

## Inside ▶

Treatment of community-acquired pneumonia

Urinary tract infections in the elderly

Complementary update — Cranberry products for preventing UTIs

The *Common colds need common sense* campaign

## Antibiotic prescribing is increasingly judicious

Over the last five years Australian health professionals have become increasingly judicious in their use of antibiotics. Prescribing rates for uncomplicated upper respiratory tract infection (URTI) have decreased and the choice of agents appears to follow guideline recommendations more closely. At the same time, community knowledge of appropriate antibiotic use has increased and fewer believe that antibiotics are needed in common viral infections. These achievements are substantial, but the latest data show that there are still opportunities to improve the use of these valuable drugs.

### Achievements in reducing antibiotic prescribing

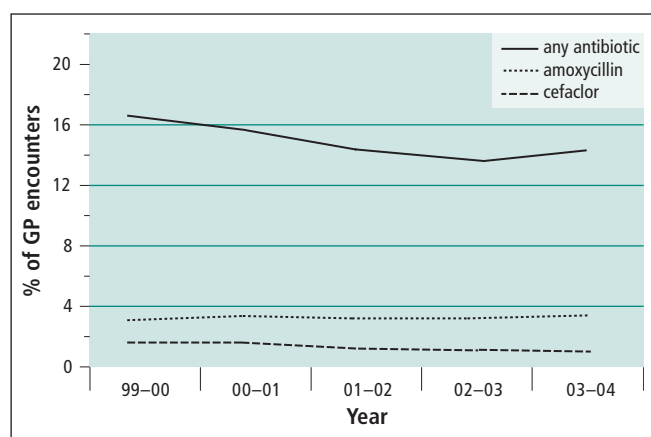
Statistics show a significant decline in antibiotic prescribing over the last five years (Figure 1). In addition, prescribing for URIs has decreased — from 42% of patient GP visits for URIs in 1998–99 to 35% in 2002–03.<sup>2</sup> This represents a shift towards recommended management, as antibiotics are generally unhelpful in uncomplicated URTI<sup>3</sup> (see also *NPS News* 27).

The current Australian prescribing rate for generalised URTI is notably lower than the 61–63% reported in US data for 1996<sup>4</sup>; however, the example of the Netherlands suggests that the optimal rate of prescribing may be lower still, as analysis of data from 2000 put the Dutch prescribing rate at 16% of GP contacts for URTI.<sup>5</sup>

Trends in antibiotic choice suggest that more Australian GPs are prescribing in line with guidelines. Use of amoxicillin as a proportion of total antibiotic use is increasing, while use of cefaclor is decreasing (Figure 1). Amoxicillin is the first-line oral therapy in acute bacterial sinusitis, acute otitis media (AOM), acute exacerbations of chronic bronchitis and community-acquired pneumonia, while cefaclor should only be used in AOM or sinusitis in cases of non-immediate hypersensitivity to penicillin.<sup>3</sup>

It has recently been confirmed that European countries with higher rates of antibiotic use have higher levels of antibiotic resistance than countries with lower use.<sup>6</sup> Total use of antibiotics in the Australian community falls in the

**Figure 1: Antibiotic prescribing rate as proportion of all GP visits.<sup>1</sup>**



middle of the range recorded in European countries: in 2002 Australian community antibiotic use was 21 defined daily doses\* (DDD) per 1000 population per day.<sup>8</sup> Usage was highest in France, at 32DDD/1000/day, while the Netherlands had the lowest usage at 10DDD/1000/day.<sup>6,9</sup>

\*A defined daily dose is the international unit for comparing drug use, as defined by the World Health Organization, and corresponds to the assumed average maintenance dose per day for the main indication of a drug in adults.<sup>7</sup>

# Treatment of community-acquired pneumonia

## Oral empirical antibiotic therapy

Dual therapy (Box 1) gives good coverage of causative organisms seen in community-acquired pneumonia (CAP) in Australia — a beta-lactam (at adequate dosage) covering *Streptococcus pneumoniae*, and a macrolide or doxycycline covering atypical organisms (most commonly *Mycoplasma pneumoniae* or *Chlamydia pneumoniae*).<sup>10</sup> Standard therapy is empirical, as identifying the causative organism is rarely feasible. For severe disease or when a specific pathogen is suspected or identified (e.g. *Legionella* spp.), other therapy may be indicated.<sup>3</sup>

While some overseas guidelines recommend quinolones for low-risk CAP patients, widespread use of these drugs has been associated with the emergence of resistance.<sup>11</sup> Australian guidelines recommend that they be reserved for patients with an immediate penicillin hypersensitivity. A recent meta-analysis of trials in non-severe CAP suggests that patients receiving beta-lactams fare no worse than those receiving quinolones.<sup>12</sup>

### Box 1: Oral empirical therapy for non-severe community-acquired pneumonia<sup>3</sup>

amoxicillin 1 g 8-hourly for 7 days PLUS EITHER

- doxycycline 200 mg for the first dose, then 100 mg daily for 5 more days
- OR
- roxithromycin (Biaxsig, Rulide) 300 mg daily for 7 days

#### For patients with non-immediate penicillin hypersensitivity

cefuroxime (Zinnat) 500 mg 12-hourly for 7 days (in the place of amoxicillin, with doxycycline or roxithromycin as above)

#### For patients with immediate penicillin hypersensitivity

gatifloxacin (Tequin)\* or moxifloxacin (Avelox)<sup>†</sup> 400 mg daily for 7 days (as monotherapy)

\* gatifloxacin is not available on the PBS but is subsidised on the RPBS

<sup>†</sup> moxifloxacin is an authority-required PBS listing

## Identifying patients for hospital referral

The Pneumonia Severity Index (PSI) is a scoring system that stratifies adults with a radiologically confirmed diagnosis of CAP according to mortality risk.<sup>13</sup> While the PSI was developed for use in hospitals and its calculation requires haematology, blood chemistry and blood gases, determining if a patient is in the lowest risk category (Class I) only depends on clinical history and simple physical signs (Box 2). The probability of 30-day mortality in Class I is 0.1% and in most cases hospital admission is not required.<sup>14,15</sup> Patients falling

outside this category should be referred to a hospital for further assessment.

Regardless of PSI risk class, the patient's clinical, social or psychological background may necessitate hospital care. The PSI is unsuitable for assessing patients under 18 years of age or immunocompromised patients and in no case replaces clinical judgment. Patients may worsen over the first 24–48 hours despite therapy, so continuing clinical review is necessary.

### Box 2: Criteria for Pneumonia Severity Index (PSI) risk Class I (low risk)<sup>3</sup>

Patient age ≤ 50 years and patient has *none* of the following:

#### History of:

- neoplastic disease
- liver disease
- congestive cardiac failure
- cerebrovascular disease
- renal disease

#### Clinical signs:

- acutely altered mental state
- respiratory rate ≥ 30 per minute
- systolic blood pressure < 90 mmHg
- temperature < 35°C or ≥ 40°C
- pulse rate ≥ 125 per minute

## The CAPTION project

Judicious use of antibiotics is as much a concern within hospitals as in primary care. *Community-acquired pneumonia: towards improving outcomes nationally* (CAPTION)<sup>16</sup> is a national project, funded by NPS, due for completion by the end of 2005. It aims to optimise antibiotic prescribing and improve patient outcomes by implementing use of the PSI and guideline-compliant antibiotic prescribing in the emergency departments of 40 Australian hospitals.

Patients with CAP discharged from hospital may be referred to their GPs for follow-up. In the case of low-risk patients discharged by the emergency department, the GP should be contacted to arrange review within 24 hours to guard against a worsening condition. In most of these cases the hospital will prescribe and/or dispense oral antibiotics. As guidelines are implemented more widely, GPs will see more patients discharged on the recommended dual therapy.

## Urinary tract infections in the elderly

Urinary tract infections (UTIs) are common, increase in prevalence with age and are usually treated with antibiotics.<sup>17–19</sup> In people under 50 years of age more than 95% of UTIs are in women, but in those aged 65 and over the rate of infection in men has been observed to be about two-thirds that in women.<sup>20</sup>

Diagnosis of UTI in older patients relies on clinical judgment, as the signs and symptoms are often ambiguous. Pneumonia, dehydration and other causes of non-urinary symptoms such as fever and delirium may first need to be eliminated.<sup>19</sup> As up to 50% of women and 30% of men in institutional aged care may have benign asymptomatic bacteriuria, a positive culture or dipstick test alone is insufficient to indicate an antibiotic.<sup>19,21</sup> Empirical therapy should be stopped and alternative causes for symptoms considered if there is no improvement in 48 hours.<sup>22</sup>

In acute cystitis, choice between the recommended antibiotics (trimethoprim, cephalexin, amoxicillin+clavulanate, and nitrofurantoin)<sup>3</sup> should depend upon local resistance patterns, cost and adverse effects.<sup>23</sup> Avoid amoxicillin monotherapy, as resistance is widespread.<sup>24</sup> Quinolones should be reserved for second-line treatment, as they are the only oral drugs available for infections due to multi-resistant bacteria, and most pathogens are sensitive to the recommended drugs.<sup>3</sup>

### Recurrent infections

Recurrent or relapsing UTI may indicate an abnormality of the urinary tract. In men the possibility of prostatic enlargement should be investigated, particularly if there is urinary obstruction.<sup>25</sup> Imaging or functional tests may also be warranted in either sex if the infection persistently fails to respond to antibiotics.<sup>24,25</sup>

In women with recurrent symptomatic UTIs (three or more infections per 12 months<sup>24</sup>) antibiotic prophylaxis

(Box 3) is the option best supported by evidence and the same treatment is recommended in men.<sup>3</sup> Prophylaxis may be continued for 3–6 months or in some cases longer.<sup>3</sup> A systematic review of studies in women concluded that infection rates quickly return to their previous level on withdrawal of antibiotics.<sup>23</sup>

There is little evidence to support the use of hexamine hippurate (Hiprex)<sup>26</sup>, and current guidelines do not recommend it.

Antibiotic prophylaxis is frequently associated with adverse events, especially candidiasis, skin rash and nausea.<sup>23</sup> Elderly people and people with reduced renal function are at increased risk of uncommon but serious adverse events with nitrofurantoin (Macrochantin), including peripheral neuropathy, pulmonary toxicity, haemolytic anaemia and immune-mediated hepatotoxicity.<sup>27</sup>

In postmenopausal women with chronic or recurrent symptoms, topical oestrogen therapy has been suggested to reduce susceptibility to UTIs. Two small trials showed a significant reduction in incidence of UTIs.<sup>28,29</sup> However, a more recent trial of oestriol-containing vaginal pessaries found that the preventive effect was inferior to that of prophylaxis with nitrofurantoin.<sup>30</sup> There is no good evidence to support prescribing oral oestrogens for this purpose.<sup>17</sup>

### Box 3: Prophylaxis of urinary tract infection for adults<sup>3</sup>

- nitrofurantoin 50 mg orally at night or, in women, within 2 hours of sexual intercourse OR
- cephalexin 250 mg orally at night OR
- trimethoprim 150 mg orally at night

