



National Prescribing Service Limited

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Progress, achievements and
future directions

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NPS is an independent, non-profit organisation for Quality Use of Medicines,
funded by the Australian Government Department of Health and Ageing.

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Executive summary: Is NPS influencing change?

The National Prescribing Service Limited (NPS) was launched in March 1998 after being announced in the 1997–98 Federal Budget. NPS is an independent, non-profit organisation funded by the Australian Government Department of Health and Ageing. NPS activities and services aim to give people information, skills and knowledge so they can choose if, when and how to use medicines to attain better health and wellbeing (Weekes et al, 2005). Activities focus on Quality Use of Medicines (QUM), the tenet at the heart of Australia’s National Medicines Policy. QUM is about helping people to:

- wisely select options to manage their health
- choose suitable medicines if a medicine is considered necessary
- use medicines safely and effectively.

QUM applies equally to medicine use by an individual or within a community, and includes prescription, non-prescription and complementary medicines. NPS activities and services are directed at health professionals (primarily GPs, pharmacists, specialists, students, and nurses), and consumers and their carers.

A multi-strategic approach to behaviour change

NPS takes a multi-strategic approach to improving health via seven core service arms. We recognise that a great deal is known about interventions that have been shown to change behaviour when implemented in a sustained fashion at a national or local level (Grol, 2001; Grol & Grimshaw, 2003). NPS draws on this evidence in professional education, community development, social marketing and health promotion to develop and deliver a comprehensive range of interventions, including websites, newsletters on topical information, unsolicited direct mail with prescriber feedback combined with specific educational messages, educational visiting (academic detailing), clinical audit with feedback, peer group meetings, hypothetical case scenarios that facilitate problem-based learning (PBL) for individuals or groups, curriculum and training, information on new drugs and research, patient information leaflets, community information sessions, and community capacity building. Opinion leaders and community peers are also used to deliver and endorse key messages where appropriate.

Therapeutic targets

NPS systematically targets therapeutic areas where prescribing problems, uncertainty or controversy have been identified as likely to result in sub-optimal health outcomes and/or increased costs, and where education and information may have a positive impact. In addition to targeting specific areas, general QUM concepts and principles are promoted to clinicians and the general community, including the use of medication reviews, use of generic medicines, cautious adoption of new drugs, and awareness of drug interactions.

Program evaluation

Program evaluation plays a central role in the NPS organisational structure and delivery of activities and services. A team dedicated to undertaking the evaluation was established at the inception of the organisation. Program evaluation provides information that internal and external stakeholders can use to make decisions about accountability, program design and delivery, strategic direction, and QUM policy more broadly.

Report overview

This 10th Evaluation Report presents information on the progress and key achievements of NPS to June 2007. It builds on previous evaluation reports (www.nps.org.au/site.php?content=/resources/content/nps_eval_reports.html) and complements the comprehensive Evaluation Framework for the organisation (www.nps.org.au/site.php?content=/resources/content/EvaluationFramework_home.html). The Evaluation Framework for NPS is a series of questions under broad areas that reflect the organisation's corporate and program goals. These are:

Operating an organisation that:

- is intellectually and strategically independent, with excellent governance
- is well resourced and managed
- achieves targets, goals and contract deliverables
- is in the best position to carry out our purpose and reach our vision
- has effective and valued partnerships that promote QUM in Australia.

Implementing programs that:

- achieve better health outcomes in target areas
- achieve better prescribing and use of medicines
- improve QUM awareness and competence (i.e. knowledge, beliefs, values, skills and behaviour) among health professionals and consumers
- create greater capacity in the QUM workforce
- support nationally co-ordinated QUM activity
- encourage and undertake evaluation and research that supports innovation and learning.

Detail on the methods and scope of data to inform the evaluation is provided on the NPS website (www.nps.org.au/resources/evaluation/evaluation_framework_appendix_05.pdf).

Key achievements to June 2007

- 37 therapeutic modules for health professionals have been delivered to date.
- *Australian Prescriber* and *NPS News* continue to be published 6 times each year with each issue distributed to over 60,000 health professionals.
- Telephone services have taken nearly 100,000 calls from health professionals and consumers.
- 11,500 individual GPs voluntarily participated in NPS core activities in 2006–07, which reflects a steady increase from 2,500 participants in 1998–99.
- 54% of GPs who have ever participated in NPS programs have participated 4 or more times since 1998.
- New, more comprehensive programs for specialist medical practitioners, nurses and hospitals are being developed and implemented.
- Ongoing work with Divisions of General Practice and other stakeholders ensures a nationally coordinated and collaborative approach to delivery of QUM — 99% of Divisions of General Practice have a contract with NPS to deliver programs to health professionals.
- NPS is a valued and trusted source of reliable and independent information on medicines and therapeutics: 89% of GPs and 97% of pharmacists surveyed in 2006 perceive NPS to be of either great or moderate value. This survey is undertaken biennially. This data will be updated in 2008.

- Evaluation data reveal positive changes in self-reported consumer and health professional attitudes, skills and knowledge consistent with program objectives and key messages.
- Consumer awareness of Consumer Medicine Information (CMI) in 2007 (46%) has increased by 22% since 2003 (24%).
- In 2007, 55% of consumers reported asking questions of their doctor the last time they were prescribed a new medicine, which is an increase on the 48% of consumers who reported asking questions in 1999.
- In 2007, 35% of consumers reported asking questions of their pharmacist the last time they were prescribed a new medicine, which is more than double the proportion of consumers (16%) who reported asking questions in 1999.
- Use of heart failure specific beta blockers is increasing and prescribing trends will continue to be monitored when data from 2006 becomes available in early 2008.
- Savings over \$324 million have been made to the PBS to June 2006.
- NPS remains committed to best methods for assessing the impact of changes in medicines use on health and to developing new and innovative models for program delivery via our research and development efforts.

Operating an organisation that achieves corporate goals

At a corporate level, it is our goal to operate an organisation that:

- Is intellectually and strategically independent, with excellent governance
- Is well resourced and managed
- Achieves targets, goals and contract deliverables
- Is in the best position to carry out our purpose and reach our vision
- Have effective and valued partnerships that promote QUM in Australia.

An independent organisation with strong governance

NPS operations continue to be overseen by a Board of Directors. NPS functions independently of the Australian Government and pharmaceutical industry. Despite this just over half (57%) of GPs surveyed in 2006 thought that NPS information and activities were unduly influenced by the Australian Government. A further quarter (25%) thought that NPS was unduly influenced by the pharmaceutical industry (either agreeing 3% or agreeing to some extent, 22%). Fewer pharmacists surveyed in 2006 thought that NPS information and activities were unduly influenced by government, with 6% agreeing and a further 31% agreeing to some extent. Just over a quarter (27%) of pharmacists surveyed thought that NPS was unduly influenced by the pharmaceutical industry (5% agreeing and 22% agreeing to some extent). This data will be updated in 2008 when the biennial GP and Pharmacist Surveys are undertaken.

Well resourced and managed with a track record for achieving contract deliverables

All four NPS contracts have been refunded by the Australian Government Department of Health and Ageing, reflecting a commitment to QUM and a belief that NPS will continue to deliver. Currently NPS receives funding of approximately \$30 million annually and, at the time of writing this report, NPS operated with just over 110 staff.

Valued partnerships to enhance national co-ordination of QUM activity

NPS is member-based and works in partnership with health professionals, government, pharmaceutical industry and consumers. We work closely with our partners and stakeholders, particularly our clients and those in divisions of general practice, consumer, health and community-based organisations, to update and improve our programs and services.

NPS works in collaboration with a number of national community and consumer peak organisations to develop strategic directions on quality use of medicines initiatives across Australia. Partner organisations include: Consumers' Health Forum of Australia, Combined Pensioners' and Superannuants' Association of NSW Inc (CPSA), COTA Partners and COTA Alliance, Federation of Ethnic and Communities' Councils of Australia, Health Consumers of Rural and Remote Australia, National Aboriginal Community Controlled Health Service and National Rural Health Alliance.

NPS has contracts with 115 of the 118 divisions of general practice across Australia to provide local delivery of NPS messages. In the report of the 2004–05 annual survey of divisions of general practice (Primary Health Care Research and Information Service, 2006), over 70% of divisions reported using NPS for planning, research or evaluation support. NPS and universities were deemed the most useful

in terms of this support, with 68% endorsing NPS to be of either some or a great deal of use in terms of planning, research or evaluation support.

Throughout 2006–07, NPS supported the Department of Veterans' Affairs with the Veterans' MATES Project, and also the Department of Health and Ageing and Australian Divisions of General Practice with the Enhanced Divisional QUM (EDQUM) Program.

Better prescribing and use of medicines

Influencing best use of medicines

Increasingly, consumer behaviour is reflecting best use of medicines. To determine how NPS is influencing the better use of medicines, trends in awareness, knowledge and behaviour relating to QUM are monitored using the Annual consumer survey.

In 2007, the survey found that 55% of consumers reported asking questions of their doctor the last time they were prescribed a new medicine. This represents an increase of 6.5% since the benchmark survey was conducted in 1999. Similarly, 35% of consumers reported asking questions of their pharmacist the last time they were prescribed a new medicine, which is more than double the 16% of consumers who reported asked questions in 1999. Better communication between consumers and health professionals has been the focus of Community QUM programs that have been run since NPS was established.

In addition, amongst consumers who were aware that Consumer Medicine Information (CMI) leaflets were available from a doctor or pharmacist, 36% had asked a doctor or pharmacist for a leaflet at some time, up from 32% in 2005. CMI's have also been the focus of Community QUM programs.

Improvements were found in the percentage of consumers who kept a medicines list. This increased from 17% in 2005 to 21% in 2007. For consumers who had been taking another prescription medicine at the time they were given their last new prescription medicine, 74% had told a doctor or pharmacist about the other prescription medicine, compared with 57% in 2006. In addition, for consumers who had been taking a non-prescription medicine the last time they were given a new prescription medicine, 59% had told their doctor or pharmacist about this non-prescription medicine. This compares with 42% in 2006.

However, there is also evidence that some aspects of QUM need further work. For example, the percentage of consumers who had been given a new prescription medicine and who had asked their doctor about the medicine had not changed since 2006. In both 2006 and 2007, 57% of consumers had asked their doctor about the medicine. In addition, the percentage of consumers who were aware of CMIs asking for a CMI from a doctor or pharmacist had decreased; in 2006, 40% of survey respondents said that they had asked for a CMI, and in 2007, 38% had asked.

Attitudes to generic medicines have not changed since 2006, with 25% of respondents in 2007 agreeing or strongly agreeing that generic medicines are not as effective as brand name medicines. In 2007, 64% of consumers agreed or strongly agreed that doctors should be consistent in the brand of medicine they prescribed for persons on long-term medication. This compared with 67% in 2006.

A positive change in prescribing of antithrombotics

NPS's program to improve the use of antithrombotics focused on using antiplatelet drugs (aspirin, clopidogrel, dipyridamole and ticlopidine) to prevent cardiovascular events and the appropriate use of warfarin.

The key messages were:

- consider warfarin in all patients with atrial fibrillation at moderate-to-high risk of thromboembolism
- regularly monitor international normalised ratio (INR) and review risk factors for bleeding as keys to enhancing safe warfarin use
- low dose aspirin (75–150 mg per day) remains the drug of first choice over other antiplatelet agents for cardiovascular prophylaxis
- where the absolute risk of coronary heart disease events is low, the benefit of low dose aspirin is no greater than the risk of bleeding.

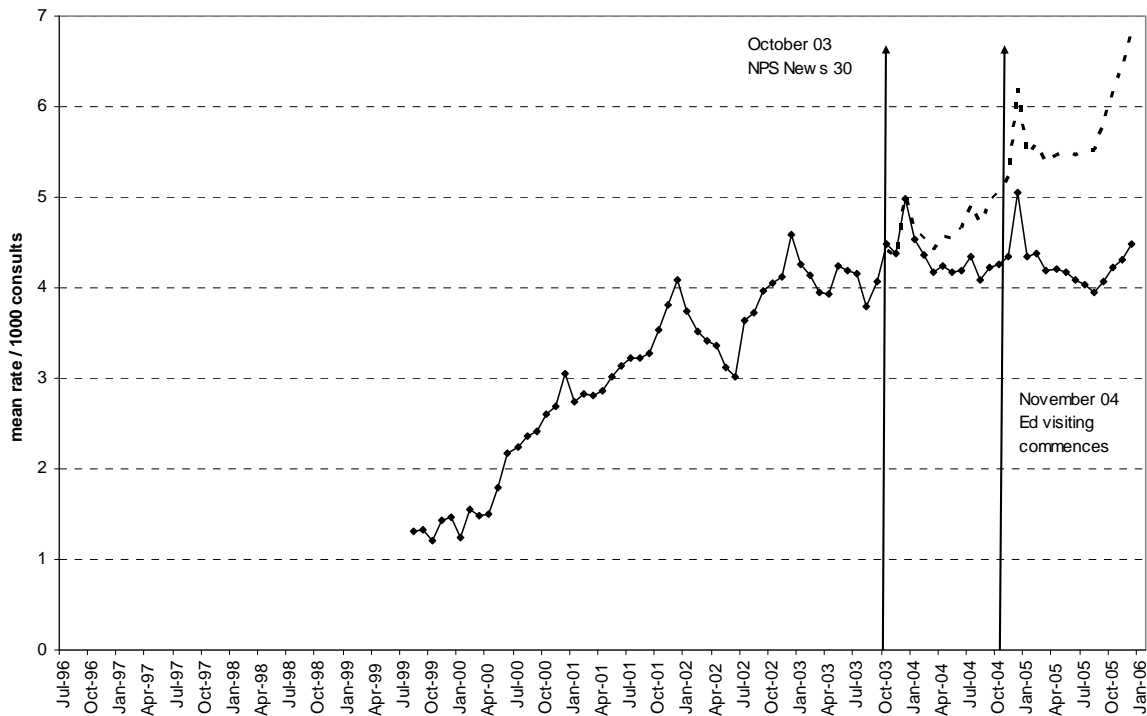
The program used a mix of passive and active interventions. The passive interventions consisted of mail outs of written materials to all GPs (around 20,000) in Australia as well as prescribing feedback. The active interventions were those contacts where the GP (actively) participated in either one-to-one educational visiting, small group case study discussions (including problem-based learning), or clinical audits or case studies. For this program, over 7,000 GPs participated in a total of 8,225 activities during the period October 2003 to September 2006.

The statistical methods used to examine whether NPS interventions influenced the volume and relative prescribing in Australia is described elsewhere (Mandryk et al, 2006; Horn et al, 2006). Briefly, monthly prescribing data (July 1996 to December 2005) were obtained from the national Pharmaceutical Benefits Scheme (PBS) administrative database maintained by Medicare Australia. Data were aggregated and de-identified by Medicare Australia at the provider level for each month.

Original prescriptions (and not repeats), by date of prescribing, were the subject of analysis, since any impact by NPS is expected to be reflected in the prescribing decision of the doctor. Because the NPS programs targeted individual GPs the prescribing data were summarised at the level of the GP (as medians and means across GPs within each month).

Prescribing appeared to have decreased for dipyridamole, clopidogrel and ticlopidine. The decline was statistically significant only for dipyridamole. Figure 1 demonstrates this significant decline. The broken line on the graph is predicted time series of prescribing rates if there were no effect of the intervention based on a regression model. The NPS antithrombotics program appears to have had modest success, but such evaluations raise questions about whether a focus on outcomes at a national level is appropriate, given likely concealment of effects at local levels.

Figure 1: Mean prescribing rates of dipyridamole and combination product per 1,000 consultations per month – actual versus expected*



*Broken line is the predicted time series of prescribing rates if intervention had no effect (based on regression model). There is a significant difference between the observed and predicted lines (regression intervention $p=0.0001$), though the real difference in prescribing is modest.

A change in prescribing of heart failure medications

The NPS heart failure program began in September 2004 and ended in July 2006. The program key messages were:

- Heart failure is more common than has previously been recognised and is associated with significant morbidity and mortality
- A significant proportion of heart failure remains undiagnosed
- The echocardiogram is an extremely important part of the clinical investigation of suspected heart failure
- Use ACE inhibitors in all grades of systolic heart failure
- Use beta-blockers in stabilised systolic heart failure — bisoprolol, carvedilol and metoprolol (controlled-release) are approved for use in heart failure.
- Titrate ACE inhibitors and beta-blockers carefully and slowly to the highest dose tolerated for proven survival benefits
- Look for, and avoid, drugs which may exacerbate heart failure
- Ensure patient understanding of heart failure and treatment goals to maximise compliance and outcomes.

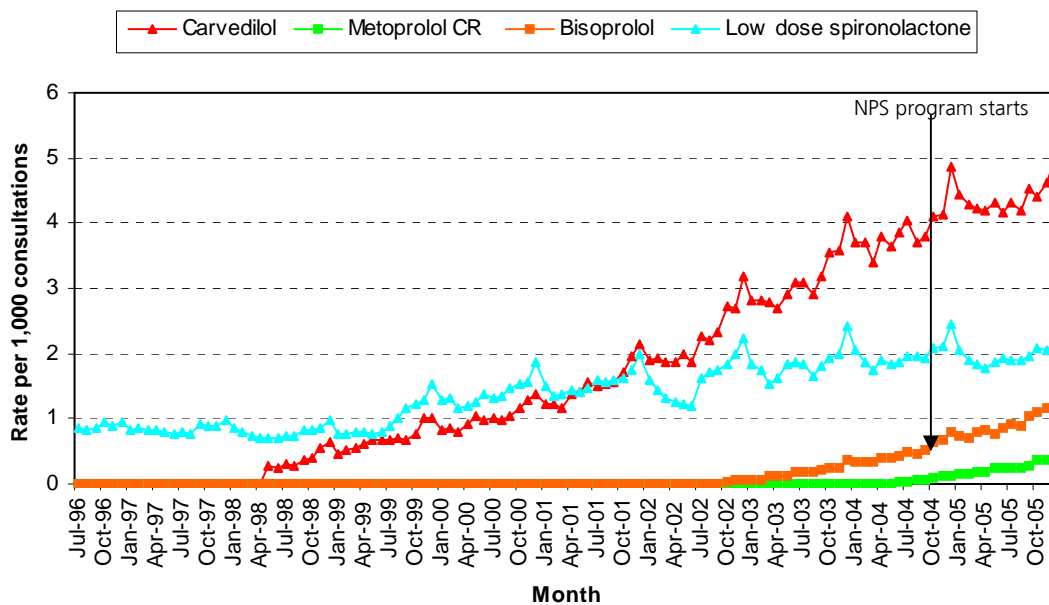
The program used a mix of passive and active interventions. The passive interventions consisted of mail outs of written materials as well as prescribing feedback to all GPs. The active interventions were one-to-one educational visiting, a case study and three different small group case study discussions (including problem-based learning) — one for heart failure prescribing, one for the correct diagnosis of heart failure using echocardiography and the third had an HMR (Home

Medicines Review) focus. For this program, a total of 5,165 activities were undertaken, 4,677 by GPs and the remainder by other health professionals.

The statistical methods used to examine whether NPS interventions influenced the volume and relative prescribing in Australia is described in the previous section of this report. Figure 2 demonstrates the PBS data trends for the three heart failure specific beta blockers and for low dose spironolactone. All three specific heart failure beta blockers increased over the program period. The 2006 data needed to verify this trend is currently unavailable.

The use of national data again raises questions about whether a focus on prescribing at a national level is appropriate. For this program, 50% of divisions participated, potentially masking any effects at local levels.

Figure 2: Mean prescribing rates of heart failure medications per 1,000 consultations per month



Improving economic outcomes

The methods used by NPS for estimating savings to the PBS includes a mix of actual versus forecasted PBS spending as well as time series and regression modelling per program, linking utilisation and expenditure with implementation and GP participation in NPS activities.

The initial funding agreement with the Government required that the core QUM program achieve savings to the PBS of \$45.6 million over 4 years. At the end of the 4 year contract period, NPS achieved savings of just over \$63.4 million, satisfying the contract requirements.

The second agreement with the Government (July 2001 to June 2005) required that, with funding of \$45.9 million over 4 years, NPS must deliver savings of \$111 million to the PBS. In the third agreement (July 2005 to June 2009), with funding of \$75.8 million, NPS must deliver a savings of \$160 million to the PBS: \$40 million each year. In the period July 2005 to June 2006, at a minimum, NPS activities generated savings of \$19.8 million to the PBS, but could be as high as \$75.6 million.

Table 1 summarises the savings generated, contracted and brought forward for each contract period since the inception of NPS. Savings over \$324 million have been made to the PBS to June 2006. Claiming conservative estimates of savings generated, the actual savings in excess of contracted savings available to be brought forward as of July 2005 are \$127.6 million.

Table 1: Savings generated, contracted and brought forward (\$AUD), 1997 to 2006

	1997 to 2001	2001 to 2005	2005 to 06
Savings brought forward at 1 July	24,255,409	222,970,662	147,800,246
Savings generated	63,413,536	241,002,710	19,781,189
Less savings contracted	-45,616,000	111,000,000	-40,000,000
Available savings at June 30	17,797,536	147,800,246	127,588,035

Improving QUM awareness and competence among consumers

The provision of independent medicines information to consumers remains a priority for NPS. The NPS Community QUM program has dedicated resources to build awareness, knowledge and skills in the community that will lead to better use of medicines and ultimately improved health. The NPS Community QUM program provides information and services nationally and to targeted population-based groups: older people, people with chronic conditions, multicultural communities, and Aboriginal and Torres Strait Islander communities.

National resources for the community and community organisations

Patient information leaflets continue to be distributed on a range of topics to help GPs, pharmacists and consumers discuss and decide on the appropriate therapeutic course. These include detail on symptomatic management for respiratory infections, patient self-management of heart failure, a tool to help GPs to review use of proton pump inhibitors and a tool to help GPs to review patient medication use.

The **Medimate** brochure, available in English and as a bilingual resource (Chinese, Greek, Italian and Vietnamese) continues to be widely promoted. *Medimate* is an interactive, consumer-friendly resource to help consumers find medicines information from reliable and accurate sources and help them manage their medicines in partnership with health professionals.

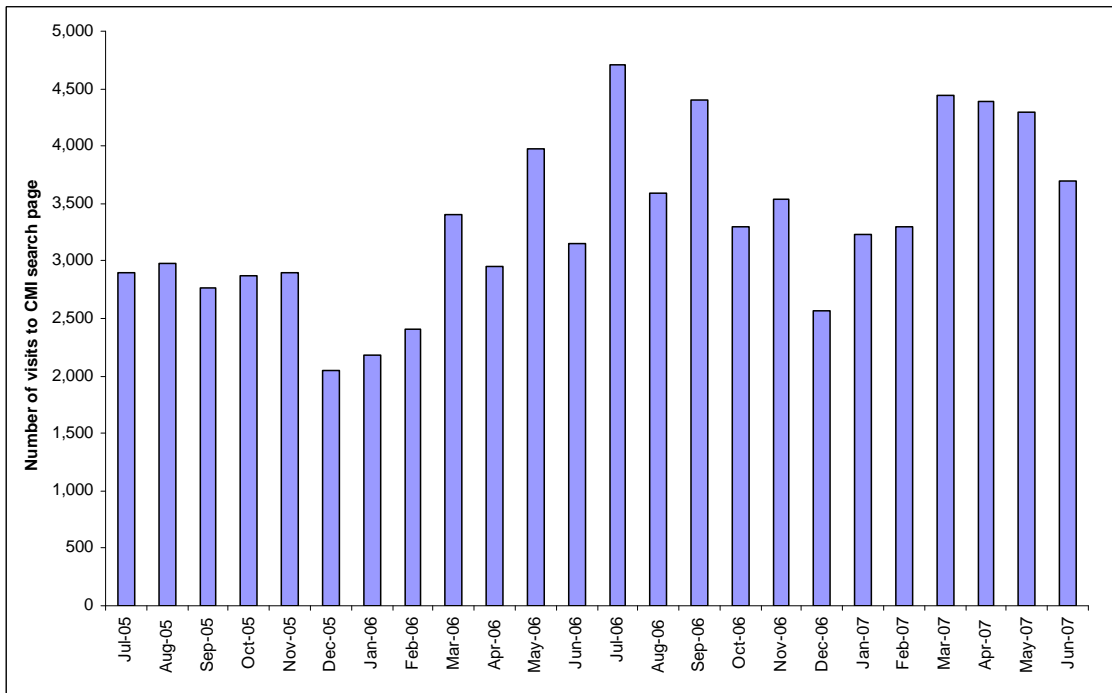
A **Get to Know Your Medicines Kit** is available free to community organisations to help them plan and organise an event to support people to manage their medicines.

The **Medicines List** resource is also available and widely promoted. This resource enables consumers to carry a list of their medicines wherever they go. In 2007, 21% of consumers said that they kept a medicines list, and of these, 48% included both prescription and non-prescription medicines.

MedicinesTalk is a quarterly newsletter written by consumers for consumers giving reliable, accurate information and useful hints on managing medicines. It aims to inform consumer groups about QUM policy and programs, and to encourage groups to become involved in QUM activities. NPS provides the support and infrastructure for the publication, while most of the writing and editorial work is undertaken by consumers. In the most recent quarter, 2,321 copies of MedicinesTalk were distributed to consumer and community groups.

NPS makes available a large number of **Consumer Medicine Information** (CMI) sheets via our website, with over 1,400 included in the last financial year, and over 940 being accessed each month. The use of this resource, as measured by the number of visits to the CMI search page, is much higher in 2006–07 (3,787 monthly average) than in 2005–06 (2,878 monthly average), an increase of around 32% (Figure 3). The top ten CMI sheets accessed in the last financial year were Ponstan (capsules), Lovan, Bactroban (cream), Adrenaline (injection), Rotarix, Epilim, Periactin, SERC, Alprim, and Natrilix SR. Consumer awareness of CMI in 2007 (46%) has increased by 22 percentage points since the benchmark in 2003.

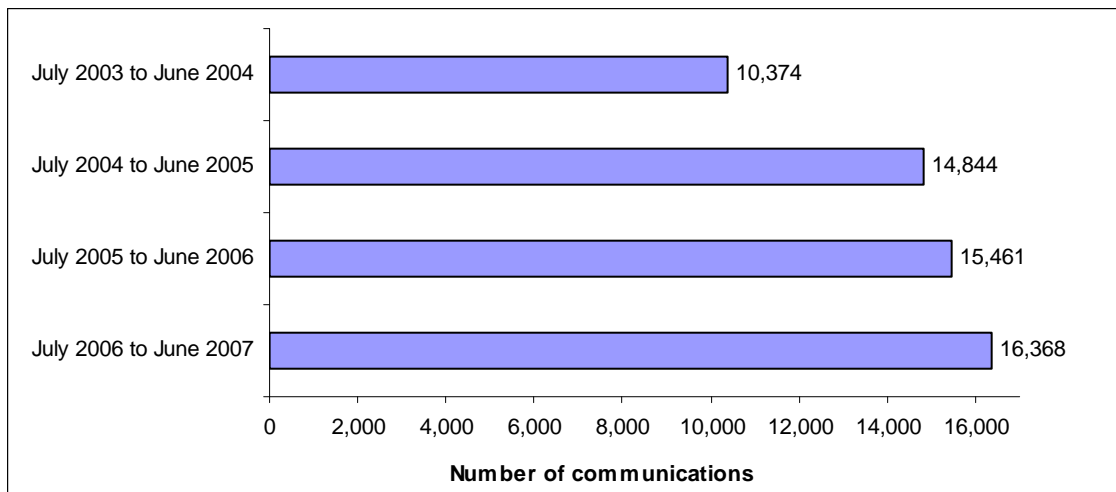
Figure 3: Number of visits per month to CMI search page



NPS continues to fund **Medicines Line**, a telephone information service for the community. Over 1,500 people call Medicines Line each month, primarily to ask questions about side effects, drug interactions, therapeutic choices, medicine use in pregnancy or when breastfeeding. Calls to the service have increased following its promotion in the Community QUM program, with over 50,000 calls received to date (Figure 4). Of consumers surveyed in 2007, 14% were aware of Medicines Line, a slight decrease from the previous year (16%). Of those aware of Medicines Line, 8.5% had called the service for advice.

Data from the 2006 national survey of GPs indicate that 39% of GPs were aware of Medicines Line and from the 2006 national survey of pharmacists, 47% of pharmacists were aware of Medicines Line. These surveys are undertaken biennially and will be updated in 2008 with regard to the awareness of Medicines Line by health professionals.

Figure 4: Calls to Medicines Line*



*Total calls to Medicines Line to date = 57,047

Medicine Update is written for consumers and provides information about new medicines consistent with information provided to health professionals. It contextualises the reasons for the PBS listing in a fashion appropriate for consumers. It outlines the role of the new medicine particularly relative to non-drug therapies, and promotes the Consumer Medicine Information (CMI) for the medicine. The first issue was published in April 2007. Three issues are currently being prepared.

Local and targeted strategies for the community

Influencing change among seniors

Throughout 2006–07, NPS continued implementing the Seniors QUM Program in collaboration with COTA organisations (previously COTA National Seniors Partnership). Complementary to the broader NPS Community QUM Program, the overall aim of the NPS Seniors QUM Program was to empower seniors with the knowledge, skills and attitudes to be active partners in their medication management. Specific objectives were to:

- generate and improve awareness of the need for information about medicines
- promote quality services and resources that are available for the senior consumer on medicines
- develop skills and strategies to obtain accurate and reliable information on medicines and to use this information to assist in effective communication with their health professional
- develop community opinion leaders and to undertake community education and community development activities for seniors.

A model of nationally coordinated peer education was continued as the primary strategy to reach seniors. This approach recognised that seniors have valuable life experiences that place them in an ideal position to communicate important messages to other seniors.

In the past 3.5 years of the program, 52 QUM training workshops were run with 273 peer educators. Feedback overall on the training was positive, in particular, the opportunity to develop and test session plans. A total of 2,478 QUM sessions for seniors were facilitated by peer educators. These sessions attracted approximately 56,144 seniors from around Australia. In 1,813 (73%) of the QUM sessions, peer educators obtained feedback forms from participants. The overall feedback on the sessions was positive: 83% agreed they learned something new; 77% agreed the information was relevant to them; and 67% agreed the session gave ideas for change.

One to two months following the sessions, 93% of the 110 seniors who were interviewed remembered the sessions and, of these seniors, 87% reported that the sessions were helpful in some way. For example, clarifying what should be included as a medicine (e.g. 'The main thing for me was to know that vitamins and herbs are medicines and should be mentioned to the doctor if I was to be taking other medicines'); reminding participants to think more actively about health and medicines and ask more questions (e.g. 'The session reminded me to think about why I take medications and if they're useful'), and providing advice on useful medicines information resources (e.g., 'Had a friend the previous day ask me about a medication ... was able to direct her to the Medicines Help Line which I think is excellent innovation').

More than half (54%) of these respondents also felt the information sessions had helped them to gain more confidence in asking the doctor and/or pharmacist questions about medicines they were taking. A further 23% reported making, often multiple, changes in the way they manage their medicines, including general changes in attitudes and behaviour around medicines use (e.g. 'We are much more aware about how I take my medicines and also what I am taking and ask questions about them all'), improvements in adherence; improvements in information seeking about medicines

and use of services available, improved communication with health professionals (e.g., 'Keep doctor informed if I change brand of medication'); reduction in medication use (e.g. 'As a direct result of the presentation made an appointment with his GP to review his medication and consequently has been taken off one of them!'); and increased focus on lifestyle options rather than medicine.

The new Generic Medicines Module

The Generic Medicines Training module was developed by NPS in consultation with national and State/territory coordinators from COTA organisations to train experienced QUM peer educators to educate seniors about the risks and benefits of generic medicines. The new information was designed for groups who have already attended a QUM session, although it is a stand alone package and does not require previous QUM knowledge. The training module addresses major issues concerning generic medicines and reinforces general QUM messages.

The training module was piloted twice in terms of peer educator training. Between May and August 2006, the first version of the training module was piloted by 3 groups in Victoria, NSW and ACT, where state/territory coordinators provided the training to 22 peer educators. These groups gave feedback on the training which informed further content development. A number of changes were incorporated into the training module and a version two was developed. Version two was evaluated primarily in terms of whether the major generics messages were getting through to peer educators. This evaluation was conducted in December 2006 in Victoria and South Australia, where State/territory coordinators delivered the training module to 21 peer educators.

In February 2007, the new Generic Medicines Information module was released. By the end of June 2007, the new module was used in 17 training workshops and provided further training to 73 peer educators in addition to the 43 trained during the pilot testing. In the first 5 months of its release, the Generic Medicines Module was used to facilitate 137 of the completed sessions.

Influencing change in multicultural communities

A resource designed for teachers of English as a second language has been jointly produced by NPS and the Adult Migrant Education Service in Victoria. This resource, available free to interested organisations, aims to help people in multicultural communities get better results from the medicines they take, avoid side effects where possible, and enjoy better health.

Throughout 2006–07 significant progress has been made in planning for the Ethnic Schools project titled the 'families get to know their medicines' program. Pilot testing for this program commenced in Term 3 (2007) in Queensland. The program used culturally appropriate health education strategies delivered as part of the established learning curriculum in after hours ethnic schools (AHES). These schools are run by community organisations to maintain linguistic and cultural heritage for children/adolescents aged 12 to 18 years. Approximately 1,000 school authorities operate these schools throughout Australia and over 100,000 students participate nationally.

The coursework for this pilot study was developed by language and curriculum experts, and involved consultation with AHES individuals and community leaders from the ethnic communities. The intervention had three steps: Step 1, the development of the coursework; Step 2, the implementation of the coursework; and Step 3, the students sharing QUM knowledge with their family members.

Implementation took place over a seven-week period where instructors used the coursework as the basis of their lessons. The importance of ethnic schools to parents and the community is recognised in the literature. By respectfully engaging with traditional family interactions, the program placed the coursework information within a two-way family learning context, which has been shown to be an effective way of increasing awareness of health issues in multicultural populations.

Key messages were reinforced by homework activities which required participation of older family members as well as informal discussions between family members.

Influencing change in Aboriginal and Torres Strait Islander communities

In 2006–07 the Good Medicines Better Health QUM training course for Senior Aboriginal Health Worker trainers was finalised. The course was developed as a train-the-trainer package via a partnership between the National Aboriginal Community Controlled Health Organisation (NACCHO), NPS, and the Aboriginal Health Council of South Australia (AHCSA). The course provides training skills and QUM content for Aboriginal health Worker trainers, who then provide training to primary health care workers (PHCWs), who work in Aboriginal Community Controlled Health Services. There are four PHCWs training modules: general QUM; asthma; hypertension; and diabetes. Consumer Information Resources are being developed to complement the training materials.

Three Aboriginal Health Services were selected for piloting the Good Medicines Better Health training. These were located in Melbourne, VIC; Port Lincoln, SA; and the Kimberley area of WA. A detailed evaluation plan was developed using participatory processes which involved NPS, NACCHO and AHCSA staff working together with Senior Aboriginal Health Worker trainers from the pilot sites. A participatory workshop was held in November 2006 to finalise dates for training and to finalise evaluation data collection methods. The first week of training of Senior Aboriginal Health Worker trainers was held in June 2007. The second and third weeks of training will be held in September and November 2007.

A detailed literature review was also undertaken to identify areas of QUM need and opportunities to influence change amongst Aboriginal and Torres Strait Islander communities. This review involved a comprehensive search for relevant literature in: Ovid MEDLINE (1966 to May, Week 3 2006), Ovid MEDLINE In-Process and Other Non-Indexed Citations (May, Week 3 2006), EMBASE Drugs and Pharmacology (1991 to 2nd Quarter 2006), CINAHL – Cumulative Index to Nursing and Allied Health Literature (1982 to May, Week 4 2006), Australian Medical Index (AMI), ATSIhealth (ATSI Health Bibliography) and the Cochrane database. Reports and other publications not indexed in the medical databases were also included where relevant.

This review identified several relevant issues for NPS program planning as well as areas requiring further research for clarification. The review highlighted that medicine issues are part of a much larger and complex set of issues, including the social, political and environmental context of ATSI people. The specific QUM issues identified of particular interest to NPS included:

- Lack of consumer understanding of medicines and a lack of shared understanding of traditional medicines and prescription medicines
- Safe storage of medicines
- Adherence
- Communication barriers, in particular, the lack of opportunity for discussion between consumers and health professionals regarding medicines use
- Limited access to QUM services, in particular Home Medicines Review, especially in rural and remote areas
- Inability to access medicines due to cost, physical availability, inappropriate prescribing, and health beliefs.

Influencing change among people with a chronic condition

In early 2006, NPS commissioned qualitative research to assist its understanding of the QUM related knowledge, understanding, practices and skills of consumers with chronic conditions. This formative evaluation involved 8 group discussions and 19 in-depth interviews conducted with people living with either type 2 diabetes or chronic pain. The evaluations were held in Sydney, Brisbane, Dubbo

and regional South Australia with a mix of consumers, carers and 'experts'. The information collected will help inform improvements to medicine management among people with chronic conditions.

In brief, this evaluation found that among consumers there is a wide range of knowledge about chronic conditions and medicines and, overall, a gap between consumers' current knowledge and that required for appropriate medicine management. Issues identified that impact on consumers' ability to manage their medicines safely and effectively include remembering to take medicines, managing and anticipating side effects, managing and anticipating interaction effects, choosing medicines and treatments, managing costs, and accessing time-poor GPs.

The consumers who participated in the evaluation varied greatly with respect to the amount of information they desired. Some chose to avoid information if possible, while others wanted as much information as they could find. Across all consumers, the primary medicines information sources were GPs and/or pharmacists.

There are a number of information gaps and needs for consumers with chronic conditions. These relate to basic facts (e.g. medicines facts, condition facts), skills (e.g. information seeking and processing), presentation of information (e.g. the need for simple, non-technical and consistent information) and information from a broader perspective (e.g. treatment from a holistic perspective and new developments in medicines and treatments).

There is evidence that there have been some important changes in prescribing and the better use of medicines by people with a chronic condition. For example, the 2007 Annual Consumer Survey found that 39.4% of people with a chronic condition kept a Medicines List, which compared to 34.7% in 2005. In addition, in 2007, 58.5% of people with a chronic condition were aware of CMLs. This compares to 30.5% in 2003. Moreover, of those aware of CMLs in 2007, 74% were aware that they could be obtained directly from a doctor or pharmacist. This compares to 67% in 2005.

With regard to generic medicines, in 2007, 24.6% of people with a chronic condition agreed or strongly agreed that generic medicines were not as effective as brand name medicines. This compares to 27.3% in 2006. In addition, in 2007, 63% of people with a chronic condition believed that it was important for doctors to prescribe the same brand of medicine for people on long term medication. This compared to 69% in 2006. These findings suggest that generic medicines are becoming more accepted in populations with chronic conditions, possibly, pointing a decrease in the out of pocket costs of medicines for these consumers.

Influencing knowledge, attitudes and behaviours regarding appropriate use of antibiotics

Targeted strategies for the community, via the NPS common colds community campaign, commenced in 2000 and, since then, have been repeated annually during the winter months. Community strategies are closely integrated, using the same tagline, key messages and visual images, and they are delivered in numerous settings including general practice, community pharmacy, child care centres and community groups.

The *Common Colds Need Common Sense* campaign implemented in 2007 built on previous work. It was designed to remind the community that antibiotics are not an appropriate treatment for a common cold and, therefore, reduce the demand for antibiotic prescriptions. The consumer activities were also included in a parallel program aimed at health professionals.

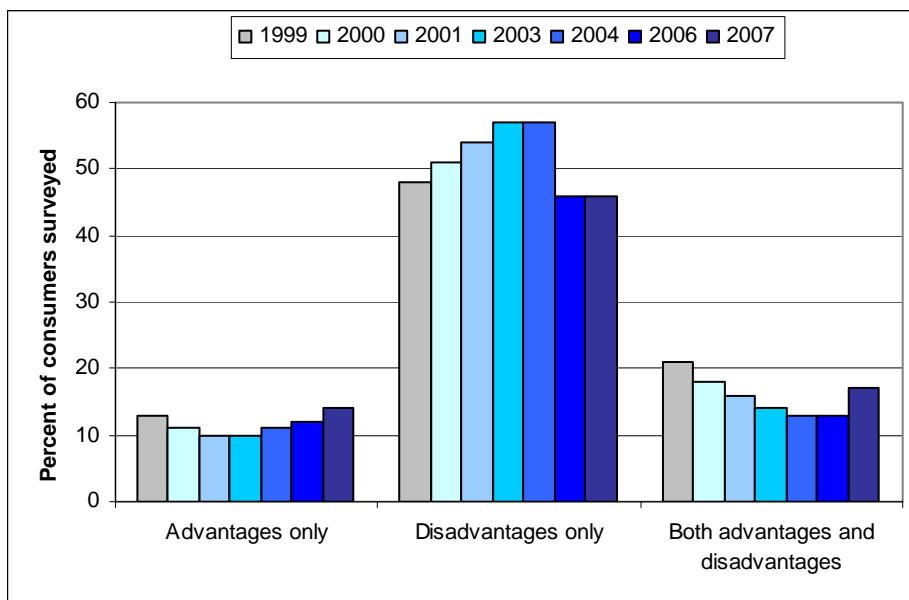
In 2007, the campaign ran nationally, aimed at a target audience of female parents with children aged 2 to 9 years, and women aged 18 to 34 years. The campaign included a television advertisement that was screened throughout the month of June, with the primary target audience

being female parents of children aged 2 to 9 years. Almost 23% of female parents of children aged 2 to 9 years who were surveyed were aware of the TV advertisement and 14% recalled the specific campaign key messages.

Between 2002 and 2007, awareness of the Common colds need common sense campaign among Australian adults increased. It went from 9% awareness pre-campaign in 2002 to 29% post campaign in 2007. The largest increase in awareness occurred between 2006 (21%) and 2007 (29%).

Knowledge and attitudes about antibiotic use for cold/flu symptoms has remained fairly stable over time, although there has been a small decrease in the proportion of consumers who believe that there are disadvantages associated with taking antibiotics (Figure 5). Most commonly, consumers believe that antibiotics speed (44%) or assist recovery (27%) and relieve symptoms (22%). In 2007, the primary disadvantages of taking antibiotics identified by consumers were that they decrease immunity (43%) and that they are no longer effective (22%).

Figure 5: Percentage of consumers who believe that there are advantages and disadvantages associated with taking antibiotics for cold and flu



Self-reported actions taken for managing cold/flu symptoms suggest that there has also been a slight improvement in symptomatic management of cold and flu amongst Australian adults (Table 2). In 2007, more consumers (87%) self reported making sure that they maintained their fluid intake compared with 2002 (82%). There has also been an increase in the proportion of consumers who asked someone at the pharmacy for advice (23% in 2002 and 29% in 2007) or who visited their doctor (25% in 2002 and 32% in 2007). However, since 2002, the proportion of consumers who self report getting extra rest the last time they suffered from cold/flu has decreased from 79% in 2002 to 72% in 2007.

Of those symptomatic consumers who visited a doctor, the total percentage diagnosed with cold/flu has fluctuated between 54% and 68% since 2002. Of those actually diagnosed with a cold/flu, the percentage of consumers who reported being prescribed an antibiotic remained relatively stable over time (between 47% and 55%).

Table 2: Actions taken by Australian population having cold/flu within the last 12 months

Action taken	Post 2002 (%) (n=730)	Post 2003 (%) (n=681)	Post 2004 (%) (n=708)	Post 2005 (%) (n=73)	Post 2006 (%) (n=699)	Post 2007 (%) (n=696)
Get some extra rest	79	79	75	78	79	72
Consciously drink lots of fluids (‘maintain fluid intake’ in 2006/2007)	82	84	79	84	85	87
Ask someone in a pharmacy or chemist for advice	23	27	24	22	25	29
Visit the doctor about symptoms	25	30	21	27	26	32

Improving QUM awareness and competence among health professionals

Provision of independent medicines information for health professionals

The **Education and Quality Assurance Program** for health professionals continues to cover an average of 6 therapeutic modules for health professionals each year (37 modules covering 29 topics have been delivered to date). Some of these modules are delivered using a wide range of interventions (written information, mailed feedback on personal prescribing, clinical audit, educational visiting, peer group discussions and responses to written case studies). Others are delivered in print publications (*NPS News* and *NPS Prescribing Practice Review (PPR)* with educational material). The target audience for these topics is primarily GPs and pharmacists, although relevant medical specialists and other health professionals also receive written information. In addition, pharmacists receive *NPS News*, *PPR* and opportunities to participate in pharmacy audits of over-the-counter medicine sales or dispensing practice.

The following publications are disseminated to all GPs, pharmacists and GP registrars on a regular basis:

NPS News is published every 2 months. 52 issues have been distributed to June 2007. It is sent to 52,000 health professionals (31% GPs, 20% pharmacists and 49% other health professionals) and has an editorial committee to ensure its quality.

NPS Prescribing Practice Review (PPR), which sometimes has feedback on personal prescribing for GPs, has been sent to GPs, other medical specialists, GP trainees/registrar and pharmacists on 37 occasions, and covers a range of topics, most recently proton pump inhibitors, chronic obstructive pulmonary disease, depression and ischaemic heart disease.

Australian Prescriber is published 6 times each year with each issue distributed to over 51,000 health professionals and students nationally. An additional 8,000 copies are distributed internationally. *Australian Prescriber* is also available online free of charge. The website remains popular, averaging around 113,000 page visits per month over the last financial year.

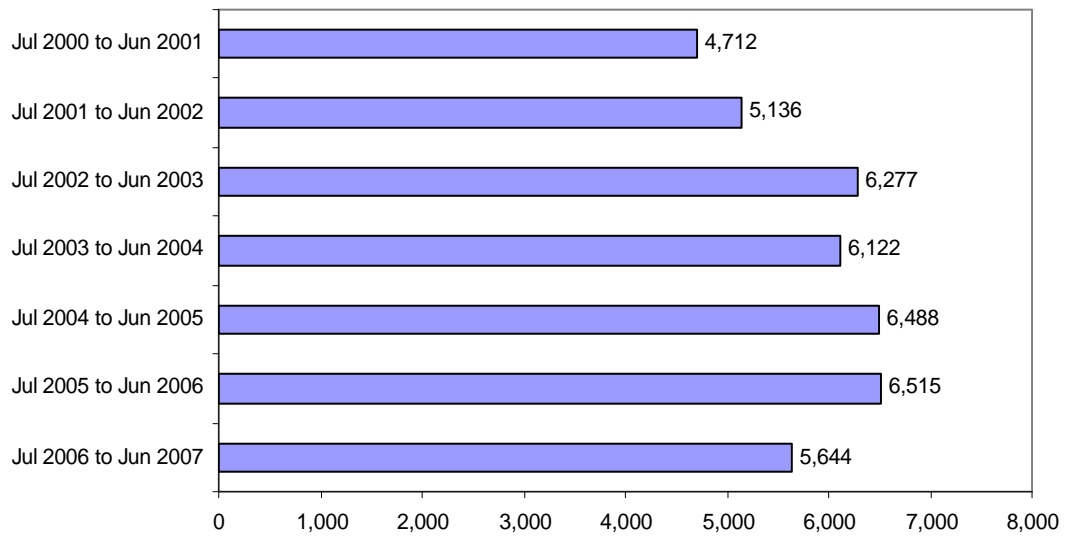
NPS also funds the following telephone advice line for health professionals:

Therapeutic Advice and Information Service (TAIS) has seen a steady increase in its use from about 4,700 calls in the 2000–01 financial year to around 6,500 in 2005–06, with more than 40,000 calls in total (Figure 6). TAIS experienced a decrease in enquirer numbers in 2006–07 compared with the previous twelve months. Reasons for this decline are unclear.

Most calls are from community pharmacists (46%) and GPs (32%). The calls are most frequently about drug interactions (21%), adverse drug reactions (20%), or therapeutic strategy (20%). Drugs or issues affecting the nervous system (including mental health problems) are consistently the major source of enquiries (17%), with cardiovascular, anti-infective and herbal/complementary medicines also frequent topics.

Data from the 2006 national survey of GPs indicated that 39% of GPs were aware of TAIS. The national survey of pharmacists found 43% of pharmacists were aware of TAIS. These surveys are undertaken biennially and will be repeated in 2008 to update these figures.

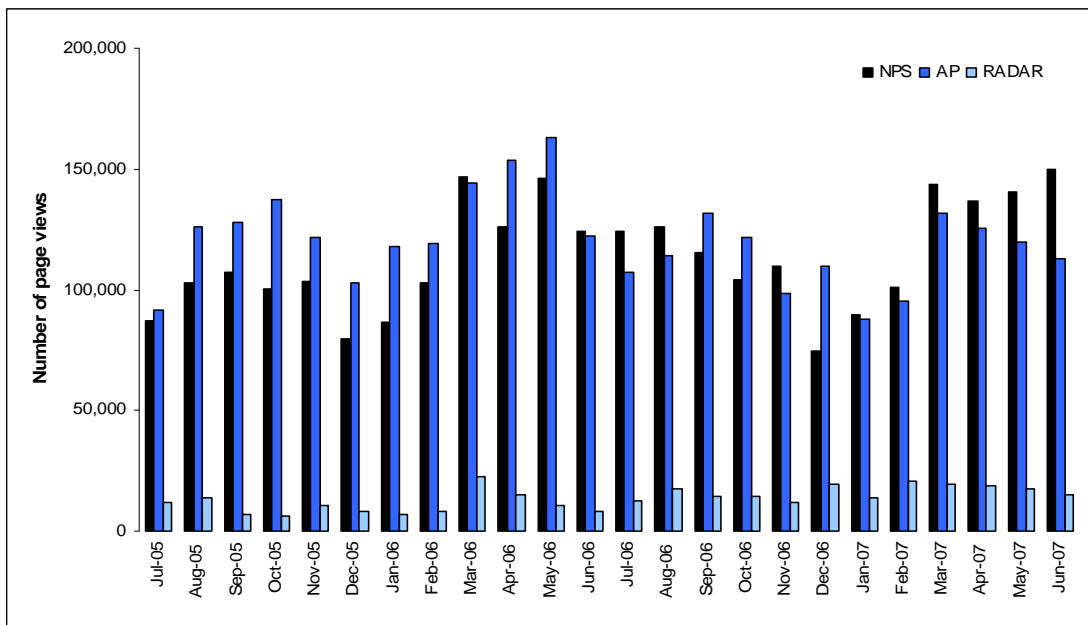
Figure 6: Calls to TAIS



The use of **web-based information** has also become a significant means of communication. NPS offers information via three major web portals: the main NPS homepage, the NPS RADAR site and the Australian Prescriber homepage. A measure of the relative popularity of each site is provided by the number of times the web pages are visited (or viewed each month) (Figure 7). For all three sites there is a substantial monthly variation, with an increase in activity over March, April, and May of each year. Over the past 6 months, there appears to have been increased interest in the NPS home page, relative to the Australian Prescriber site. There has also been some increased interest in the RADAR site.

Australian health professionals and consumers are the intended audience for the NPS website. However, there has been increased interest in the site from overseas Internet users. Data for the last financial year indicates that the NPS, NPS RADAR and Australian Prescriber sites currently experience similar degrees of interest/visiting by Australians (at around 50%), while in the previous year the percentage of visits from Australians was around 60%.

Figure 7: Number of page views per month for NPS home page, Australian Prescriber (AP) and NPS RADAR sites



Opportunities to actively participate in education and quality assurance activities for health professionals

In addition to receiving publications, health professionals, in particular GPs and pharmacists are regularly given an opportunity to participate in education and quality assurance activities. Around 21,300 GPs have participated in at least one NPS activity at any time during the past 9 years, while many have participated on multiple occasions (Table 3).

Table 3: GPs' participation in programs by type of activity to 30 June 2007

Program Topic	Educational visit	Division case study group discussion	Clinical audit	Case study
Antibiotics	4,268	734	9,832	6,800
Antipsychotics				739
Anti-thrombotics	5,139	1,955		1,176
Asthma	4,249	1,445	1,149	1,421
Benzodiazepines	33	29		325
COPD/CAL	4,660	1,851	1,065	1,646
Depression	8,333	1,848	2,122	3,714
Drug and alcohol dependence		10		1,086
Drugs in the Elderly		34		956
Dyspepsia		6		1,263
Generics		7		967
H.pylori eradication therapy		9		12
Heart failure	2,839	1,114	69	2,755
Hormone replacement therapy	2,180	816	13	3,114
Hypertension	5,032	1,341	5,093	2,272
Ischaemic heart disease		18	1,322	1,219
Lipid modifying drugs	3,098	681	1,780	1,482
Managing Type 2 diabetes	7,790	3,484	3,180	2,960
Medication review	17	45	43	1,411
Migraine		39		1,365
New drugs		75		3,830
NSAIDs (incl. COX-2 selective NSAIDs)		63	106	1,532
Osteoporosis		28		1,579
Pain management	7,821	3,005	2,242	2,291
Polypharmacy		42		1,248
Proton Pump Inhibitors	2,501	974	2,739	2,076
Psychogeriatrics		38		1,240
Rheumatoid Arthritis				788
Sleep disorders		33		1,386

The number of individual GPs who have voluntarily participated in NPS activities has steadily increased from less than 2,500 in 1998–99 to around 11,500 in 2006–07 (Figure 8). Currently, over 50% of GPs in Australia actively participate in NPS activities each year. This is in addition to receiving NPS publications. Furthermore, 54% of the 21,300 GPs who have participated in NPS programs have participated 4 or more times since 1998. Participation by GPs over the past 9 years ranges from one activity to 79 activities (Figure 9).

As part of these NPS activities/programs, GPs can participate in case studies. Case studies have involved over 52,400 GP participant contacts over all therapeutic topics, by more than 8,400 individual GPs (that is multiple contacts per GP). Since 1998, 49 case studies have been offered to GPs. The median number of GPs participating in case studies is around 1,200.

There have been over 57,700 educational visits since 1998, providing one-to-one contact for 15,600 GPs and covering 14 topics in 22 programs.

Clinical audits have also been popular, involving around 30,700 audits done by about 9,400 GPs over 14 topics since 1998. Managing antibiotics in primary care has been the most popular topic (involving around 6,000 GPs), followed by hypertension (around 3,900 GPs) and managing type 2 diabetes (around 2,700 GPs).

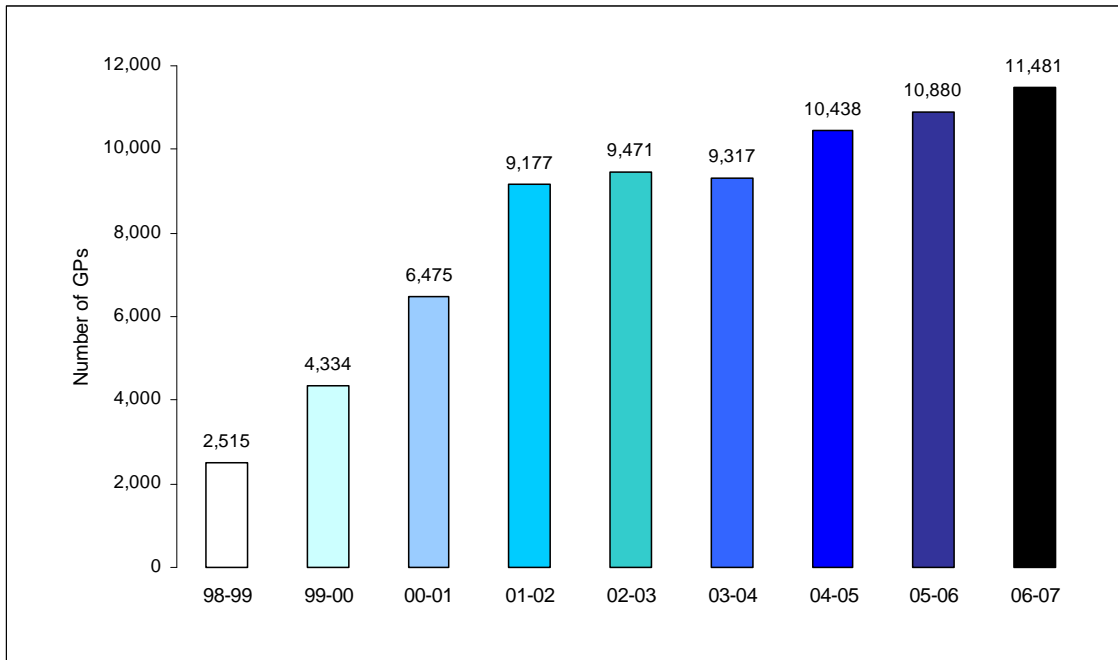
GP participation in divisional small group case study discussions (peer groups) continues to grow in popularity with over 8,500 GPs involved in 27 topics since 2001.

GP participation in the different topics offered by NPS has varied. The highest participation up to the end of June 2007 was for type 2 diabetes (over 10,600 GPs), followed by pain management (over 10,300 GPs), depression (over 10,200 GPs) and antibiotics (over 9,800 GPs).

To the end of June 2007, pharmacists have been offered 11 pharmacy practice audits and 9 case studies, covering 15 topics (Figure 10). Participation in core activities (case studies and pharmacy practice audits) by pharmacists is lower than for GPs, but continues to increase. Over 4,600 pharmacists have participated since 1999 and over 1,400 participated in the last financial year (compared with only 23 in 1999–2000) (Figures 11 and 12). Pre-registration pharmacists are a specific target of NPS prescribing interventions. Participation by this group has also increased steadily to over 2,500 by the end of the last financial year (Figure 12).

Divisional small group case study discussions can now involve both GPs and pharmacists. The overall proportion of pharmacists participating in these meetings is now about 21% (having risen from a low of 3% in 1998/1999).

Figure 8: Number of unique GPs who have participated in NPS Core QUM Program activities by financial year to 30 June 2007*



* Total unique GP participation to date = 21,276

Figure 9: Total number of GPs who have participated in NPS Core QUM Program activities by financial year to 30 June 2007

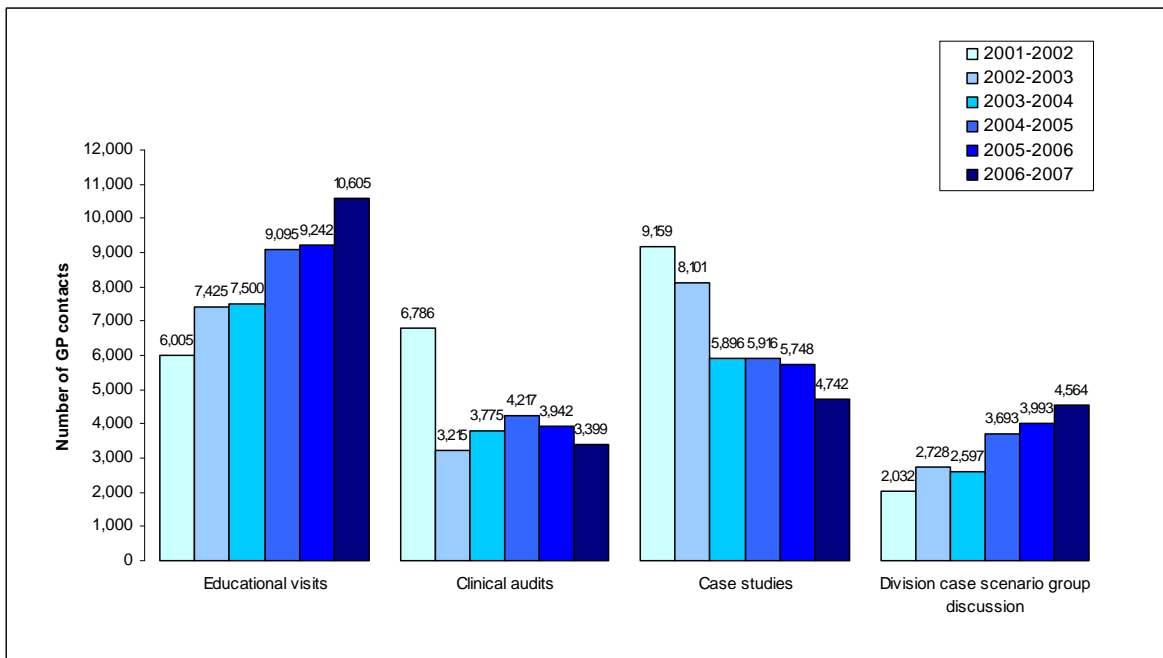
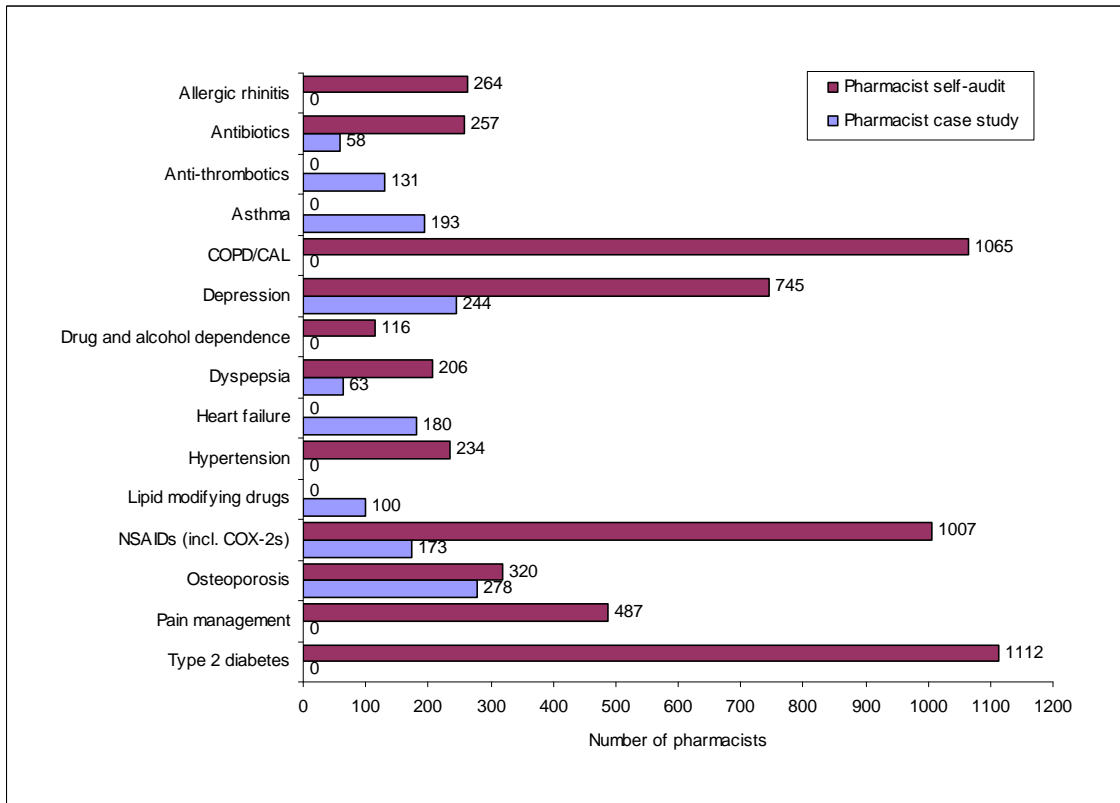


Figure 10: Participation by pharmacists across topics for case studies and self audits to 30 June 2007*



* 0 = no activity offered for particular topic

Figure 11: Participation by pharmacists in NPS core activities (case studies and pharmacy audits) by financial year to 30 June 2007

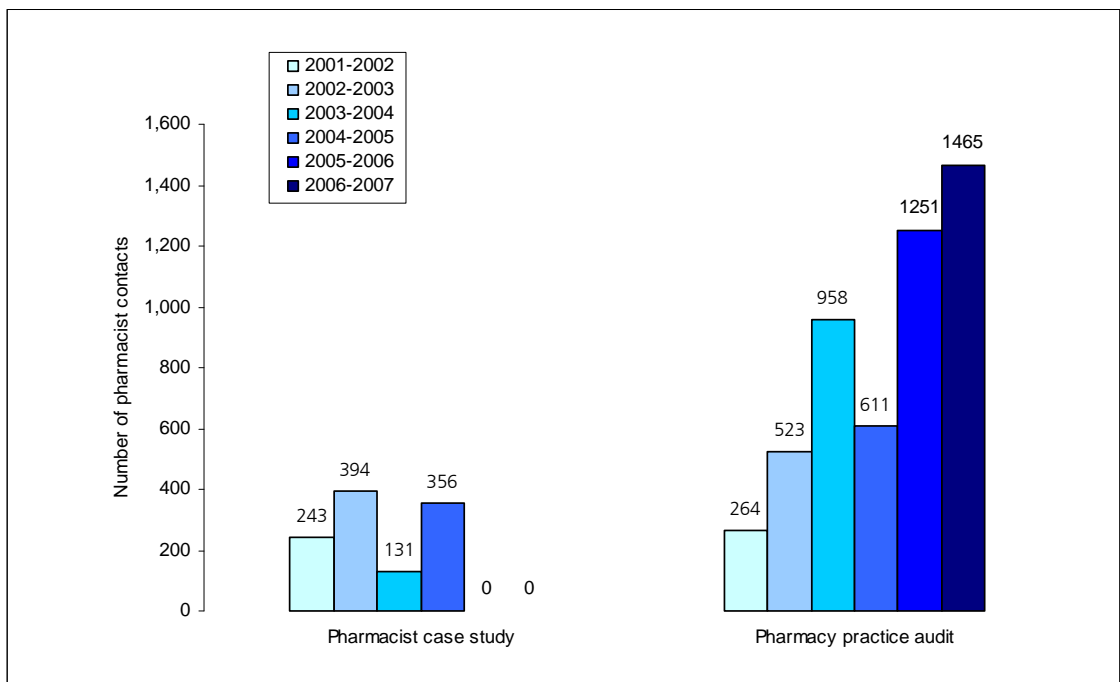
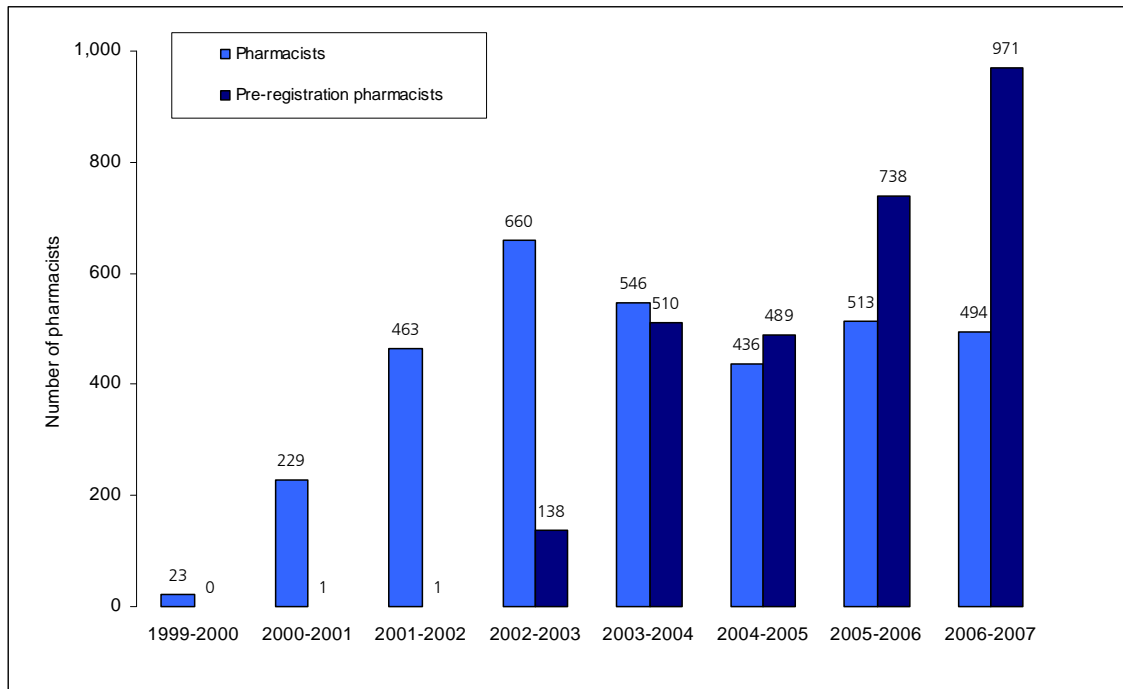


Figure 12: Participation by unique pharmacist in NPS core activities by financial year to 30 June 2007*



* Total unique pharmacist participation to date = 2,048, pre-registration pharmacists = 2,554

Provision of independent information on new drugs and research

NPS RADAR, published as part of the New Drugs program, provides information to health professionals on newly listed or revised drugs. This includes information on the PBS listing (wording of listing), reason for PBS listing (rationale behind listing), place in therapy, safety issues (particularly contraindications/precautions, adverse effects and drug interactions), dosing issues and relevant consumer information (Table 4). *NPS RADAR* is currently distributed via email subscription database. *NPS RADAR* was distributed in hard copy in August 2006, December 2006, February 2007 and April 2007 to 62,222 health professionals across Australia (36% GPs, 31% pharmacists and 31% specialists). *NPS RADAR* has also been incorporated electronically into the four main prescribing software packages: Medical Director, Locum, Genie and Medical Spectrum Plexus. *NPS RADAR* can be accessed either as part of the prescribing process via automated links or through a browser.

Table 4: NPS RADAR documents developed in 2006–07

August 2006 NPS RADAR release
Lumiracoxib (Prexige) for osteoarthritis
Alendronate with cholecalciferol (vitamin D3) (Fosamax Plus) for osteoporosis
Fentanyl patches (Durogesic) for chronic pain
Moxonidine (Physiotens) for hypertension
Adrenaline autoinjector (EpiPen) for acute allergic anaphylaxis
In brief: Change in perindopril (Coversyl) salt from erbumine to arginine
December 2006 NPS RADAR release
Amlodipine with atorvastatin (Caduet) for dyslipidaemia with concomitant hypertension or angina
Imiquimod cream (Aldara) for superficial basal cell carcinoma
Insulin glargine (Lantus) for type 1 and 2 diabetes mellitus
Pimecrolimus (Elidel) cream for facial atopic dermatitis
Rosuvastatin (Crestor) for dyslipidaemia
February 2007 impromptu issue
Revised PBS criteria for lipid modifying drugs
April 2007 NPS RADAR release
Revised PBS criteria for lipid-modifying drugs
Alendronate (Alendro once Weekly, Fosamax Once Weekly, Fosamax Plus) for osteoporosis in people with high risk fracture
Methylphenidate extended release (Concerta) for attention deficit hyperactivity disorder (ADHD)

In July 2006, twenty-three semi-structured interviews were conducted by an external contractor with individual GPs in their consulting rooms to gain insight and to explore:

- GPs' awareness of NPS RADAR as it is contextualised in clinical software.
- GPs' understanding and expressed value (and need for) NPS RADAR in software as an independent information resource.
- GPs' use of NPS RADAR and, in so doing, identify how some of the barriers to GPs using RADAR may be addressed.

Nine of the GPs who were interviewed were aware of the existence of NPS RADAR in their prescribing software. Of the nine who were aware, one said that they *'had heard it was there'* while another GP said that they had *'seen the button'* only. The remaining GPs indicated they had seen NPS RADAR via the pop-ups (that is, when prescribing a medication). None of the GPs indicated they had used the drop-down menu or the NPS RADAR button to actively seek out information.

Of those GPs who were aware of RADAR in their prescribing software only a few were able to state that the focus was on new drugs. Others made associations with the Therapeutic Goods Administration (TGA); the Australian Medicines Handbook (AMH) and Australian Prescriber. The most frequently mentioned perceived benefit to GPs was that NPS RADAR was authoritative and independent in the sense that the information was developed by known experts. The GPs who were aware of NPS RADAR in software, and who had actually read the content, commented that it was useful having it there at the point of prescribing. One GP felt that although NPS RADAR was an intrusion this was not necessarily unwelcome.

Reasons given by GPs for not using NPS RADAR were associated with the following barriers: information filtering and sorting overload; confusion; interruption to workflow; lack of rationale for use; lack of end-user control of software; lack of knowledge of how to interrogate NPS RADAR information for own information needs; end-user perceptions of speed, branding; attitude, content, time.

Extended reach of services to specialist medical practitioners, nurses and hospitals

NPS has specifically developed and delivered materials to **general practice nurses**. NPS is encouraging divisions of general practice to include general practice nurses in delivery of NPS programs where relevant and appropriate. NPS Facilitators may provide educational visits, small group based discussions, or interactive workshops. By the end of June 2007, the 'Reducing risk in type 2 diabetes' program involved 433 nurses from 55 divisions, while the 'COPD: interventions for better outcomes' program involved 423 nurses from 54 divisions. During the past two financial years 1,234 nurses have been involved with some NPS activity, while during the previous four financial years only 425 nurses were involved. These nurses have come from general practice settings as well as aged care facilities.

The **Acute Postoperative Pain (APOP)** project is a national quality improvement initiative involving 62 hospitals, which commenced in October 2006. It is funded and supported by the National Prescribing Service (NPS) in collaboration with state quality use of medicines/drug use evaluation (DUE) groups from New South Wales, Tasmania, Victoria, South Australia and Queensland.

The project aims to improve pain assessment, safe and effective analgesic prescribing and communication at discharge. The first phase consisted of a cross-sectional baseline audit of current practice. The second phase included implementing educational interventions followed by a repeat audit to assess change in clinical practice.

62 hospitals submitted baseline data through a NPS web-based clinical e-audit. Data from 2,704 inpatients and 1,699 patient telephone surveys, and feedback from 669 GPs have been evaluated. The baseline results of individual state and national hospitals were provided as feedback to be used during the educational interventions.

A variety of educational resources including an educational visiting card, bookmark and wall posters were developed and reviewed by the Faculty of Pain Medicine at the Australian New Zealand College of Anaesthetists. These were distributed to APOP hospitals in readiness for education.

A total of seven two-day workshops, covering one-on-one academic detailing, were delivered in early 2007. 120 hospital staff consisting of pain and surgical nurses, anaesthetic junior medical officers, senior medical officers and specialists were trained to provide one-on-one academic detailing in their respective hospitals.

The state TAG/DUE groups completed the first round of consultation with their relevant stakeholders to identify disease states or therapeutic areas that may benefit from a quality improvement initiative in 2008–09. Based on agreed selection criteria, the following areas were identified:

- Management of acute coronary syndrome including myocardial infarction at discharge
- Antibiotic use in surgical prophylaxis
- Reducing risk in diabetes
- Acute exacerbation of chronic obstructive pulmonary disease (antibiotics and bronchodilators)
- Management of acute postoperative pain in paediatric patients.

Access to decision support material: Ischemic Heart Disease electronic clinical audit

The **pharmaceutical decision support (PDS) team** develop electronic audits for GPs. The first national clinical e-audit, ischaemic heart disease, was released in March 2007. It underwent extensive testing and review prior to its release.

Enrolments for the ischaemic heart disease electronic clinical audit (IHD e-audit) commenced in March 2007. GPs were given approximately eight weeks to complete data collection. Completed e-audit data was received from 258 participants.

Of those who completed the e-audit (n=256), the majority were enthusiastic about the process. In particular:

- 97% 'agreed/strongly agreed' that adequate instructions were given to complete and submit the audit
- 97% 'agreed/strongly agreed' that navigation through the audit wizard was straightforward
- 86% 'agreed/strongly agreed' that they experienced minimal technical difficulty in completing the audit
- There were some particularly positive comments:

'Great! Better than paper based anytime!'

'...it is really good, much better than paper based as can't accidentally skip questions'

'...wonderful program, very easy to complete'

Feedback by fax was sought from a random sample of GPs (n=250), who had registered but did not start/complete the e-audit (n=730) and who had a valid fax number (n=524). Completed faxes were returned by 101 GPs (40%). Ninety one GPs gave a total of 95 reasons as to why they did not complete the audit. Some of the reasons are as follows:

- The most frequent reason given by the GPs for non-completion was that they were too busy (43%)
- Some GPs (11%) specifically mentioned that they had been given inadequate time to complete the e-audit
- Six GPs mentioned that they were dissatisfied that the e-audit did not integrate directly with their software, that is, they had expected that it would directly import data from their software into the audit application
- One third (n=32) of the reasons given were classified as miscellaneous.

A significant proportion of GPs who didn't complete the e-audit said they would participate in future e-audits:

Just under half of the non-completing GPs (48%) said they would definitely consider participating in an e-audit in the future, 37% responded 'perhaps' while only a minority (15%) said they would definitely not participate in the future.

A significant proportion of GPs who did complete the e-audit said they would participate again:

Of those who completed, 58% strongly agreed that they would consider future participation, 36% agreed, 4% were neutral and less than 1% disagreed.

The most preferred future clinical e-audit topic was osteoporosis (65%) followed by hypertension (58%), proton pump inhibitors (44%) and antibiotics (38%).

Enhancing QUM skills and competence among medical students

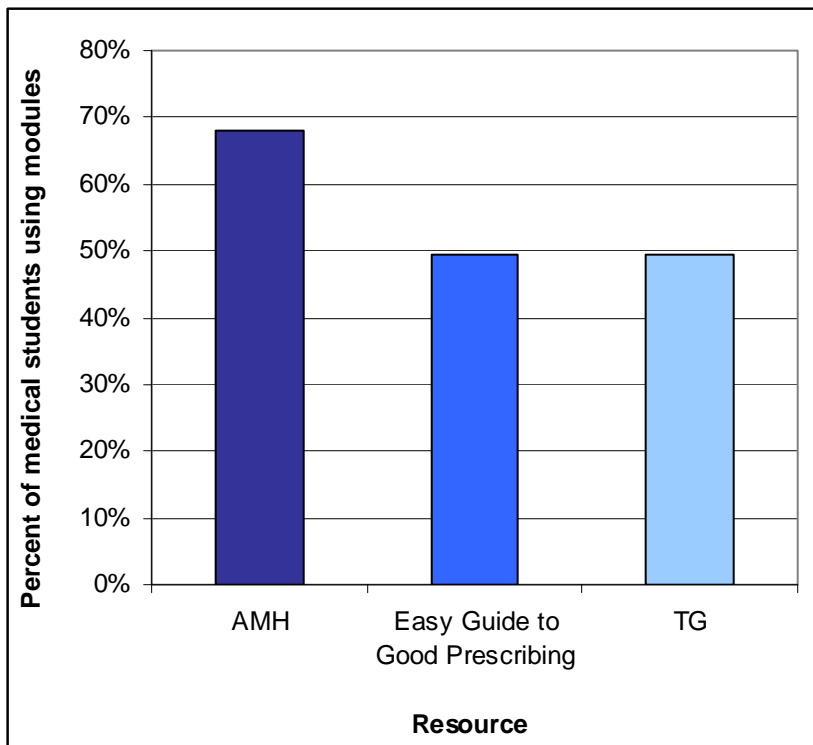
The NPS Curriculum and Training Program collaborated with all Australian medical schools and the Australian Society of Clinical and Experimental Pharmacologists and Toxicologists to develop nationally accepted **prescribing curriculum modules for senior medical students**. The modules are based on the World Health Organization's *Guide to Good Prescribing* and use the *Australian Medicines Handbook* and *Therapeutic Guidelines* as references.

The web-based interactive modules address both cognitive and behavioural issues relevant to prescribing and are now being used routinely by eligible medical students in 12 medical schools around Australia. It is anticipated that the four most recently established medical schools will also have students using the modules in the near future.

Between July 2006 and June 2007, the modules were accessed by 1,892 students, which is an increase of 16% compared with the previous year. For most students and interns, the online modules provided their first opportunity to write a prescription based on defining a patient's problem, specifying the therapeutic objective, choosing the optimal drug therapy and advising how best to use it.

In addition, significant proportions of students accessing the prescribing curriculum modules were found to be aware of reliable information sources. Of the 1,892 medical students who accessed the modules between July 2006 and June 2007, at least 1,287 students (68%) accessed the *Australian Medicines Handbook* (AMH) at least once. Additionally, at least 935 medical students accessed the *Therapeutic Guidelines* (TG) by linking from the modules, and 1,190 accessed resources such as the WHO *Easy Guide to Good Prescribing* (Figure 13).

Figure 13: Proportion of medical students accessing independent sources of information



Enhancing QUM skills and competence amongst dentistry students

During the period July 2006 to June 2007, three new modules have been developed for the online prescribing curriculum suite. These modules aim to improve prescribing knowledge among dental students. They are based on cases which might first present to a dentist, a general practitioner or to a hospital emergency department. The modules were written by academic staff from the Pharmacology and Anaesthesiology Unit of the University of Western Australia (UWA). The modules have been piloted with dental students from UWA and will be made available to all prescribing curriculum users from the commencement of the 2008 academic year.

Enhancing QUM skills and competence amongst other health professional students

The prescribing curriculum modules and online Quality Use of Medicines training have been made available to a wider audience of health professionals in training during the 2007 academic year. A number of Schools of Nursing and Midwifery and of Pharmacy have reviewed the online materials. The prescribing modules are now integrated into several programs for nurse practitioner candidates and for pharmacy students.

Influencing GP knowledge and attitudes

1. The appropriate management of type 2 diabetes

Using a short, self-administered survey, GP knowledge and attitudes were reviewed prior to the commencement of the type 2 diabetes program. A random sample of 2000 GPs answered a small number of multiple-choice questions. Topics in this survey addressed the key messages and objectives of the program. The same survey was repeated after the end of the program in September 2006 to determine if any changes in knowledge and attitudes had occurred as a result of the program.

- The response rates were 32% for the pre survey and 23% for the follow-up post survey.
- Demographics of pre and follow-up survey respondents were similar but the survey overall had an under-representation of younger GPs with only 5% being aged less than 35 compared with 11% nationally.
- Respondents were asked a question about initiation of type 2 diabetes medication. The proportion who correctly selected the option 'Metformin' was significantly higher post survey when compared with the pre survey (42% pre survey vs 55% post survey) ($\chi^2_1=14.918$, $p=0.000$).
- Respondents were given a scenario about medication choices after a patient had been titrated up to maximal oral anti-diabetic drug therapy. The proportion of respondents who selected the most appropriate response 'I would begin insulin immediately' increased significantly from 45% pre survey to 58% post survey ($\chi^2_1=16.412$, $p=0.003$).
- The proportion of GPs who correctly selected the statement 'Adding rosiglitazone or pioglitazone to sulfonylurea + metformin provides an additive glucose-lowering effect' was significantly higher between the pre and post surveys (77% pre survey vs 89% post survey) ($\chi^2_1=21.128$, $p=0.000$).
- The proportion of GPs who correctly selected the statement 'Metformin is recommended as the first-line oral agent as it has been shown to significantly reduce the incidence of diabetes-related events and mortality' was significantly higher between the pre and post surveys (82% pre survey vs 89% post survey) ($\chi^2_1=9.731$, $p=0.002$).
- There was no change in the proportion of GPs who identified in which patients Metformin was contraindicated.
- When asked about tight blood pressure control being more important than glucose control in terms of macrovascular outcomes, there was no difference in the number of correct survey responses pre and post program.
- When asked to rate their skills on educating patients on the benefits of insulin therapy, how to self monitor and how to titrate insulin therapy, there were no differences in how GPs rated themselves between the pre and post surveys.
- There were no differences in the proportion of GPs who discussed lifestyle issues with their patients between the pre and post surveys. There were no differences in how effective the GPs rated their lifestyle discussions with their patients between the pre and post surveys.

There were some encouraging results from this survey that were directly related to the program's key messages. This was the third time evaluation had used a pre and post survey to examine knowledge and attitudes of GPs. This method has not always proved to be the best for evaluation purposes, in particular in light of the depression pre and post survey, discussed next.

2. The appropriate management of depression

The methodology used to examine GP knowledge and attitudes concerning the appropriate management of depression was similar to that used to measure GP knowledge and attitudes concerning the management of type 2 diabetes.

- The response rates were 27% for the pre survey and 23% for the follow-up.
- The survey method was compromised by Divisions of General Practice changing from the control to the intervention group after the project began. Six divisions in the control group decided that they wanted to move to the intervention group, leaving the numbers imbalanced: interventions (n=16) and controls (n=4). The intention was to have 10 divisions in the intervention group and 10 in the control group.
- Demographics of pre and follow-up survey respondents were similar, but the survey overall had an under-representation of younger GPs.
- In the pre survey, half (50%) of survey respondents knew that 50% of patients with depression will have a satisfactory response to the first antidepressant chosen; however, there was no significant difference in the post survey (53%). Nor was there any difference by intervention vs. control divisions.
- In the pre survey, over half (63%) of the survey respondents knew that antidepressant therapy should continue for six months, but there was no significant difference in the post survey (60%). There was a marginal (but non-significant) decrease in the proportion of survey respondents in the intervention group who gave the correct response.
- The majority of respondents (82%) in the pre survey said that they considered it appropriate to ask patients with depression (irrespective of the severity of their depression) about suicide. This did not significantly differ in the post-survey responses, (85%).
- The majority of respondents (96%) in the pre survey said that they felt 'very confident/confident' in asking patients with depression about their suicidal thoughts/ideas. This did not significantly differ in the post-survey responses, (98%).
- In a case scenario, featuring the management of side effects in a patient on antidepressant therapy, less than half of the survey respondents (40% pre-program and 41% post-program) selected the correct response.
- The majority of respondents knew that the statement 'in mild depression antidepressants are first line' was false. There was no significant difference pre compared to post program.
- The majority of respondents (83% pre-program and 87% post-program) knew that tramadol increased the risk of serotonin syndrome when co-prescribed with SSRIs. However, only a minority (9% pre-program and 13% post-program) were able to identify the four medications which increased the risk of serotonin syndrome when co-prescribed with SSRIs.

Creating greater capacity in the QUM workforce

Greater capacity via NPS Facilitators in divisions of general practice

Local ownership and delivery of NPS messages to health professionals via NPS Facilitators employed within divisions of general practice remains a pinnacle of program delivery. As at 30 June 2007, NPS had contracts with 118 of the 119 Divisions of General Practice to deliver QUM messages to their local area. NPS provides substantial training, skills development, day-to-day program support and quality assurance for facilitators located within Divisions. In addition to ad hoc contact, the following training and support was provided throughout the year:

- monthly teleconferences with 85% attendance on average
- 32 facilitators attended the COPD Program therapeutic briefings; 100 facilitators attended the Analgesic Program therapeutic briefing; and 41 facilitators attended the Antibiotics therapeutic briefings
- three educational visiting workshops and four advanced educational visiting workshops were conducted with 53 participants in total
- four skills workshops were conducted with 39 participants in total.

Greater capacity via peer educators in the community

In 2006–07, a further 44 peer educators were trained through COTA organisations to deliver NPS messages to seniors. This brings the total of trained peer educators to 365, building on the 321 trained in the previous two years by COTA organisations and by Combined Pensioners and Superannuants Association of NSW (CPSA)¹. In 2007, 73 existing peer educators received further training in the new Generic Medicines module.

After going through the peer educator training, most peer educators reported agreement ('agree' or 'strongly agree') with statements that described the gaining of new skills and knowledge about QUM. For example, ability to identify reliable sources of information about medicines was endorsed by 98% of peer educators, understanding how to work with seniors so they get access to the best information about medicines was endorsed by 97% of peer educators, and ability to explain the benefits for seniors of being active partners in their medicines use was endorsed by 98% of peer educators. Most trainees reported readiness to share information with seniors about being an active partner in medicines use (83%) and to facilitate QUM sessions that encourage participant interaction via discussion in pairs or small groups (75%).

All trainees were asked before and after training '*if you were prescribed a new medicine today, how confident are you that you could get all the reliable information about the medicine that you needed?*' At pre-training, ratings of confidence were generally high, with an average of 8.1 on a 10-point rating scale, and 71% (197 of 275) of respondents gave a rating of 8 or more. After training, the average of confidence ratings increased significantly to 9.2 ($p < 0.001$; difference of means = -1.08 ; 95% CI for difference = -1.37 to -0.78), and 94% (237 of 253) of respondents gave a rating of 8 or more.

Peer educators who received further training about generic medicines were asked '*how confident are you that you understand the issues for seniors regarding the use of generic medicines versus brand name medicine?*' At pre-training, the average rating of confidence was 6.6 on a 10-point

¹ CPSA trained seniors from culturally and linguistically diverse backgrounds in a pilot project in 2004-05 funded as part of the Seniors QUM Program.

rating scale, and 45% (27 of 60) of respondents gave a rating of 8 or more. After training, the average of confidence ratings increased significantly to 9.0 ($p < 0.001$; difference of means = -2.37 ; 95% CI for difference = -3.00 to -1.73), and 92% (59 of 64) of respondents gave a rating of 8 or more.

In addition to gaining knowledge, skills and confidence about QUM, peer educators consistently reported the ability to empower people to take ownership of their health and medicines use and to develop strategies to use QUM information to improve their health care.

Encouraging and undertaking evaluation and research that supports innovation and learning

Research and development

The NPS Research and Development (R&D) Program focuses on enhancing our understanding of strategies that support QUM. It aims to identify barriers to change and gaps in current evidence, and define innovative methods of delivering NPS services.

Research partnerships with the University of Queensland, and the Universities of Newcastle and New South Wales, which began last year, continue with their work, building evidence about which interventions improve prescribing practice. These partnerships aim to develop research capacity both inside and outside NPS.

R&D are also working with the Pharmaceutical Decision Support team to conduct a study to identify and evaluate features of general practice prescribing systems which contribute to patient safety, quality of care and are useful to the clinician and the patient. A modified Delphi process was used to prioritise system features that were identified from the literature and key stakeholder interviews. Testing of 6 general practice systems will be completed in February 2008.

This year NPS Research and Development has begun formative research into understanding the information needs and preferences of consumers and health professionals around complementary medicines. This research will be used to improve access to high quality information about complementary medicines.

Program evaluation

Program evaluation continues to play a central role in the NPS organisational structure and delivery of activities and services. Program evaluation provides information that internal and external stakeholders can use to make decisions about accountability, program design and delivery, strategic direction, and QUM policy more broadly.

The scope of program evaluation at NPS is broad, encompassing process, impact and outcome evaluations utilising a range of quantitative and qualitative techniques. The analysis of large drug utilisation databases, such as Medicare Australia and GP survey data, plays an important role when evaluating the impact NPS programs have on prescription drug utilisation. A recent development, which will further the existing work in this area, is that NPS has gained access to General Practice Research Network (GPRN) data. This will compliment the other data sources traditionally used and will have particular application in investigating patterns of utilisation of newly listed drugs on the PBS. The evaluation effort at NPS has also been strengthened in the area of qualitative data analysis, with the creation of a new Social Scientist position in the Evaluation team. This will strengthen our capacity to conduct evaluations in the Community Program area where more qualitative analyses are often required to gauge the broader impacts of these programs.

Another key focus for NPS evaluation in the future is to improve its capacity to estimate the likely impact of NPS programs and activities on health outcomes. To this end, NPS has now entered into collaborative relations with the Sansom Institute at the University of South Australia and the Centre for Health Services Research at the University of Western Australia. Each of these collaborations will, hopefully, further our ability to examine the impact of medicines use on health outcomes by gaining access to these respective linked data systems.

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