narrow spectrum agent, but in practice this does not always occur. The reasons commonly given for selection of unnecessarily broad spectrum agents, e.g. convenience of dosing regimens, palatability of antibiotic syrups, need to be reconsidered in the light of the contribution that broad spectrum antibiotics make to encouraging the spread of antibiotic resistant bacteria.

Below are three simple changes in practice that all prescribers could, and should, consider:

1. Do not prescribe an antibiotic for patients with a sore throat who are not of Māori or Pacific ethnicity and not aged between 5 and 18 years
2. Do not prescribe amoxicillin clavulanate for skin infections caused by *Streptococcus pyogenes* or *Staphylococcus aureus*, but instead prescribe penicillin V or flucloxacillin

3. Do not prescribe ciprofloxacin or norfloxacin for patients with urinary tract infections, unless the infection has failed to respond to a more narrow spectrum agent such as nitrofurantoin or trimethoprim

It is not going to be easy to change our own established practices, and also our patients’ expectations, but present and future generations will not look kindly on us if we continue to squander the utility of antibiotics and leave them with markedly fewer options for treating infections in the coming decades.

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## References

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