

Editorial

Emergency physician's dilemma in antibiotic prescribing

急症科醫生處方抗生素的兩難

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Editor-in-Chief

Infectious diseases are common presentations in emergency departments. Early diagnosis and prompt treatment are essential to protect the health of the patient, staff and the community. However, diagnosis is not always easy as symptoms and signs can be non-specific, especially in the elderly.¹ As a result, empirical antibiotic treatment is frequently started in emergency departments before the bacteriological result is available, or even before taking any bacterial culture.^{1,2} This is understandable and necessary if the severity of the condition (e.g. sepsis, meningitis, immunodeficiency) or the contagiousness of the suspected pathogens demands immediate action. Appropriate initial antibiotic therapy has been shown to be an important independent determinant of patient survival.³ On the other hand, studies have demonstrated that antibiotics are commonly prescribed for minor 'self-limiting' diseases such as upper respiratory tract infections (URTI).^{4,5} This concurs with the article by Lee in this issue on "antibiotic prescribing for patients with upper respiratory tract infections by emergency physicians in a Singapore tertiary hospital". Although there are some evidence that antibiotics are not effective in relieving symptoms

or preventing secondary bacterial infection in URTI,^{6,7} a recent (2005) review by the Cochrane Library concluded that antibiotics may have modest overall benefits in shortening the duration of symptoms (headache, throat soreness and fever) and in protecting against suppurative (acute otitis media, acute sinusitis and quinsy) and non-suppurative (acute glomerulonephritis and acute rheumatic fever) complications, especially in patients with sore throat, but at the expense that many will derive no benefit.⁵

There is no doubt that liberal and indiscriminate use of antibiotics may facilitate the emergence of resistant strains, which are difficult to treat or eradicate.⁸ It has been well shown in studies that reduced use of antibiotics resulted in decreased prevalence of resistance.^{9,10} As accountable professionals, emergency physicians should participate in measures to limit the selection pressure of antibiotic resistance.¹¹ In addition to avoiding the use of antibiotics in conditions in which they are unlikely to provide benefit such as common cold, narrow-spectrum (and usually less expensive) antibiotics should be used as far as possible to minimise generating broad-spectrum resistance and its impact. For additional reasons of adverse effects, cost, and superinfection, the shortest course clinically acceptable should be prescribed.⁸ These are illustrated by Li et al in this issue on the use of 3-day nitrofurantoin for "acute uncomplicated lower urinary tract infection in women" in a study in Hong Kong. The article recommends the judicious use of a single,

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high-dose, short-duration and narrow-spectrum antibiotic. Use of lower doses may select for strains with reduced susceptibility.¹² There are a lot of variations in the duration of antibiotics prescribed, ranging from a single dose to 14 days or longer, but traditionally one week is the most common. It has been shown that in lower urinary tract infection, single dose antibiotic treatment might be less effective but better accepted by patients than longer treatment durations (3 to 14 days). There was no significant difference between short and longer course antibiotics, and the optimal treatment duration could not be determined.¹³ The role of antibiotic cycling (rotation) in limiting the emergence of antibiotic resistance is controversial.^{14,15}

On the contrary, combination antibiotic therapy has been practised in the prevention of the emergence of bacterial resistance, as exemplified by the treatment of tuberculosis and *Helicobacter*. It is also indicated in the empirical treatment of life-threatening infections, polymicrobial infections, and for synergism. However, it has the disadvantages of

increased expense, risks of adverse effects, antagonism, and superinfections.¹⁶

Guidelines on the judicious use of antibiotics may partially solve the dilemma.⁸ The IMPACT guideline is a good local reference.¹⁷ There are a number of evidence-based recommendations on antibiotic use in the emergency department setting from BestBETS (Table 1).¹⁸ However, in the article by Kerr et al in this issue on the management of "chronic obstructive airways disease in Australian emergency departments", it was found that only 53% of the patients received antibiotics, even though they were recommended by the guidelines.

Vaccines seem to be the ultimate answer to lower the development of antibiotic resistance as exemplified by the success of the *Haemophilus influenzae* type b vaccine. However, it seems unlikely that effective vaccines will be available for every infectious disease in the foreseeable future. Inevitably, emergency physicians will have to continue struggling with the dilemma of antibiotic prescribing.

Table 1. BestBETS recommendations on antibiotic prescription¹⁸

Condition	Recommendation	Remark
Human bite of hand	Yes	
Dog bite	Yes	
Venomous snake bite	No	
Non-venomous snake bite	No	
Corneal foreign body	No	
Compound fracture of distal phalanx	Inconclusive	Rigorous wound management as good
Puncture wound of foot	No reference	
Isolated chest trauma requiring chest drains	Yes	
Urinary catheterisation	Inconclusive	
Acute exacerbation of chronic obstructive airways disease	Yes	Greater benefit in patients with more severe underlying disease
Near drowning	No	
Traveller's diarrhoea	Yes	Increased side effects of antibiotics

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