

An ongoing national programme to reduce antibiotic prescription and use

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High levels of antibiotic use have been associated with higher levels of antimicrobial resistance. The National Prescribing Service (NPS) has been running national programs to reduce prescription and use of antibiotics in Australia since 1999. These programs have used a range of strategies to influence general practitioners, community pharmacists and consumers. Over time, there have been modest changes in consumer attitudes towards antibiotics and antibiotic prescription rates continue to decline.

The NPS was a newly established organisation in 1999 when the JETACAR report was released and noted that unnecessary use of antibiotics exposes the community to unwarranted medication use and contributes to the development of antimicrobial resistance¹. Reducing the prescription and use of antibiotics in the Australian community was one of the NPS early program objectives for quality use of medicines and it remains a major priority today.

Many factors contribute to the unnecessary use of antibiotics including the knowledge and beliefs of doctors and consumers, direct patient requests, perceptions of patient demand, culture and norms and the health setting^{2,3}. Perceived patient pressure is a strong predictor of the decision to prescribe antibiotics in general practice^{4,5}. It has been suggested that while doctors feel uncomfortable prescribing antibiotics, they do not want to damage the therapeutic relationship with the patient or they may not have the time required to explain their decision⁶.

Perceived patient pressure often stems from common beliefs in the community that antibiotics hasten recovery from respiratory infections and prevent more serious disease⁷.

Against this background, the NPS began a multifaceted program to reduce antibiotic use with a particular emphasis on respiratory infections. The intensity of the program has varied from year to year but generally there have been both consumer and health professional arms to the program (Table 1). The tag line '*common colds need common sense*' has been used for the consumer campaigns⁸ and fairly consistent messages have been provided to health professionals and consumers (Table 2).

Omnibus data show modest changes in consumer knowledge and attitudes to use of antibiotics for coughs and colds (Table 3) as well as changes in the self-reported use of antibiotics. Comparison of successive yearly consumer surveys shows a significant decrease from 10.8% in 1999 to 7.4% in 2004, in the self-reported use of antibiotics to treat cold, cough or flu.

Drug utilisation data show a continuing decline in antibiotic use in Australia: from about 25 defined daily doses (DDD) per 1000 population per day in 1996 to 21.5 DDD/1000/day in 2006. There is a parallel decline in use of the nine antibiotics most commonly used for respiratory infections (Figure 1). Similarly, doctors are less likely to write a prescription for antibiotic for upper respiratory tract infection presentation, with the incidence falling from 51.1% in 1999 to 50.5% in 2005, with a low of 49.6% in 2002⁹.

The NPS antibiotic program is typical of many around the world that take a regional or national approach to controlling use and minimising resistance^{10,11}. These have been prevalent in both high and low income countries and while a range of different interventions has been used there is much consistency. Studies in the United States, using materials from the Centre for Disease Control and Prevention targetted parents and family physicians, and demonstrated a significant increase in the knowledge of parents that antibiotics are not needed for colds¹². A UK study in the first winter of the campaign on antibiotic treatment in primary care and national advice to the public¹¹ reported a

Table 1. Activities offered for NPS antibiotics program each year.

	Health professionals	Consumers
1999	Prescribing feedback with written educational materials for GPs, newsletter, academic detailing, clinical audit, patient educational material (non-prescription for symptomatic management).	
2000	Prescribing feedback with written educational materials for GPs, newsletter, academic detailing, clinical audit, case studies for individuals, patient educational material (non-prescription for symptomatic management), letter to pharmacists, case study for pharmacists.	Editorial in general media.
2001	Prescribing feedback with written educational materials for GPs, newsletter, academic detailing, clinical audit, case studies for individuals and small group meetings, patient educational material (non-prescription for symptomatic management), letter to pharmacists, case study for pharmacists.	Billboard advertising; small amount of TV and radio advertising; editorial in general media; community grants programme to encourage local action, website; pamphlets, stickers for children.
2002	Prescribing feedback with written educational materials for GPs, newsletter, academic detailing, clinical audit, case studies for individuals and small group meetings, patient educational material (non-prescription for symptomatic management), letter to pharmacists, case study for pharmacists.	Billboard advertising; small amount of TV and radio advertising; editorial in general media; community grants programme to encourage local action; website; pamphlets; stickers for children.
2003	As for 2002.	Radio advertising; editorial in general media; website; pamphlets; stickers for children.
2004	As for 2002.	Billboard advertising; small amount of TV and radio advertising; editorial in general media; community grants programme to encourage local action; website; pamphlets; stickers for children.
2005	Case study for individuals only.	Children's story book; website; pamphlets; stickers for children; posters; newsletter articles for childcare centres; child care staff education.
2006	Clinical audit, case study, prescribing feedback with written educational materials for GPs, newsletter, pharmacist letter.	Radio advertising; a second children's story book; website; pamphlets; stickers for children; posters; newsletter articles for childcare centres; editorial for general media; direct mail to child care centres, schools, community centres and libraries; child care staff education.
2007	Prescribing feedback with written educational materials for GPs, newsletter, academic detailing, clinical audit, case studies for individuals and small group meetings, patient educational material (non-prescription for symptomatic management), letter to pharmacists, case study for pharmacists.	Television advertising; website; pamphlets; stickers for children's services and schools on hygiene; colouring-in sheets; posters; story books; newsletter articles for schools and childcare centres; editorial in general media; direct mail to schools; childcare centres; community centres and libraries; primary school writing competition; primary school and childcare staff education programme; workforce strategy with large recruitment company.

Table 2. Some of the key messages supported by the NPS antibiotics program

Health professionals	Consumers
<ul style="list-style-type: none"> Most upper respiratory tract infections do not require an antibiotic. 	<ul style="list-style-type: none"> Antibiotics won't help a common cold.
<ul style="list-style-type: none"> When an antibiotic is needed, first line agents should be prescribed: amoxycillin for sinusitis and otitis media or penicillin V for sore throat. 	<ul style="list-style-type: none"> You won't get better more quickly by taking antibiotics for a common cold.
<ul style="list-style-type: none"> Second line agents such as roxithromycin and amoxycillin/clavulanate should be restricted to patients who have failed first line therapy. 	<ul style="list-style-type: none"> The common cold is a virus and antibiotics don't help – instead of using antibiotics for a common cold, use common sense.
<ul style="list-style-type: none"> Cefaclor has a very limited role in treatment of respiratory infections. 	<ul style="list-style-type: none"> You need to take it easy. You need to relieve the symptoms. You need to see a doctor if it gets worse.
<ul style="list-style-type: none"> Review your prescribing and discuss realistic expectations with patients. 	<ul style="list-style-type: none"> Visit your doctor or pharmacist for more information or if symptoms persist.

Table 3. Percentage of respondents to a community survey reporting the actions they took for their most recent cough, cold or flu.

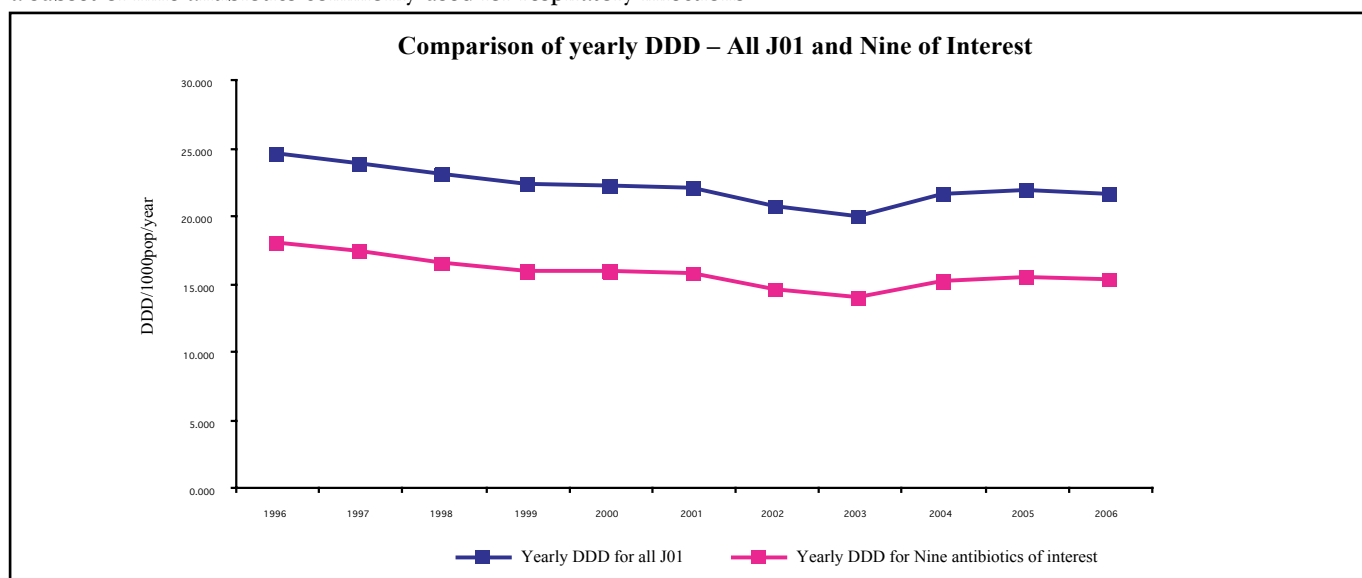
Actions taken	1999 %	2000 % (change)*	2001 % (change)*	2003 % (change)*	2004 % (change)*
Took non-prescription medicine	67.5	68.9 (↑ 1.4)	69.4 (↑ 1.9)	70.5 (↑ 3.0)	70.1 (↑ 2.6)
Rested at home	56.8	54.4 (↓ 2.4)	53.7 (↓ 3.1)	60.7 (↑ 3.9)	57.5 (↑ 0.7)
Asked pharmacist for advice	20.2	20.6 (↑ 0.4)	21.9 (↑ 1.7)	22.4 (↑ 2.0)	22.4 (↑ 2.2)
Visited a doctor	23.3	21.8 (↓ 1.5)	19.3 (↓ 4.0)	20.3 (↓ 3.0)	18.0 (↓ 5.3)**
Took antibiotics	10.8	10.0 (↓ 0.8)	10.1 (↓ 0.7)	9.8 (↓ 1.0)	7.4 (↓ 3.4)**

Source: National annual consumer survey data

* Percentage point change relative to 1999

** Statistically significant change at p<0.05 level.

Figure 1 Antibiotic prescription in Australia 1995–2006: all antimicrobials as defined by Anatomical Classification Code J01 and a subset of nine antibiotics commonly used for respiratory infections



Source: Drug Utilisation Subcommittee of Pharmaceutical Benefits Advisory Committee 2007

reduction in prescribing rates and positive changes in attitudes in the community.

As well as multifaceted programs, individual strategies have been used in many studies. Delayed prescriptions, patient information leaflets and 'non-prescriptions' that prescribe symptomatic management have all been used and elements of these are incorporated into the NPS program.

Programs to reduce antibiotic use remain important. Australia still has a relatively high rate of antibiotic use in ambulatory care at 21 DDD/1000/day compared with the lowest rates in Europe, which are found in the Netherlands at 10.0 DDD/1000/day. Moreover, a correlation has been demonstrated between community use of antibiotics and antibacterial resistance rates. Goossens *et al*¹³ showed higher rates of antibiotic resistance in high consuming countries in eastern and southern Europe than in northern Europe where usage trends are lower. In Australia we have been recently reminded of the increase in the prevalence of community acquired methicillin-resistant *Staphylococcus aureus* isolates from 4.7% in 2000 to 7.3% in 2004¹⁴.

The NPS antibiotic program continues to be an important part of Australia's quality use of medicines strategy. Significant gains have been made in recent years but antibiotic usage rates are still well above world's best practice and there is a continued need to work in this area.

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