



National Prescribing Service Limited

# **Evaluation Report No. 11**

2007-08

Progress, achievements and  
future directions

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

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## Executive summary: NPS influencing change

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Since the inception of the National Prescribing Service Limited (NPS) in 1998, a robust evaluation framework has enabled NPS to measure the impact of its work and has informed approaches to program design and delivery.

During 2007-08 the scope of evaluation has been broad, encompassing process, impact and outcome evaluations and utilising a range of quantitative and qualitative techniques. Evaluation has assisted internal and external stakeholders in decisions about accountability, program design and delivery, and strategic direction.

NPS has made significant advances toward demonstrating improved health outcomes through techniques such as simulation modeling and collaborative research partnerships that utilise existing linked health data. While this evaluative work is in its early stages, we are confident that as access to linked, patient level health data improves, so too will our ability to provide a more accurate picture of the impact of NPS activities.

The information presented in Evaluation Report No.11 reflects the strong track record of NPS and is measurable evidence that NPS activities continue to result in better prescribing practices, use of medicines and economic outcomes in terms of savings to the PBS.

In the current agreement with the Commonwealth Government (July 2005 to June 2009) NPS must deliver savings of \$40 million each year to the Pharmaceutical Benefits Scheme. The estimated savings claim for 2006-07 was well over \$18 million in excess of contractual requirements, demonstrating the positive impact of NPS activities on changes in prescribing and economic outcomes.

Some of the other key NPS achievements during 2007–08 include:

- 11,908 individual GPs voluntarily participated in NPS core activities in 2007-08, which reflects a steady increase from 2,500 participants in 1998–99.
- 3,318 pharmacists actively participated in NPS activities.
- More than 2,000 senior medical students from 12 medical schools accessed the National Prescribing Curriculum modules as part of their health professional training.
- More than 800 practice nurses participated in two therapeutic topics.
- Approximately 79,500 seniors around Australia had participated in the Peer education program.
- Of those GPs and pharmacists aware of NPS in 2008, 90% and 95% respectively perceived NPS to be valuable.
- Savings to the PBS of over \$58.8 million were calculated in 2007-08 for the 2006-07 period.
- 37 modules covering 29 topics for health professionals have been delivered to date.
- Australian Prescriber and NPS News continue to be published bi-monthly with each issue distributed to more than 60,000 health professionals.
- Telephone services have taken nearly 121,000 calls from health professionals and consumers.
- Awareness of NPS amongst consumers has increased and was more pronounced following the national Get to know your medicines and Generic medicines campaigns between August and September 2007.
- 99% of divisions of general practice have a contract with NPS to deliver programs to health professionals. Ongoing work with divisions of general practice and other stakeholders ensures a nationally coordinated and collaborative approach to delivery of QUM.

NPS, through strong partnerships and a multi-strategic approach to delivering a comprehensive range of interventions for consumers and health professionals, continues to enable better decisions about medicines and create better health and economic outcomes.

## Introduction

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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 promote quality use of medicines (QUM), one of the four arms of Australia's National Medicines Policy. It is defined as:

- wisely selecting options to manage health
- choosing suitable medicines if a medicine is considered necessary
- using medicines safely and effectively.

QUM applies equally to medicines 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 audits 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.
- Community capacity building.

Opinion leaders and community peers are also used to deliver and endorse appropriate key messages.

### **Therapeutic targets**

NPS systematically targets therapeutic areas where prescribing problems, uncertainties or controversies 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 11th Evaluation Report presents information on the progress and key achievements of NPS to June 2008. It builds on previous evaluation reports and complements the comprehensive evaluation framework for the organisation. Information on our 10 year achievements is provided for context.

The complete evaluation framework can be accessed online here:

[www.nps.org.au/eval\\_framework](http://www.nps.org.au/eval_framework)

The Evaluation Framework for NPS is a series of questions under broad areas that reflect the organisation's corporate and program goals.

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 its purpose and reach its 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.

Details of the methods and scope of data that informs the evaluation is available online here:

[www.nps.org.au/eval\\_framework/appendix\\_5](http://www.nps.org.au/eval_framework/appendix_5)

# Operating an organisation that achieves corporate goals

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## Independent with strong governance

NPS operations continue to be overseen by a Board of Directors, and function independently of the influence of government and the pharmaceutical industry. This is measured against whether NPS is perceived to have sound governance by regulators and members; strong leadership and direction by members and senior management; and demonstrates intellectual and strategic independence by regulators, members, senior management and others with interest in QUM. The Board oversees the long term future of NPS and reflects regularly on its own performance, through annual self-assessment of performance and director development plans. The members of the Board bring excellent environmental knowledge that helps to shape the organisation's future direction.

The perceived independence of NPS is also reflected amongst GPs and pharmacists. While almost half (48%) of GPs surveyed in 2008 thought that NPS information and activities were unduly influenced by government, at least to some extent, this is a marked improvement since 2006 when 57% of GPs surveyed expressed this view. Approximately 20% of GPs in 2008 also thought that the NPS was unduly influenced by the pharmaceutical industry.

Compared with GPs, fewer pharmacists surveyed in 2008 thought that NPS information and activities were unduly influenced by government, with 37% holding this view to some extent. However, more pharmacists (27%) than GPs in 2008 thought that NPS was unduly influenced by the pharmaceutical industry.

## Well-resourced and managed with a track record of achieving contract deliverables

Currently NPS receives funding of approximately \$30 million annually and at the time of writing this report NPS operated with just over 120 staff. Three of the four contracts are due for refunding by the Australian Government Department of Health and Ageing in July 2009. This report demonstrates our sound track record for achieving and exceeding the existing contract deliverables.

## Valued partnerships enhance national co-ordination of QUM activity

NPS is member-based and works in partnership with health professional organisations, government, the pharmaceutical industry and consumer organisations to update and improve our programs and services and disseminate information. As at June 2008, NPS had contracts with 118 of the 119 divisions of general practice across Australia to provide local delivery of NPS messages.

NPS also works in collaboration with a number of national community and consumer peak organisations to develop strategic directions on QUM initiatives across Australia. Partner organisations include:

- Consumers' Health Forum of Australia.
- Combined Pensioners' and Superannuants' Association of NSW Inc (CPSA).
- Council on the Ageing (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.
- National Rural Health Alliance.

Throughout 2007–08 NPS also supported the Department of Veterans' Affairs with the Veterans' MATES Project.

## Better prescribing and use of medicines

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### Positive changes in prescribing

The statistical methods used to examine whether NPS interventions influenced the volume and relative prescribing in Australia is described in more detail in the section entitled 'Improving Economic Outcomes'. Briefly, direct time series regression modelling was applied to the monthly prescribing data 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. Note that data pertaining to changes in prescribing are based on their date of prescribing, whereas analyses of economic outcomes is based on date of supply data.

### Positive change in the 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.

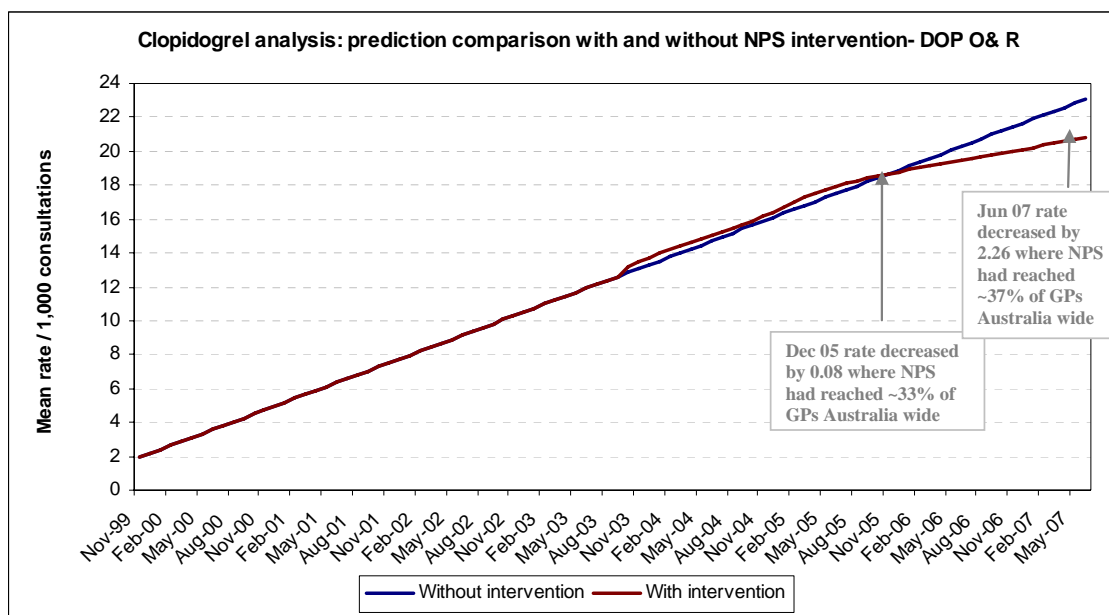
The program used a mix of passive and active interventions. The passive interventions consisted of written materials being mailed out to all GPs (around 20,000) in Australia, as well as personalised prescribing feedback. The active interventions were those contacts where the GP (actively) participated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

As a result of the intervention strategies employed by NPS, the primary outcome of interest was a change in the prescribing rate of clopidogrel.

Time series analyses confirmed that a statistically significant decline in the prescribing rate of clopidogrel was associated with NPS active program interventions ( $p < 0.001$ ). As depicted in Figure 1, by December 2005 the mean rate of scripts had decreased by 0.08 per 1,000 consultations per month, where NPS had reached approximately 33% of GPs Australia wide.

By June 2007 the prescribing rate had decreased significantly by 2.26 scripts per 1,000 consultations per month where NPS had reached approximately 37% of GPs Australia wide - an estimated decline of 10% of prescribing for that month.

**Figure 1: Changes in the prescribing of clopidogrel on the PBS (originals and repeats: July 1999 to June 2007)**



### Better prescribing of beta blockers for heart failure

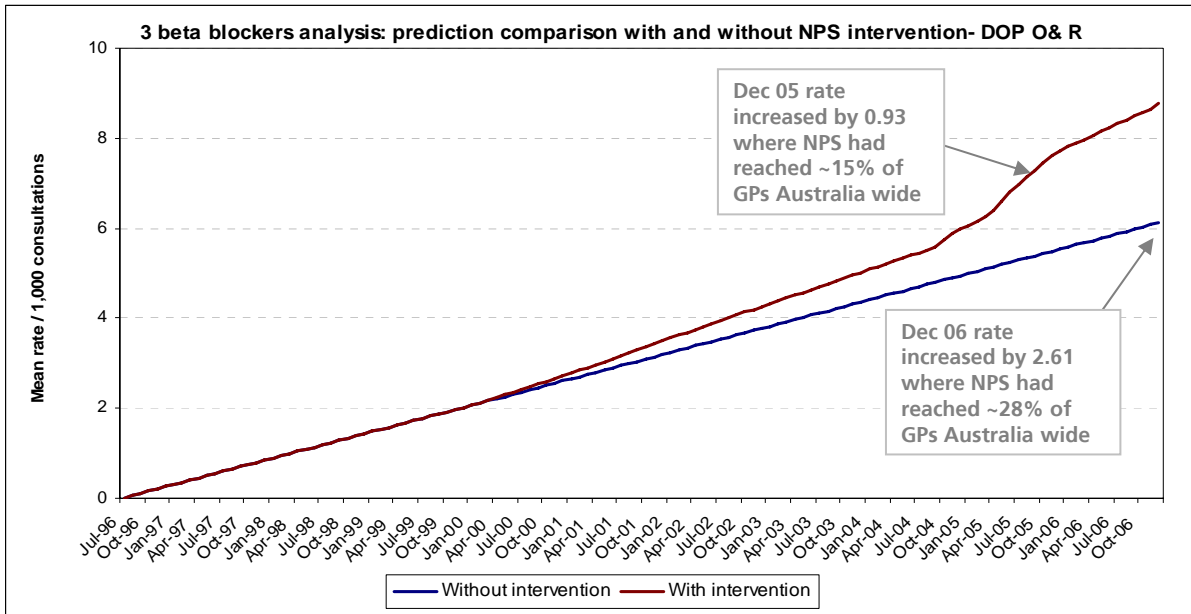
The NPS heart failure program began in September 2004 and ended in July 2006. The program key messages were:

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

Time series analyses confirmed that a statistically significant increase in the prescribing rate of the three beta blockers indicated for heart failure was associated with NPS active program interventions ( $p < 0.001$ ). As depicted in Figure 2, by December 2005 the mean rate of scripts had increased by 0.93 per 1000 consultations per month, where NPS had reached approximately 15% of GPs Australia wide. By December 2006 the prescribing rate had increased significantly by 2.61 scripts per 1,000 consultations per month where NPS had reached approximately 28% of GPs Australia wide.

**Figure 2: Changes in prescribing of beta blockers on the PBS for heart failure (July 1996 to December 2006)**



## Improved health and economic outcomes

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During 2007-08, NPS made significant progress towards improving methods for demonstrating improved health and economic outcomes. These include:

- More sophisticated methods for estimating savings to the Pharmaceutical Benefits Scheme (PBS) as a consequence of NPS programs.
- Simulation modelling demonstrating health and cost benefits associated with increased use of metformin following NPS interventions.
- Collaboration with the Sansom Institute, University of South Australia, to explore the impact of NPS interventions on drug use and associated health outcomes amongst the veteran population utilising linked record data.
- Collaboration with the Centre for Health Services Research, University of Western Australia, to explore the impact of NPS interventions utilising linked record data amongst the Western Australian population.

### Savings to the PBS

The methods used by NPS for estimating savings to the PBS in the past have included a mix of actual versus forecasted PBS spending as well as time-series and regression modelling for each program. This was achieved by linking drug utilisation and expenditure with GP participation in NPS activities. For the analysis of the 2006-07 data, a direct time-series modelling approach was adopted, rather than also employing the interim analysis methodology of comparing actual and projected expenditure levels (based on DoHA projections). This was because of a concern that the projected expenditure levels themselves actually incorporated the impacts of previous NPS activity, thereby underestimating the overall impact of NPS on actual expenditure levels for a given group of drugs.

The direct time-series method was further developed this year with the inclusion of an interaction term between time and the cumulative number of participating GPs in specific NPS programs. Further, sensitivity analyses were undertaken to build in the potential for a modest level of intervention decay over time. This takes into account that intervention effects may not be sustained for extended periods of time. These analyses produced both an upper estimate of expenditure savings (no decay model) and a lower estimate (0.99 decay).

All time-series models were controlled for pre-existing underlying trend, seasonality, autocorrelation and, where relevant, copayment changes. PBS expenditure was modelled directly in order to be able to directly estimate changes in PBS expenditure as a function of GP participation in specific NPS programs. However, a necessary condition for the acceptance of these estimates was that the time series modelling of actual drug utilisation levels confirmed the findings from the expenditure modelling. In both cases, date of supply was used when extracting the data.

The more conservative lower bound estimates which incorporated intervention decay were used as the basis for the savings claim. This was for those drug groups where the expenditure time series modelling showed a significant NPS program effect which was also apparent in the drug utilisation modelling.

In the current agreement with the Commonwealth Government (July 2005 to June 2009) with funding of \$75.8 million, NPS must deliver savings of \$160 million to the PBS - \$40 million each year. The savings claim for 2006-07 totalled \$58.8 million. This comprised \$16.6 million from reduced clopidogrel expenditure (Antithrombotic program) and \$42.2 million from reduced expenditure on ACE inhibitor combination products and angiotensin II receptor antagonist combination products (Management of hypertension program). This level of savings exceeds the contracted amount of \$40 million by \$18.8 million.

Table 1 summarises the savings generated, contracted and brought forward. Savings over \$290 million have been made based on data from 2003 to 2007. Claiming conservative estimates of savings generated, the actual savings in excess of contracted savings available to be brought forward as at July 2007 are \$117.6 million.

**Table 1: Savings reported, contracted and brought forward (\$AUD), 2004 to 2008\***

<b>Report date</b>	<b>Jun-04</b>	<b>Jun-05</b>	<b>Jun-06</b>	<b>Jun-07</b>	<b>Jun-08</b>
<i>Based on 12 month data to</i>	<i>Jun-03</i>	<i>Jun-04</i>	<i>Jun-05</i>	<i>Jun-06</i>	<i>Jun-07</i>
Savings reported	65,328,949	65,851,177	68,732,103	33,934,667	58,793,293
Savings required by contract	27,500,000	27,500,000	40,000,000	40,000,000	40,000,000
Variance	37,828,949	38,351,177	28,732,103	-6,065,333	18,793,293
Cumulative savings in excess of contract requirement	37,828,949	76,180,126	104,912,229	98,846,896	117,640,189

\* Shaded area is savings claimed within the 2005-09 funding period

## **Simulation modelling of health benefits**

NPS instigated several initiatives to promote the use of effective medication for people with diabetes. A key component of the NPS program in 2005 which focused on reducing risk in type 2 diabetes was to increase the use of metformin.

Evaluation of such NPS programs involving the treatment of chronic diseases poses challenges as the health and economic consequences of interventions accrue over long periods of time. For this reason a computer simulation model was used to evaluate the likely impact of increased use of metformin on the progression of diabetes and its complications. This included extrapolation of outcomes, in terms of: (i) reduced rates of major diabetes-related complications; (ii) increases in life expectancy, and (iii) health care costs.

Detailed methodology and findings have been reported elsewhere (Clarke, 2008) and are described here in brief only. The Outcomes Model involved probabilistic discrete-time computer simulation and was based on an integrated system of parametric proportional hazards risk equations. These were estimated over a median period of 11 years from the diagnosis of diabetes using individual patient data (Clarke et. al. 2004). A working version of the model has been developed that includes both macro-vascular (e.g. myocardial infarction, other ischaemic heart disease, congestive heart failure, stroke) and selected micro-vascular (e.g. blindness) complications. This model can be used to assess the impact of the disease on morbidity and mortality and can also be used to estimate health care costs associated with the disease.

The second phase of the analysis involved estimating the impact of the change in metformin use on health care costs. This required defining a *base population* used by the simulation model to predict outcomes under different scenarios.

Simulation modelling of the increase in metformin usage since 2005 following NPS programs showed the potential for significant effects on the health of Australians with Diabetes. If 3,000 additional people with type 2 diabetes used metformin, the simulated results suggest that over a 10 year period this would result in around 230 fewer myocardial infarctions and 370 fewer deaths. The potential cost savings would have been around \$5 million (or \$4.5 million when discounted at 5%).

## **Impact of NPS interventions on drug use and associated health outcomes in the veteran population**

In late 2007 the Sansom Institute, University of South Australia, in partnership with NPS commenced work to assess the impact of NPS programs on drug use and associated health outcomes in selected veteran populations. While many NPS interventions target senior Australians who are more likely than younger Australians to be using medicines, NPS does not have specific programs targeting veterans.

This partnership with Sansom Institute enabled NPS to explore the potential impact of NPS programs using existing linked data sources.

Determining potential health outcomes is contingent upon the completion of the first stage of the study (by June 2009) which has three primary objectives to determine:

- Trends in medicines use in selected veteran populations.
- Time-to-effect for interventions.
- Trends in step down therapy and combination product use.

## **Impact of NPS interventions utilising linked record data in Western Australia**

In collaboration with the Centre for Health Services Research, University of Western Australia, NPS commenced work on another project to assess the impact of NPS interventions in five therapeutic areas:

- Antihypertensives.
- Heart failure.
- Type 2 diabetes.
- Proton pump inhibitors.
- Antithrombotics.

For each therapeutic area the primary objectives are to determine the effects of NPS interventions on prescribing behaviour and health outcomes. The study uses the cross-jurisdictional facility of the Western Australia Data Linkage System, linking PBS and Medicare Benefits Schedule (MBS) data records of inpatient episodes and deaths in Western Australia. Preliminary data are expected in 2010.

## Improving QUM awareness and competence among consumers

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Better communication between consumers and health professionals has been a primary focus of Community QUM programs that have been run since 2002. 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.

Awareness of NPS amongst consumers has steadily increased from 8% in 2000 to 27% in 2008.

Provision of independent medicines information to consumers remains a priority for NPS. The overall awareness of NPS amongst consumers has steadily increased from 8% in 2000 to 27% in 2008. In 2008, 53% of consumers reported asking questions of their doctor the last time they were prescribed a new medicine. Even though this figure peaked in 2004 at 59% the response of consumers since then has remained stable. Importantly, the 2008 results represent an increase of 5 percentage points since the benchmark survey was conducted in 1999. Similarly, 34% of consumers reported asking questions of their pharmacist the last time they were prescribed a new medicine, more than doubling from 16% in 1999.

In addition, amongst consumers who were aware that Consumer Medicine Information (CMI) leaflets were available from a doctor or pharmacist, 29% had asked them for a leaflet at some time, up from 24% in 2005.

Improvements in communication between consumers and health professionals is evident. The percentage of consumers who kept a medicines list increased from 17% in 2005 to 21% in 2008. There was also an increase in the number of consumers who told their doctor or pharmacist they were taking a prescription medicine when they were prescribed a new medicine. This rose from 57% in 2006 to 76% in 2008. In addition, the number of consumers who told their doctor or pharmacist they were taking a non-prescription medicine when they were prescribed a new medicine also rose from 42% in 2006 to 59% in 2008. Consumers were also asked in 2008 if they had told their doctor or pharmacist about natural or herbal medicines at the point of being prescribed a new medicine. Encouragingly, 58% of consumers indicated they did tell their doctor or pharmacist.

The awareness of generic medicines among consumers has remained consistent, with approximately 90% of consumers being aware of the availability of generic medicines since 2005. Attitudes towards generic medicines also remained consistent between 2006 and 2008 with approximately 21% of consumers agreeing or strongly agreeing that generic medicines are not as effective as brand name medicines. The percentage of consumers being offered a generic medicine by their doctor has declined steadily since 2006 from 35% to 29% in 2008. Conversely, there has been a small increase in the percentage of consumers reporting that they had been offered a generic medicine by a pharmacist (75% in 2006 compared with 77% in 2008). NPS expects these figures and attitudes to change over the next 12 months following the PBS Reforms and NPS's *Generic medicines are an equal choice campaign*, which began in July 2008 and concludes in April 2009.

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: seniors, people with chronic conditions, culturally and linguistically diverse 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 other health professionals discuss potential lifestyle/treatment options. These include information on the symptomatic management for acute upper respiratory tract infections, starting insulin and

treating depression, as well as tools to help GPs review use of proton pump inhibitors and patient medication use. There have been three patient information leaflets produced in the last 12 months, all of which have focused on the management of type 2 diabetes, two of which were specifically designed as an adjunct to a *Pharmacy Practice Review*.

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. During 2007-08, 114,200 copies of the *Medimate* brochure were distributed

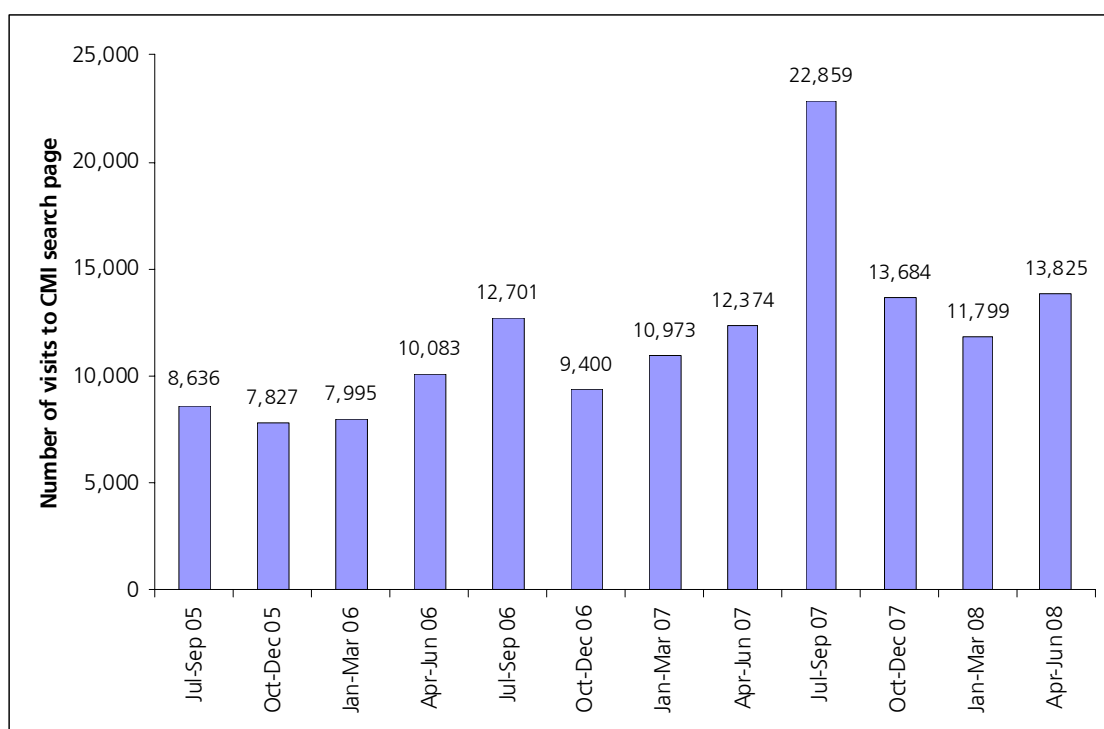
A **Get to Know Your Medicines Kit** is available free to community organisations to help them plan and organise an event to support people manage their medicines.

The **Medicines List** resource is also available and widely promoted. This resource enables consumers to carry a list of medicines wherever they go. In 2008, 21% of consumers said that they kept a medicines list, and of these 15% included both prescription and non-prescription medicines.

**MedicinesTalk** is a quarterly newsletter written by consumers for consumers giving reliable, accurate information and useful tips 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. There were 12,028 copies of the most recent edition of *MedicinesTalk* distributed.

NPS makes available a large number of **Consumer Medicine Information** (CMI) leaflets via our website. The use of this resource, as measured by the number of visits to the CMI search page, has risen each year since 2005-06 during which time there was an average of 2,787 clicks per month. This increased to a monthly average of 3,787 in 2006-07. In 2007-08 the average number of clicks increased to 5,181 per month. The results shown in Figure 3 indicate the number of clicks on the search page for each financial year quarter. The top 10 CMI leaflets accessed in the last financial year were Gardasil, Coversyl, Champix, Protos, Panadeine Forte, Alprim, Augmentin Duo, Olmetec, Endep and Zolof.

**Figure 3: Number of visits per month to CMI search page (July 2005 to June 2008)**



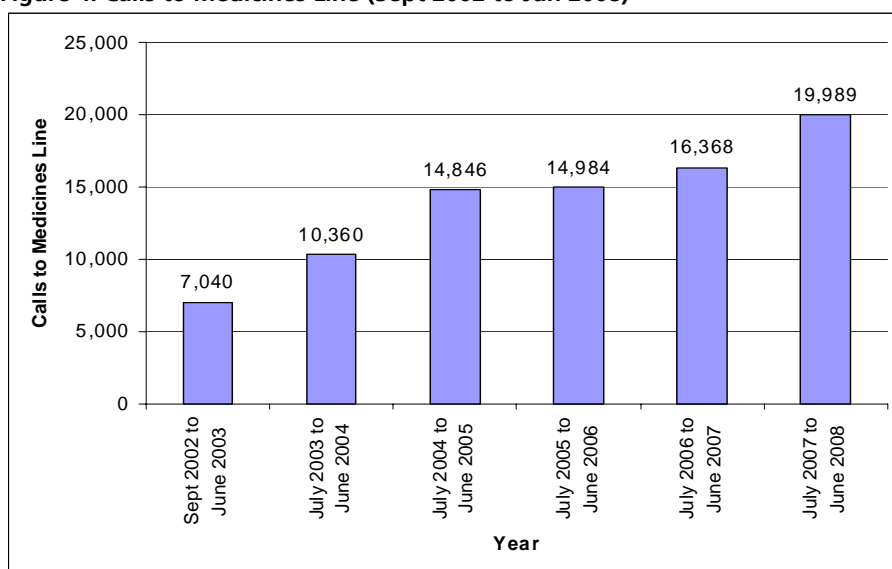
NPS continues to fund **Medicines Line**, a telephone information service for the community. More than 2,200 calls were made to Medicines Line each month during 2007-08 of which over 1,400 calls were answered. Calls to Medicines Line typically involve questions about side effects, drug interactions, therapeutic choices, and medicine use in pregnancy or when breast-feeding. The number of calls to the service has increased significantly in the past year following its promotion in the *Get to know your medicines* and *Generic medicines are an equal choice* television advertisements in 2007, with over 80,000 calls received to date (Figure 4).

The 2008 Annual Consumer Survey of Australians aged 15+ years revealed a statistically significant increase in awareness of Medicines Line since 2006-07 from 14.5% to 17.8% ( $\chi^2=5.6$ ,  $df=1$ ,  $p=0.02$ ). Additionally, among consumers aged 50+ years the increase was a 6.9 percentage point increase in awareness from 14.8% in 2006-07 to 21.7% ( $\chi^2=8.4$ ,  $df=1$ ,  $p=0.004$ ) in 2007-08.

Of those consumers who were aware of Medicines Line (N=446), 7.4% reported having called Medicines Line, equating to 1.3% of the total sample. A majority of respondents who were not aware of Medicines Line (N=2060) indicated they would be very likely (24.8%) or likely (37.0%) to call Medicines Line now that they had been made aware of the service.

While Medicines Line is not promoted for use by health professionals, the 2008 National Survey of Pharmacists showed a statistically significant increase in the number of pharmacists aware of Medicines Line between 2006 (47%) and 2008 (55.3%) ( $\chi^2=7.06$ ,  $df=1$ ,  $p=0.008$ ). On the other hand, there was a statistically significant decrease in awareness amongst GPs, declining from 38.7% in 2006 to 33% in 2008 ( $\chi^2=5.5$ ,  $df=1$ ,  $p=0.02$ ).

**Figure 4: Calls to Medicines Line (Sept 2002 to Jun 2008)\***



\* Total calls answered by Medicines Line to date = 84,076

**Medicine Update** is a consumer-focused version of the health professional publication, *NPS RADAR*. It provides information about new medicines and new PBS listings for some medicines covered in *NPS RADAR*. *Medicine Update* is published online only and is promoted to relevant consumer health organisations; they are invited to include the publication or a link on their own websites or information in their newsletters. The information it provides is consistent with information provided to health professionals, discussing who can obtain the medicine through the PBS, outlining the role of the new medicine, comparing it with other medicines for the condition, and the role of non-drug therapies. *Medicine Update* complements and promotes information provided in the Consumer Medicine Information (CMI). The first issue was published in April 2007. A further four issues were released last year focusing on osteoporosis, smoking cessation and chronic obstructive pulmonary disease.

## National Awareness Campaign 2007

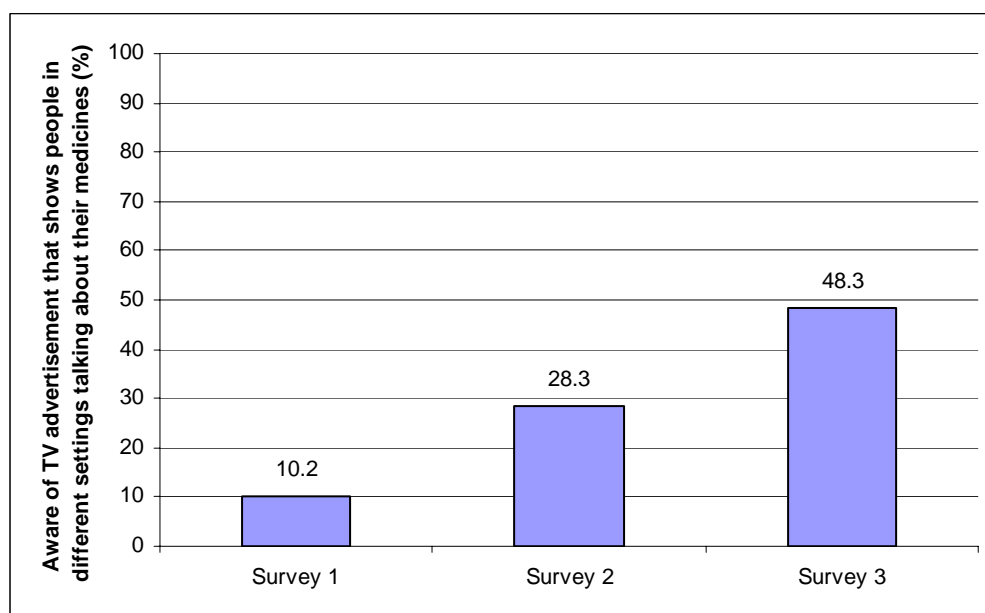
The 2007 National Awareness Campaign was a major consumer awareness campaign conducted by NPS which included TV advertisements run during August and September. It was the second such campaign that has been conducted by NPS since the organisation was established in 1997. The target groups for the campaign were people aged 50 or over who suffer from a chronic condition, and their carers.

The campaign consisted of television advertisements (*Get to know your medicines* and *Generic medicines*), community activities, engagement with community organisations and the development of printed and electronic resources promoting QUM. Awareness of the advertisements and their possible impact on QUM knowledge and behaviour were measured by three telephone surveys of persons aged 50 years and older with a chronic condition. The impact of the advertisements on NPS resource utilisation was measured by examining changes in the volume of enquiries to Medicines Line and access to NPS consumer web pages.

As shown in Figure 5, there were large increases in awareness of the campaign as measured by recall of the television advertisement. General recall increased from 10.2% to 28.3% following the *Get to know your medicines* advertisements. Recall increased further to be almost 50% at the end of the *Generic medicines* advertisement. This indicates a cumulative recall effect across the whole television campaign period.

At the conclusion of the *Generic medicines* advertisements, it was also found that awareness of NPS had significantly improved among those surveyed. As can be seen in Figure 5, awareness of NPS increased from 32.8% to 45.8% ( $p < 0.0001$ ).

**Figure 5: Cumulative recall of having seen TV advertisements showing people talking about their medicines across the three survey waves**



The evaluation also suggested that the campaign made a significant contribution to the achievement of increasing consumers' active participation in decisions about their medicines, including choice about using generic medicines. This is particularly evident in patterns of information seeking behaviour as evidenced by the increased level of enquiries to Medicines Line and utilisation of the NPS consumer website.

## **Building awareness of NPS through targeted media**

NPS has continued to build on its media presence, responding to and proactively engaging trade and consumer media on QUM issues. Between July 2007 and June 2008 media mentions of NPS increased 155% from the previous year.

The number of media releases issued increased from 48 in 2005-06 to 52 in 2006-07 to 91 in 2007-08. Media requests also more than doubled over the same period, from 81 in 2005-06, to 117 in 2006-07 to 178 in 07-08.

## **Local and targeted strategies for the community**

### **Influencing change amongst seniors: peer education**

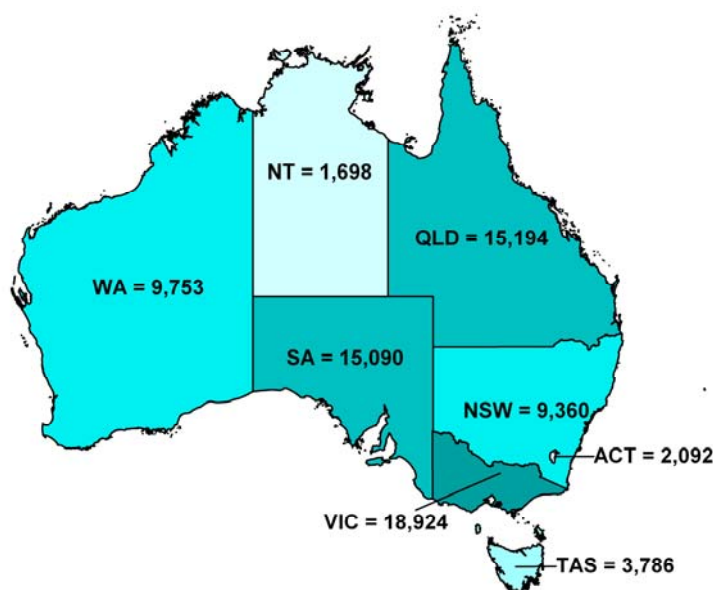
Throughout 2007-08, NPS continued implementing the Seniors QUM program in collaboration with Council on the Ageing (COTA) organisations. Complementing the broader NPS community QUM program, the overall aim of the NPS seniors QUM program was to empower seniors with the knowledge, skills and attitudes needed 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 about medicines available for senior consumers.
- Develop skills and strategies to obtain accurate and reliable information on medicines and to use this information to assist effective communication with health professionals.
- Develop community opinion leaders and 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.

Since December 2005, 63 QUM training workshops have been run with 323 peer educators. Feedback overall on the training was positive; the opportunity to develop and test session plans was particularly well-received. A total of 3,478 QUM sessions for seniors were facilitated by peer educators attracting attendance of approximately 75,900 seniors from around Australia. Figure 6 shows the number of session participants by state and territory since program inception. In approximately 85% of the QUM sessions, peer educators obtained feedback forms from participants. The overall feedback on the sessions was positive: 89% agreed they learned something new; 79% agreed the information was relevant to them; 71% agreed the session gave ideas for change; and 79% agreed they now understood the use of generic medicines.

**Figure 6: Reach and spread of Seniors QUM peer education program; number of seniors attending QUM sessions since inception**



### **The new Generic Medicines Module**

The Generic Medicines Module was developed by NPS in consultation with national and state/territory coordinators from COTA organisations. The aim was 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 standalone 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 by training 43 peer educators in 2006, and was subsequently released for use in February 2007. By the end of June 2008 it was used in 23 training workshops and provided further training to 105 existing peer educators in addition to the 43 trained during the pilot testing. Additionally, the Generic Medicines Module was used to facilitate 555 of the completed sessions attended by approximately 11,000 consumers.

### **Greater understanding about local implementation of the Peer education program**

In 2007-08 case studies were conducted in two sites that involved in-depth interviews of peer educators and program participants. These case studies identified the following: what maintains peer educators' involvement in the program at Site A; key issues in establishing the program in a new site (Site B) and how these may be overcome; program impacts on evaluation participants' attitudes, knowledge and/or beliefs about medicines; and ways in which these impacts have translated to practice.

### **Peer educators' perspective**

The peer educator role was described as providing a way for retired health professionals to use their expertise and interactive skills in retirement. The support peer educators received from COTA staff and other peer educators were found to be crucial to their continued commitment to the peer educator role.

Key issues in establishing the program in a new site (Site B) were identified that emphasised the importance of taking the culture of the region into consideration. It was important that the program have a recognisably 'Site B' aspect that demonstrated an understanding of the particular issues in the region. Having local peer educators and promotional avenues (such as local radio) were important in achieving this.

At Site A, peer educators were found to be more comfortable with booking sessions than had been reported in the previous evaluation. For the most part, peer educators found the program materials to be useful and well-received. Given their years of experience, Site A peer educators offered a number of valuable suggestions regarding program delivery and support materials, such as more portable information and technological aids made for large groups.

All peer educators who had experience being a peer educator believed that delivering sessions to small groups was far more effective than large groups. With larger groups, the interactive style that is such a defining feature of the program is much more difficult to achieve. This has particular implications for how we define success in this program, as this is currently determined by 'counting' the number of sessions and the number of participants in attendance.

### **Program participants' perspective**

Both the program content and interactive style of presentation was new to program participants in Site B. As such, the program was well received. This was particularly the case among participants who lived in socioeconomically disadvantaged areas and reported struggling financially. However, receiving the information would not necessarily ameliorate the financial challenges these participants faced in maintaining their medicines regimes.

Most participants in both sites described having heard important information, but not remembering it all. However, all participants interviewed came away from the program having learned something new that they had retained by the time of the interview. Many participants in both sites mentioned that the program had 'gotten them thinking'. The most common change that participants reported as a result of the program were completing a Medicines List and keeping several copies.

An intention to communicate with their pharmacists and GPs was also reported, including asking more questions and to inform them of *all* the medicines they take. Most intended to continue to adhere to their doctor's recommendations, but all participants understood their right to understand their medicines more thoroughly. For the few participants who reported not having made any changes, this was due to medicines not being a major issue in their lives at present.

### **Program reach through peer educators and program participants**

Both peer educators and program participants described ways in which they shared program information with people they knew outside of the organised sessions. Details about medicine management were most often shared with a spouse or close friend with whom the participant had a practical and supportive relationship. A number of participants attended sessions with a partner, discussed the session together afterwards or participated in the evaluation together.

Informal conversations were reported to occur as issues were raised spontaneously by friends or family and 'mini sessions' of key points when family or friends expressed general interest. Program participants recommended the program as a whole to their acquaintances, giving them copies of the written material received and suggesting it to other groups with which they were involved.

### **Influencing change in multicultural communities**

NPS worked in partnership with Federation of Ethnic Communities' Councils of Australia (FECCA) to develop the Families get to know their medicines program – a trial intervention targeting Chinese, Greek and Vietnamese communities. This trial involved the use of a quality assured LOTE (language other than English) curriculum resource about QUM within the After Hours Ethnic Schooling (AHES)

program in Queensland – an existing infrastructure already reaching multiple communities. AHES classes occur outside regular school hours, are community run and operated outside of the formal education system.

The aim of the program was to develop a curriculum package that values culturally and linguistically diverse (CALD) communities' heritage, culture and language learning objectives, while enhancing the capacity of multicultural families to seek, obtain, understand and use information on medicines.

The curriculum package as a trial intervention was delivered in Queensland After Hours Ethnic Schools by volunteer teachers in term three of the school year in 2007. Participatory action evaluation methods were used as a framework for developing, implementing and evaluating the program trial in consultation and collaboration with all program partners. The evaluation consisted of three major components:

- Monitoring participation at all levels, including uptake of the curriculum within all After Hours Ethnic Schools and involvement of teachers, students and families.
- A case study of a sub-sample of After Hours Ethnic Schools within each language.
- Overall partner evaluation.

Evaluation methods included:

- Records from all After Hours Ethnic Schools (22), e.g. teacher participation.
- Documentation of all program activities.
- Completion of pre and post homework activity sheets by students.
- Completion of a student checklist by teachers – a 'hands up' exercise to assess involvement of family members in student homework activities.
- A bilingual teacher feedback survey at the end of the trial.

In addition, an independent research contractor (Simply Qual) conducted in-depth interviews with teachers, principals, and family members of students. Interviews with key project partners involved in the development and implementation of the program were also conducted by the contractor to assess partnership processes.

Sixteen (73%) of the 22 Queensland After Hours Ethnic Schools formally accepted the invitation to participate in the trial. This included 11 of 13 Chinese schools, 2 of 7 Greek schools, and all 3 Vietnamese schools. These 16 schools comprised 72 classes with approximately 75 teachers and 1,000 students. A student competition was incorporated into the curriculum to ensure maximum uptake during the trial. A total of 289 entries from students were received. At least 300 people attended the awards ceremony.

The trial was supported by a multifaceted communication strategy to increase participation. A Frequently Asked Questions and Answers brochure was the central tool for communication to ensure consistent key messages and overcome potential barriers to participation. Editorials were provided in organisational newsletters and the FECCA Mosaic quarterly journal. Altogether the above activities generated an estimated audience of 5,000-5,500.

Feedback on the curriculum was received from 12 Chinese teachers and 3 Greek teachers. The major issues for teachers were:

- The highly variable age of students (10 to 18 years) even within the same class presented difficulties regarding the interest and enjoyment of students in curriculum activities.
- Time for completing the sessions was too short. About half of the teachers reported completing 4 or 5 of the 7 sessions.
- Students' existing ability with the language influenced their ability to take part in and enjoy the curriculum activities.

Through the in-depth interviews with teachers, principals and family members, the consultant identified 10 key factors that impacted on the success of the intervention. These factors were:

- School and class differences.
- The ability of families to read and write in the target languages.
- English language skills among teachers and principals.
- Teachers' ability to deliver the program.
- Accessibility of family members to the student.
- Parents' expectations of the language program.
- Efficiency and organisation of school administration.
- Program design (time and content).
- Communication between project staff and schools.
- Existing medical and pharmaceutical knowledge in the communities.

Several recommendations arose from the overall evaluation findings, including that:

- The curriculum be simplified or extended to cover a longer period.
- The specific medicine names used in the curriculum remain in English, since the English names are much more commonly used among family members and teachers.
- The curriculum activities be more accurately graded according to age and language ability.
- The curriculum instructions make clear that teachers may use their judgement about which activities are suitable for which age or ability of their students.
- More evaluation is conducted to further assess if and how extended families are involved in the language learning of children attending After Hours Ethnic Schools, especially among language groups where responses were limited.

## **Influencing change in Aboriginal and Torres Strait Islander communities**

In February 2008, nine senior Aboriginal Health Worker trainers completed the Good Medicines Better Health (GMBH) QUM training course. 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 provided training skills and QUM content for Aboriginal Health Worker trainers, who then began training primary health care workers in Aboriginal community controlled health services. There are four modules for use in training of primary health care workers: general QUM; QUM for asthma; QUM for hypertension; and QUM for 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 are located in Melbourne, Victoria; Port Lincoln, South Australia; and the Kimberley area of Western Australia. 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. Following the completion of four week-long training blocks (in June, September and November, 2007 and February 2008), the nine Aboriginal Health Worker trainers participated in the National Medicines Symposium in Canberra (May 2008) – a first time at presenting for most of them. They also attended an evaluation workshop and focus group discussion conducted by an independent contractor. The general consensus on the QUM training from focus group participants was positive. The train-the-trainer model was seen to be empowering and building capacity of Aboriginal Health Workers to provide a higher quality of service to their community on health issues. Participants felt the training had provided confidence through the acquisition of knowledge on medicines which enhanced their role when working with their community and other health professionals.

Prior to the QUM training when patient medication was discussed by doctors and nurses, it was assumed that Aboriginal Health Workers' knowledge was limited. QUM training gave a more defined and active role when working with patients, such as 'ambassador' and 'middle person', as well as a role in the screening process by helping medical staff discuss use of medicines with patients. Aboriginal

Health Worker trainers also felt the knowledge gained helped in understanding immediate family who were reliant on medication. In addition, they had gained skills to use the web and to access up-to-date information concerning medicines.

Key issues for the project were identified, particularly regarding the training of primary health care workers in local sites and the deployment of the training package to Aboriginal community controlled health services throughout Australia. These issues were:

- Time – There was concern about the time taken to do the QUM training course, to travel to the workshops, and with the additional work that came with Aboriginal Health Worker trainers' involvement in the program. The time needed to set up training of primary health care workers at their local health services was also an added stress for Aboriginal Health Worker trainers, who felt employing someone full time to do this job would maximise the impact of the training.
- Content – There were concerns about the characters used in slides, who didn't represent their own mob. Also, an increased focus on specific topics (e.g. diabetes) would address confusion during training and would help retention of information.
- Support – For future deployment of the program, Aboriginal Health Workers suggested a need to negotiate support and space (time) to give training the full attention it deserves. An online information service was also suggested.
- Resources – There was a need to work with local organisations and health services to identify appropriate resources that could assist in training and delivery.

## **Influencing knowledge, attitudes and behaviours regarding appropriate use of antibiotics**

Strategies targeting community commenced in 2000 via the NPS Common Colds Campaign, and have been repeated annually since during the winter months. Community strategies are closely integrated, using the same tagline, key messages and visual images and are delivered in numerous settings including general practice, community pharmacy, childcare services and community groups.

The *Common colds need common sense* campaign implemented in 2008 built on previous work. It was designed to remind the community that antibiotics are not appropriate treatment for a common cold and so reduce the demand for antibiotic prescriptions. In 2008, the campaign predominantly focused on female parents of children aged two to nine years and women aged 18 to 34 years. The campaign included magazine advertisements, staff updates in childcare services, resource distribution to both childcare service and primary schools, and information via the NPS website.

A survey was designed to ascertain the impact of the 2008 campaign amongst women aged 18 to 34 years. Because 18 to 34 year old females are a relatively rare target group, households with members in this age group were identified using Newspoll's large Omnibus Survey Database. Respondents were selected by means of a stratified random sample process.

The survey was repeated three times with 301 participants (903 in total), before (week beginning 13 July), during (10 August) and after the campaign (week beginning 31 August) to coincide with magazine publication dates. While self-reported readership was approximately what had been expected, recall of the NPS campaign advertisement was very low (<1% of the entire sample over the three waves).

The survey also included questions to help NPS get a better understanding of the target groups' knowledge and beliefs about antibiotics, and their information sources. The majority of women had correct knowledge regarding antibiotics for treatment of a cold: 67% of women disagreed or strongly disagreed that antibiotics work on most colds. However, there was still a significant proportion of women who believed that antibiotics work on common colds (26%).

Women also had good knowledge about the effect of antibiotics on bacteria. Three quarters of women (76%) either agreed or strongly agreed that antibiotics kill bacteria. However, between 38% and 44% of women incorrectly either agreed or strongly agreed that antibiotics kill viruses, suggesting that there is still some confusion about the role of antibiotics. Despite misconceptions about the role of antibiotics,

a large proportion of women understood that if taken too often, antibiotics are less likely to work (~90%). A large proportion of women (~83%) also agreed that antibiotics are becoming resistant to bacteria.

More than a third of women reported that their main source of advice to take antibiotics for colds was their doctor, followed closely by a relative or friend (Table 2).

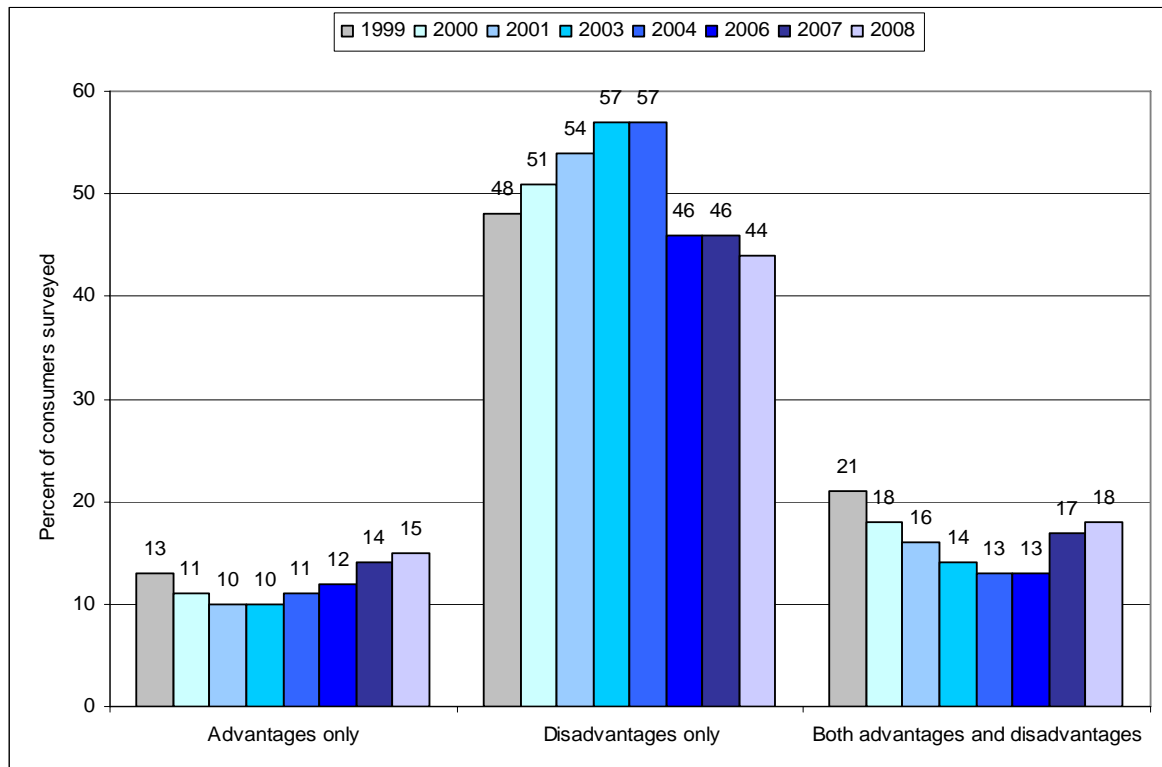
**Table 2: People who have ever given advice on taking antibiotics for a cold (N=903)**

People	n*	%
Doctor	377	42
Friend	313	35
Relative	325	36
Pharmacist	103	11
Someone else	57	6
None/don't know	335	37

\*Multiple responses allowed

Amongst the general adult population, knowledge and attitudes about antibiotic use for cold/flu symptoms has remained fairly stable over time (Figure 7). Most commonly consumers believe that antibiotics speed (36%) or assist recovery (27%) and relieve symptoms (14%). The primary disadvantages of taking antibiotics identified by consumers were that they decrease immunity (42%) and that they are no longer effective (15%).

**Figure 7: Percentage of consumers who believe there are advantages and disadvantages associated with taking antibiotics for cold and flu**



## Improving QUM awareness and competence among health professionals

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### Provision of independent medicines information for health professionals

The **Education and Quality Assurance program** for health professionals continues to cover an average of six therapeutic modules health professionals each year (37 modules covering 29 topics have been delivered to date). During 2007-08 these were Selective use of antibiotics, Preventing osteoporosis and reducing fracture risk, Early use of insulin and oral anti diabetics, and Hypertension.

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). Additional interventions are included in print publications only (*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 have opportunities to participate in pharmacy specific audits of over-the-counter medicine sales or dispensing practice.

Print publications are disseminated to all GPs, pharmacists and GP registrars on a regular basis. **NPS News** is published bi-monthly with 56 issues distributed to June 2008. It is sent to approximately 52,000 health professionals (31% GPs, 20% pharmacists and 49% other health professionals) and has an editorial committee to oversee the clinical content.

**NPS Prescribing Practice Review (PPR)**, which sometimes includes 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 the early use of insulin and oral antidiabetic drugs, improving outcomes in chronic heart failure, preventing osteoporosis and reducing fracture risk and managing hypertension as a cardiovascular risk factor.

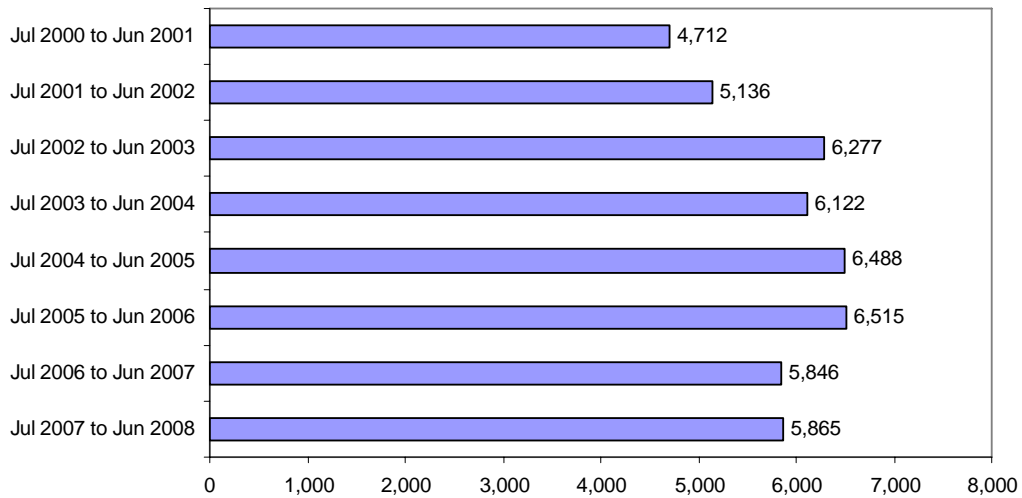
**Australian Prescriber** is published bi-monthly with each issue distributed to over 51,000 health professionals and students nationally. An additional 8,000 copies are distributed internationally. *Australian Prescriber* is also available online free-of-charge. The website remains popular, averaging around 150,000 page visits per month over 2007-08.

NPS funds a telephone advice line for health professionals, the **Therapeutic Advice and Information Service (TAIS)**. There was an increase in the use of TAIS from approximately 4,700 calls in 2000-01 to approximately 5,800 in 2007-08, with more than 45,000 calls in total (Figure 8). The numbers of callers to TAIS has remained steady for the past two years.

Most calls are from community pharmacists (44%) 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. These data remain unchanged from 2006-07.

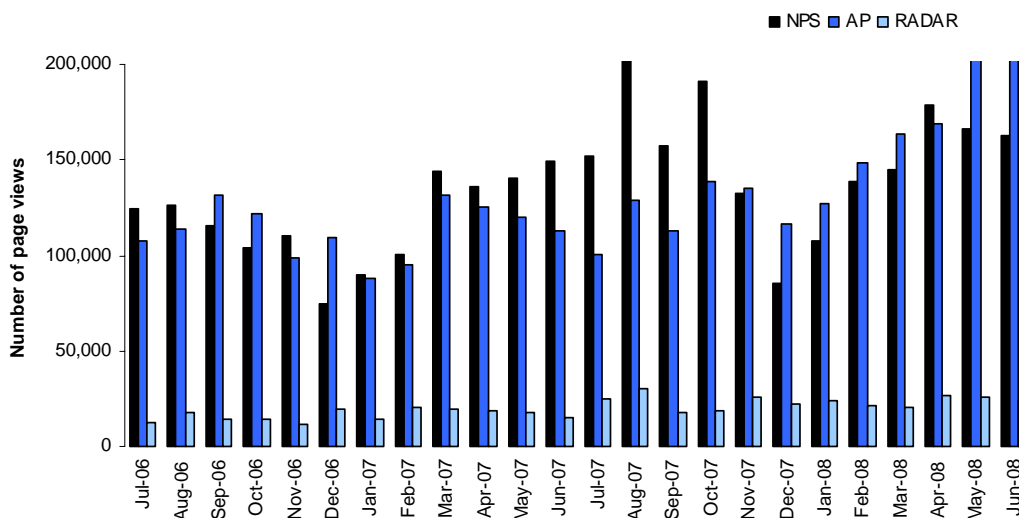
Data from the 2008 national survey of GPs indicated that 35% of GPs were aware of TAIS. The national survey of pharmacists found 47% of pharmacists were aware of TAIS. Of those pharmacists who were aware of TAIS, there was a significant increase in the percentage who used the service from 44% in 2006 to 59% in 2008. These surveys are undertaken biennially and will be repeated in 2010.

**Figure 8: Calls to TAIS (July 2000 to June 2008)**



The use of **web-based information** has also become a significant means of communication by NPS 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 each month (Figure 9). During 2007-08, approximately 1,821,300 visits were made to the NPS homepage, 1,816,060 visits were made to the *Australian Prescriber* homepage, and 281,900 visits were made to the NPS RADAR site. For all three sites there is substantial monthly variation, which is indicative of publication release dates. Over the last six months there was increased interest in the *Australian Prescriber* site; over the last year there was increased interest in the *NPS RADAR* site. Note that the large differences in page view counts between *Australian Prescriber* and NPS websites are due to the different layout of the publications and methods used to count page views.

**Figure 9: Number of page views per month for NPS, Australian Prescriber and NPS RADAR sites (July 2006 to June 2008)**



## 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 (the wording of the listing), reason for PBS listing (the rationale behind the listing), place in therapy, safety issues (particularly contraindications/precautions, adverse effects and drug interactions), dosing issues and relevant consumer information.

*NPS RADAR* is currently distributed via email subscription database as well in hard copy. *NPS RADAR* was distributed to an average of 63,127 health professionals across Australia. *NPS RADAR* has also been incorporated electronically into two main prescribing software packages, Medical Director and Genie, and can be accessed either as part of the prescribing process via automated links or through a browser.

During the 2007-08 financial year, the following articles and briefs were published in *NPS RADAR*.

**Table 3: NPS RADAR documents developed in 2007–08**

<p><b>NPS RADAR April 2008</b></p> <p>Fentanyl lozenges (Actiq) for breakthrough cancer pain (Review article)</p> <p>Paliperidone (Invega) for schizophrenia (Review article)</p> <p>Pioglitazone (Actos) for type 2 diabetes mellitus (Review article)</p> <p>Methylphenidate (Ritalin LA): a second controlled-release formulation PBS listed for attention deficit hyperactivity disorder (Brief item)</p> <p>Smaller dose volume of influenza vaccine PBS listed for children aged 6-35 months (Brief item)</p> <p>Terbinafine authority listed for fungal infections in Aboriginal and Torres Strait Islander peoples (Brief item)</p> <p>Intolerance and contraindications to metformin (Web-only item)</p> <p>New York Heart Association grading of heart failure (NYHA) (Web-only item)</p>	<p><b>NPS RADAR September 2007</b></p> <p>Interstate transfers and rotavirus vaccination of infants: practical advice (Brief item)</p>
<p><b>NPS RADAR January 2008</b></p> <p>Varenicline (Champix) for smoking cessation (Review article)</p>	<p><b>NPS RADAR August 2007</b></p> <p>Fluticasone propionate with salmeterol xinafoate (Seretide) for chronic obstructive pulmonary disease (Review article)</p> <p>Budesonide with eformoterol dry powder inhaler (Symbicort) maintenance and reliever regimen for asthma (Review article)</p> <p>Olmesartan medoxomil (Olmotec) monotherapy or in combination with hydrochlorothiazide (Olmotec Plus) for hypertension (Review article)</p> <p>Alternative hydroxocobalamin product PBS listed (Brief item)</p> <p>Cholinesterase inhibitors: change in authority requirements for cognitive testing (Brief item)</p> <p>Perindopril arginine with indapamide hemihydrate (Coversyl Plus) (Brief item)</p>
<p><b>NPS RADAR December 2007</b></p> <p>Topiramate (Topamax) for migraine prevention (Review article)</p> <p>Another ultra-short-acting insulin PBS listed: insulin glulisine (Brief item)</p> <p>Sevelamer (Renagel) 800 mg tablets PBS listed for adults with chronic kidney disease who are on dialysis (Brief item)</p> <p>Quetiapine (Seroquel) PBS listed for acute mania (Brief item)</p>	<p>Benzhexol hydrochloride misuse (Brief item)</p> <p>Risedronate sodium (Actonel) and risedronate sodium with calcium carbonate (Actonel Combi) listing for osteoporosis in patients at high risk of fracture (Brief item)</p> <p>Levonorgestrel-releasing intrauterine device (Mirena) now PBS listed for idiopathic menorrhagia (Brief item)</p> <p>Be aware of dose ranges for new ramipril with felodipine combination (Triasyn) (see erratum below) (Brief item)</p> <p>Rosiglitazone and cardiovascular risk - NPS fact sheet (Brief item)</p> <p>Additional content: Olmesartan medoxomil monotherapy or in combination with hydrochlorothiazide for hypertension (Web-only item)</p>
<p><b>NPS RADAR November 2007</b></p> <p>Rosiglitazone (Avandia) and rosiglitazone with metformin (Avandamet) for type 2 diabetes mellitus (Review article)</p> <p>Strontium ranelate (Protos) for postmenopausal osteoporosis (Review article)</p> <p>Additional content — Strontium ranelate (Protos) for postmenopausal osteoporosis: Differences between trial populations used for indirect comparisons between strontium and alendronate (Web-only item)</p>	<p><b>NPS RADAR July 2007</b></p> <p>Rotavirus vaccines (Rotarix and RotaTeq) for prevention of rotavirus gastroenteritis (Review article)</p> <p>Quadrivalent human papillomavirus vaccine (Gardasil) (Review article)</p> <p>Atomoxetine (Strattera) for attention deficit hyperactivity disorder (Review article)</p>

## **Access to decision support material: ischaemic heart disease electronic clinical audit**

The **Pharmaceutical Decision Support (PDS) team** develop electronic audits for GPs. The first national clinical e-audit was released in March 2007 titled Optimising drug use in ischaemic heart disease. Following the success of the first national Clinical e-Audit, enrolments for a new audit (Management of hypertension) commenced in September 2007 with GPs being given approximately eight weeks to complete data collection (although this was dependent on when the GP ordered/received the CD). The closing date for submission of the initial data collection phase was 1 February 2008 and for the review phase was 18 April 2008. Completion of both phases of the audit is required to complete the full audit cycle. Initial data completion for the Management of hypertension e-Audit was received by 631 GPs and completed e-audit data from the review phase (final phase) was received from 548 participants.

Of those who completed the initial data completion for the e-audit (n=631), the majority were enthusiastic about the process. In particular:

- 86% indicated they would carry out an e-audit in the future.
- 76% indicated that they prefer the electronic audit to the paper based version.

Among those who completed the audit to the review phase (548) there were impressive responses in relation to whether the GPs found that the learning objectives had been met by the e-Audit:

- 73.7% of GPs indicated that the learning needs were entirely met to calculate the absolute cardiovascular risk using the NZ cardiovascular risk calculator.
- 65.7% of GPs found that the learning objective to assess patient's adherence to antihypertensive medication(s) and to identify mechanisms of assessment were entirely met.
- Over three quarters of GPs (78.6%) indicated that the learning objective 'Identify patient's recommended target blood pressure based on relevant coexisting conditions' was entirely met.
- Just under half (46.2%) of GPs indicated that the learning objective to 'Alter antihypertensive drug therapy in patients who are not achieving target blood pressure' was entirely met. A further 52.9% of GPs indicated that the learning objective was partially met.
- Almost three quarters (72.1%) of GPs rated the learning objective 'Consider antihypertensive drug selection based on patient characteristics and the potential favourable effects on coexisting conditions' as entirely met.
- 80.7% of GPs indicated that the learning objective to 'Identify patients who are using an antihypertensive for which there is potential contraindication for use' was entirely met.

Approximately 450 GPs have already requested the next e-audit, which will focus on type 2 diabetes and is yet to be promoted.

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

### General Practitioners

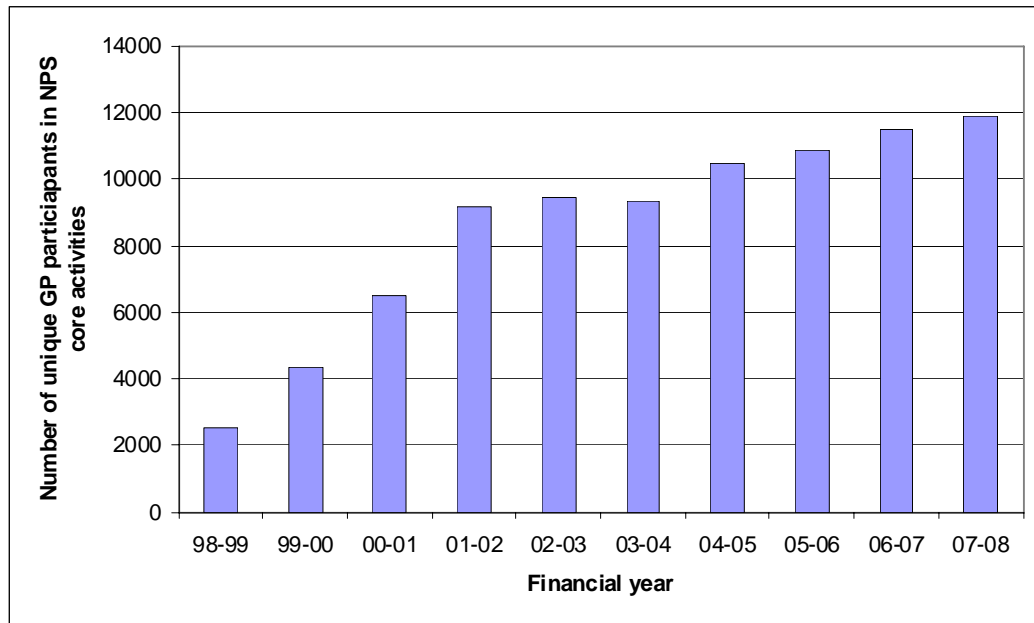
In addition to receiving print publications, health professionals, in particular GPs and pharmacists are regularly given an opportunity to participate in education and quality assurance activities. Over 21,000 GPs have participated in at least one core (active) activity at any time during the past 10 years, while many have participated on multiple occasions (Table 4). A total of 183,438 core activities have been completed.

**Table 4: Participation by GPs in programs by type of activity to 30 June 2008**

Description	Total unique to topic	Educational visit	Division case scenario group discussion	Clinical audit	Case study
Antibiotics	12,294	7,346	1,895	10,854	6,828
Antipsychotics	768	-	4	-	765
Anti-thrombotics	7,419	5,139	1,955	-	1,176
Asthma	6,716	4,249	1,445	1,149	1,421
Benzodiazepines	329	33	29	-	325
Chronic obstructive pulmonary disease (COPD) / chronic airways limitation (CAL)	7,792	5,191	1,825	1,067	1,646
Depression	10,351	8,465	1,850	2,122	3,715
Drug and alcohol dependence	1,093	-	10	-	1,086
Drugs in the Elderly	986	-	34	-	956
Dyspepsia	1,248	-	6	-	1,263
Generics	969	-	7	-	967
<i>Helicobacter pylori</i> eradication therapy	21	-	9	-	12
Heart failure	5,643	2,840	1,129	70	3,557
Hormonal contraception	702	-	-	-	702
Hormone replacement therapy	4,836	2,180	816	13	3,112
Hypertension	8,865	5,032	1,344	6,511	2,497
Ischaemic heart disease	2,309	-	18	1,482	1,219
Long acting beta agonists and inhaled corticosteroids	473	-	-	-	473
Lipid modifying drugs	5,687	3,098	681	1,780	1,481
Medication review	1,417	17	45	43	1,412
Migraine	1,394	-	39	-	1,365
New drugs	2,737	-	75	-	3,829
NSAIDs (incl. COX-2 selective NSAIDs)	1,565	-	63	106	1,532
Osteoporosis	8,982	5,689	2,197	564	2,298
Pain management	10,984	8,597	3,382	2,246	2,293
Polypharmacy	1,219	-	42	-	1,248
Proton Pump Inhibitors	5,799	2,501	974	2,747	2,076
Psychogeriatrics	1,268	-	38	-	1,240
Rheumatoid Arthritis	788	-	-	-	789
Sleep disorders	1,418	-	33	-	1,386
Type 2 diabetes	11,414	8,714	3,899	3,180	3,900

Currently, over 50% of GPs in Australia actively participate each year in NPS activities in addition to receiving print publications. The number of individual GPs who have voluntarily participated in NPS core activities has steadily increased from 2,515 in 1998–99 to 11,908 in 2007–08 (Figure 10).

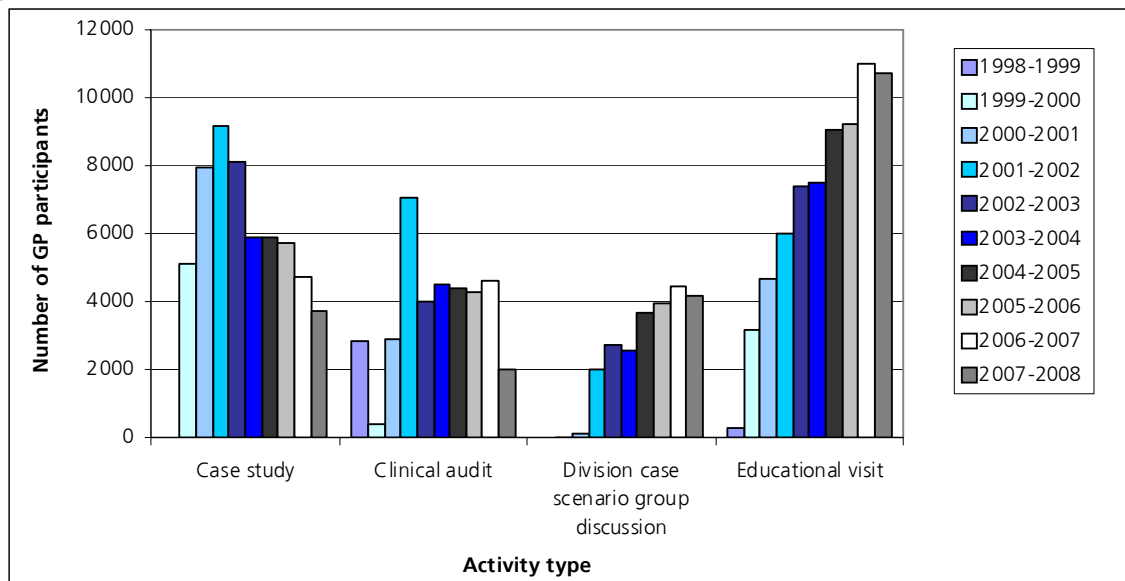
**Figure 10: Number of unique GPs who have participated in NPS core QUM program activities by financial year to 30 June 2008**



Participation by GPs over the past 10 years by activity type is shown in Figure 11. Case studies have involved over 56,393 GP participant contacts over all therapeutic topics. There have been over 69,179 educational visits since 1998 and 23,844 contacts made with GPs using Division case scenario group discussions (peer to peer).

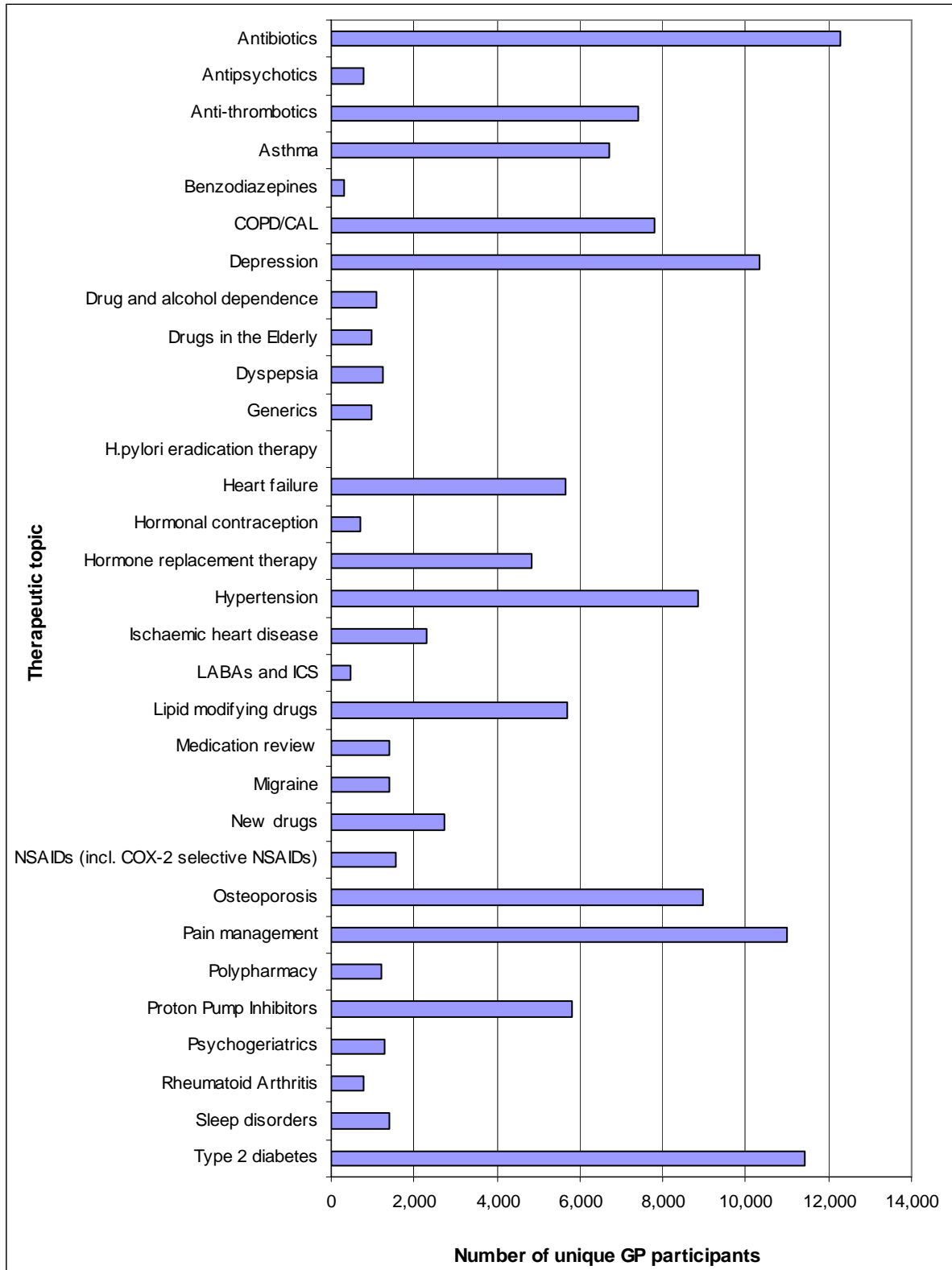
Clinical audits have also been popular, with the completion of 37,149 since 1998. Managing antibiotics in primary care has been the most popular topic (10,854 audits), followed by hypertension (6,511 audits) and managing type 2 diabetes (3,900 audits).

**Figure 11: Total number of GPs who have participated in NPS core QUM program activities by financial year to 30 June 2008**



GP participation in the different topics offered by NPS has varied. The highest participation up to the end of June 2008 was for antibiotics (12,294 GPs), type 2 diabetes (11,414 GPs), pain management (10,984 GPs) and depression (10,351 GPs) (Figure 12).

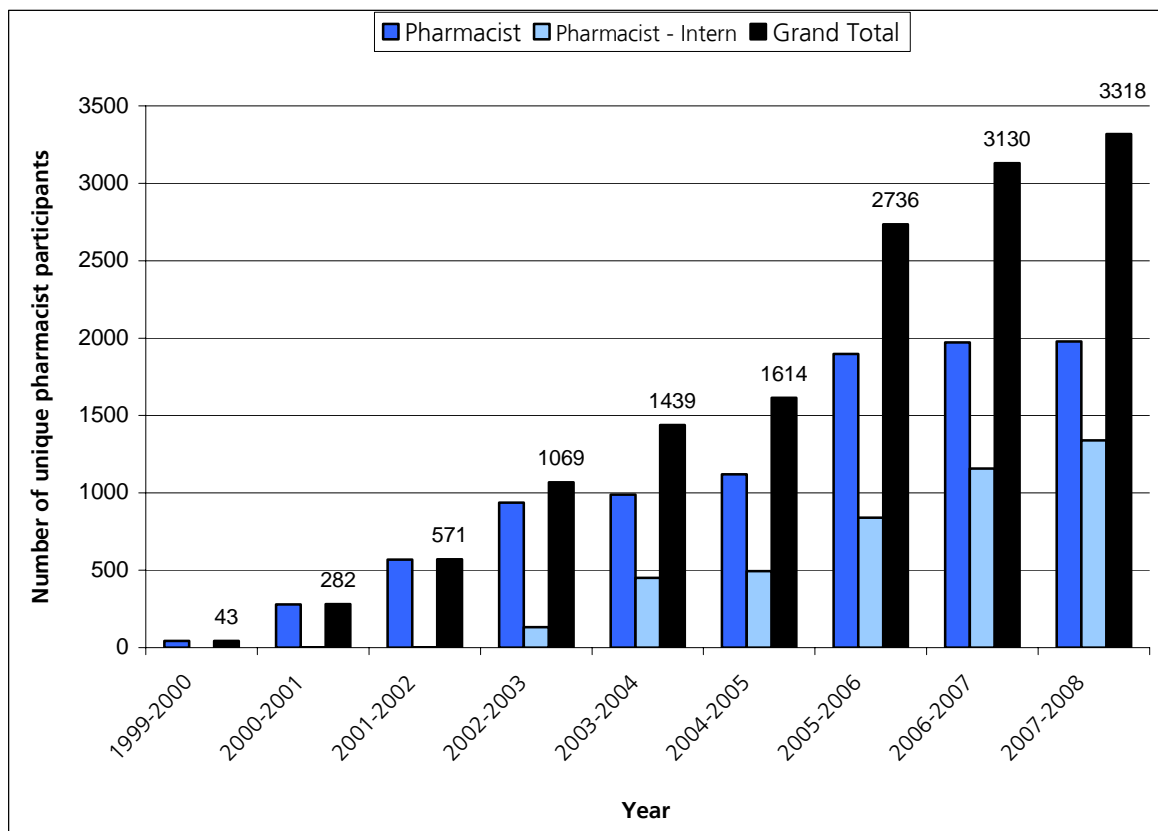
**Figure 12: Number of unique GP participants in NPS core activities by topic (July 1998 to June 2008)**



## Pharmacists

Participation by pharmacists has increased gradually since 1999 with a total of 3,318 intern pharmacists and pharmacists participating in at least one core NPS activity during 2007-08 (Figure 13). Participation in core activities (case studies and pharmacy practice audits) by pharmacists is lower than for GPs, but continues to increase, particularly with increased activities being made available to meet their needs.

Figure 13: Participation by unique pharmacist in NPS core activities by financial year to 30 June 2008



## General Practice Nurses

Nurses are a major part of the health care workforce and they have a variety of roles in medication management, from safe administration of medications in institutional settings to ongoing monitoring of medicines by practice and community-based nurses. Much of the work to date has been with general practice nurses as a means of ensuring a total-practice approach to issues in general practice. In the last financial year, more than 800 practice nurses from about 55 divisions of general practice were involved in both the Reducing type 2 diabetes and Chronic obstructive programs.

## Enhancing QUM skills and competence amongst medical students

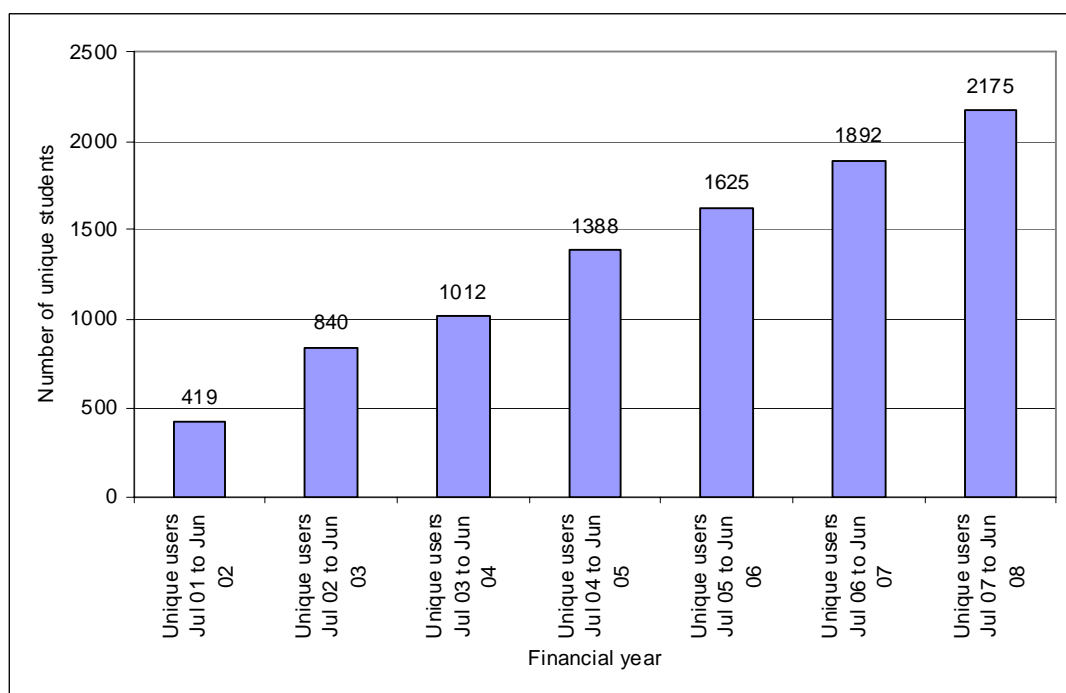
The NPS curriculum and training program collaborated with all Australian medical schools and the Australian Society of Clinical and Experimental Pharmacologists and Toxicologists to develop nationally accepted **prescribing curriculum modules for senior medical students**. The modules are based on the 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 medical students in 12 medical schools around Australia. It is anticipated that the five most recently established medical schools will also have students

using the modules in the near future, and the University of Wollongong has already participated in a pilot program for a new format of the modules to be released in 2009.

Between July 2007 and June 2008, the modules were accessed by 2175 students which is an increase of 15% compared with the previous year (Figure 14). For most students and interns, the online modules provide a 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.

**Figure 14: Reach of the National Prescribing Curriculum (July 2001 to June 2008)**



## 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 wide audience of health professionals in training during the 2008 academic year. The prescribing modules are now integrated into several programs for nurse practitioner candidates, dentistry and pharmacy students.

## A new format for prescribing modules

From February 2009 student prescribing modules will be offered in a new format. The format has been designed to offer learners more feedback from both peers and experts. The content has also been expanded to include more opportunities for learners to begin addressing the indicators of quality prescribing. Links to evidence-based medicine resources have been retained as a feature in the new format. In addition, several new modules have been written this year. New topics encompass adolescent mental health, prophylaxis for deep vein thrombosis and anticoagulation in atrial fibrillation.

## Awareness, knowledge and attitudes of health professionals

Health professionals increased their awareness of NPS products and services during 2007-08. Data from the 2008 surveys of GPs and pharmacists are indicative of NPS's increasing profile and utility.

### General Practitioners

The value of NPS to GPs has grown significantly over the years. The majority of GPs surveyed in 2008 rated NPS to be of either great (36.7%) or moderate value (53.5%). This compares with 14% of GPs in 2000 who considered the NPS to be of great value. GPs are very positive in their views on the clinical relevance, evidence-based nature, trustworthiness and influence of NPS on their practice. The 2008 biennial survey showed that GPs thought NPS was:

- Clinically relevant - 65.7% agreed and 21.7% strongly agreed.
- Evidence-based - 59.3% agreed and 22.9% strongly agreed.
- Trustworthy - 58.6% agreed and 23.0% strongly agreed.
- Appropriate to their needs - 59.5% agreed and 23.0% strongly agreed.

GPs also believed that NPS:

- Reduces uncertainty on medicines issues - 54.5% agreed and 16.2% strongly agreed.
- Influences their prescribing - 53.1% agreed and 16.2% strongly agreed.

The NPS health professional product/resource with the highest awareness was *Australian Prescriber* with 95% of GPs being aware. Awareness of *NPS RADAR*, *NPS News* and *NPS Prescribing Practice Review* was also encouragingly high, at approximately 90%. GPs were, however, much less aware of the NPS website (48%) and Therapeutic Advice & Information Service (TAIS) (35%).

Use of NPS health professional products and resources among GPs was also encouraging, perhaps with the exception of TAIS. In 2008 (of those GPs aware):

- 34.8% frequently and 63.2% sometimes read *Australian Prescriber*.
- 35.2% frequently and 53.2% sometimes read *NPS RADAR*.
- 37.6% frequently and 58.2% sometimes read the *NPS Prescribing Practice Review*.
- 33.7% frequently and 61.0% sometimes read *NPS News*.
- 7.0% frequently and 60.1% sometimes used the NPS website.
- 4.9% frequently and 37.6% sometimes used TAIS.

Between 2006 and 2008 there was a significant increase in the number of GPs who were aware of *NPS RADAR* from, 89.4% (2006) to 92.4% in 2008. However there was a coinciding significant decrease in the use of *NPS RADAR* from 94.2% of GPs in 2006 to 88.4% in 2008.

Surveyed GPs were asked a number of questions about quality use of prescription medicines. GPs were asked which antibiotic they would prescribe as their first choice for a patient presenting for the first time with acute sinusitis. About two thirds of GPs (65.2%) correctly indicated that they would use amoxicillin, a slight decrease from 68% in 2006.

GPs were also asked what they would do if the treatment of a 60-year-old patient who has just been titrated up to a maximal oral antidiabetic drug therapy fails after 2 months to normalize fasting plasma glucose and HbA<sub>1c</sub> levels. 51.9% of GPs correctly answered that they would begin insulin immediately, suggesting that there is still substantial room for improvement in the management of diabetes.

The last question which examined GPs' knowledge and attitude towards some prescription medicines was answered by almost all GPs correctly (93.4%), identifying that rosiglitazone (Avandia) and pioglitazone (Actos) are contraindicated in patients with moderate to severe heart failure.

The 2008 GP survey again investigated GPs' views on complementary, over-the-counter and generic medicines. Most GPs agreed that it was important (80.2%) or to some extent important (18.4%) to ask patients if they were taking complementary medicines. Similarly, the overwhelming majority of GPs agreed that it was important (84.4%) or to some extent important (15.2%) to ask patients if they were taking OTC medicines.

In relation to generic medicines, over one fifth of GPs (21.1%) either agreed or strongly agreed that generic medicines are not always as effective as branded medicines. A further 30.8% of GPs neither agreed nor disagreed. 57.4% of GPs noted that in the last 6 months that there had been no change in the number of patients asking about generic medicines. A further 26.2% of GPs indicated that in the last 6 months that there had been an increase to some extent in the number of patients asking about generic medicines.

## Pharmacists

The overwhelming majority of pharmacists surveyed in 2008 rated NPS to be of great (60.4%) or of moderate value (35.0%). Similar to GPs, pharmacists are very positive in their views on the clinical relevance, evidence-based nature, trustworthiness and influence of NPS on their pharmacy practice. The 2008 biennial survey showed that pharmacists thought NPS was:

- Clinically relevant - 62.8% agreed and 31.6% strongly agreed.
- Evidence-based - 59.0% agreed and 32.5% strongly agreed.
- Trustworthy - 59.0% agreed and 34.9% strongly agreed.
- Appropriate to their needs - 62.4% agreed and 22.5% strongly agreed.

Similar to the views held by GPs, pharmacists also thought that NPS:

- Reduces uncertainty on medicines issues - 55.6% agreed and 24.8% strongly agreed.
- Influences pharmacy practice - 48.1% agreed and 19.5% strongly agreed.

Almost 100% of pharmacists were aware of *Australian Prescriber* and *NPS RADAR*. Over 90% of pharmacists were aware of *NPS Prescribing Practice Review* and *NPS News*. Awareness of the NPS website increased significantly from 63.1% in 2006 to 72% in 2008, as did awareness of TAIS from 43.6% in 2006 to 58.5% in 2008.

Use of NPS health professional products and resources among pharmacists was also encouraging. In particular, in 2008 (of those aware):

- 58.1% frequently and 41.1% sometimes reported to read *Australian Prescriber*.
- 53.1% frequently and 36.8% sometimes read *NPS RADAR*.
- 56.3% frequently and 40.0% sometimes read the *NPS Prescribing Practice Review*.
- 60.7% frequently and 37.2% sometimes read *NPS News*.
- 21.6% frequently and 63.4% sometimes used the NPS website.
- 8.9% frequently and 49.6% sometimes used TAIS.

Pharmacists were also asked a series of questions in relation to their views relating to complementary, OTC and generic medicines. Most pharmacists agreed that it was important (85.5%) or to some extent important (13.8%) to ask patients if they were taking complementary medicines. Again the overwhelming majority agreed that it was important (94.7%) or to some extent important (5.0%) to ask patients if they were taking OTC medicines.

Encouragingly, the majority of pharmacists indicated that NPS products and activities helped improve their over-the-counter advice (43.8%) or improved their OTC medicine advice to some extent (45.2%).

## Creating greater capacity in the QUM workforce

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### 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 2008, NPS had contracts with 110 of the 111 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, training and support throughout the year included:

- Monthly teleconferences with an average of 86% of facilitators each month.
- 57 facilitators attended therapeutic briefings for the Osteoporosis program, with more briefings planning for 2008-09; and 103 facilitators attended therapeutic briefings on Type 2 diabetes.
- 25 facilitators attended 3 workshops on best practice in educational visiting and 7 facilitators attended a workshop on building on skills in educational visiting.
- 15 facilitators attended 2 small group workshops.

### Greater capacity via peer educators in the community

In 2007-08, a further 59 peer educators were trained through COTA organisations to deliver NPS messages to seniors. This brings the total of trained peer educators to 424, building on the 365 trained in the previous three years by COTA organisations and by Combined Pensioners and Superannuants Association of NSW (CPSA)<sup>1</sup>. In the 2007-2008 financial year, 32 existing peer educators received further training in the new Generic Medicines Module, bringing the total trained in this module to 105.

After training, most peer educators reported agreement (ratings of 'agree' or 'strongly agree') with statements describing new skills and knowledge about QUM, including: ability to identify reliable sources of information about medicines (endorsed by 99% of peer educators); understanding how to work with seniors so they get access to the best information about medicines (98%); and ability to explain the benefits to seniors of being active partners in their medicines use (97%). Most trainees reported readiness to share information with seniors about being an active partner in medicines use (89%) and readiness to facilitate QUM sessions that encourage participant interaction via discussion in pairs or small groups (77%).

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. After training, the average of confidence ratings increased significantly to 9.2 ( $p < 0.01$ ).

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 6.7 on a 10-point rating scale. After training, the average of confidence ratings increased significantly to 9.0 ( $p < 0.01$ ). 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.

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

## Progress in research and development

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The NPS research and development (R&D) program focuses on enhancing our understanding of strategies that support quality use of medicines. It aims to identify barriers to change and gaps in current evidence, and define innovative methods of delivering NPS services. R&D has continued to build partnerships with national organisations with similar QUM research interests in order to maximise opportunities to develop research initiatives, attract funding and conduct research to improve the quality use of medicines amongst Australians.

In 2008, two new partnerships were established. A partnership between the Faculty of Pharmacy at the University of Sydney and NPS was awarded an Australian Research Council Linkage Project Grant to promote an interdisciplinary approach to asthma management in the community. This may ultimately be used to enhance the management of people with other conditions such as chronic airway limitations. R&D also partnered with the National Institute for Clinical Studies (NICS), an arm of the National Health and Medical Research Council to fund the inaugural NICS-NPS Quality Use of Medicines Fellowship. The fellowship was awarded to Mr Kevin McNamara to support the implementation of evidence to improving blood pressure control in people with cardiovascular disease using primary care collaborations.

In 2007-08, R&D collected data for research into the attitudes and information needs and preferences of consumers and health professionals around complementary medicines. The research included Australia-wide surveys of 612 complementary medicines consumers, 1178 GPs and the 265 community pharmacists. Interviews were conducted with 19 complementary medicines users. Six focus groups with general practitioners and six with community pharmacists in urban and regional centres were conducted in three states. Preliminary results were presented at national and international conferences in 2008, while a full report on the research and NPS recommendations was made available in December 2008.

Research partnerships with the Universities of Queensland, Newcastle and NSW begun in 2006-07 and continued through 2007-08. The 'Understanding and improving prescribing practice' partnership completed a review of interventions used to improve prescribing practice and a case study exploring possible reasoning for the rapid uptake of the antithrombotic drug, clopidogrel, in Australia. The 'Uptake of evidence-based drug information and decision support' partnership completed a review of the barriers and enablers of the use of electronic decision support to improve prescribing behaviour. Also completed was a systematic review to identify interventions that improve access and uptake of electronic evidence-based drug information by clinicians.

## Conclusion

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In 2007-08 NPS continued evaluation to assist internal and external stakeholders make decisions about accountability, program design and delivery, and strategic direction. The scope of evaluation has been broad, encompassing process, impact and outcome evaluations, using a range of quantitative and qualitative techniques.

Participation in NPS activities by health professionals and students in 2007-08 continued to increase, with more than 50% of all GPs and 3,318 pharmacists actively engaged in NPS activities. Our capacity to achieve this was enhanced by contracts with 99% of divisions of general practice, who employ local facilitators to promote and deliver NPS programs. Additionally, over 800 practice nurses participated in two therapeutic topics, while over 2,000 senior medical students from 12 medical schools accessed the National Prescribing Curriculum modules as part of their health professional training.

Partnerships with the Council on the Ageing (COTA) organisations have continued and the reach of the Seniors peer education program has expanded; by June 2008 approximately 79,500 seniors around Australia had participated in the program. We have also gained a greater understanding about local implementation of the program by conducting in-depth qualitative evaluation at two sites. This understanding will help us develop and expand the program to new localities.

In partnership with the National Aboriginal Community Controlled Health Organisation (NACCHO) and the Aboriginal Health Council of South Australia (AHCSA), senior Aboriginal Health Worker (AHW) trainers completed the Good Medicines Better Health QUM training course, which increased their knowledge and confidence in managing medicines issues. The evaluation identified areas for improvement of the training course, in terms of time, content and support, crucial for informing potential national rollout.

Awareness of NPS amongst consumers has increased, particularly following the national *Get to know your medicines* and *Generic medicines* campaigns. Consumer competence and behaviour around medicines use is also changing, with more consumers discussing their new medicines with a GP or pharmacist, requesting CMI for new medicines and utilising Medicines Line to gain reliable information about their medicines.

Newly developed time-series modelling techniques in 2007-08 were applied to the analyses of drug utilisation trends associated with NPS interventions. Following the antithrombotics and heart failure programs for health professionals, we were able to demonstrate significant improvements in GP prescribing of targeted medicines. An additional benefit was that more appropriate prescribing of antithrombotic and antihypertensive medicines following NPS intervention resulted in an estimated savings to the PBS of \$58.8 million.

NPS's positive influence on the way health professionals and consumers think about and use medicines continues to grow. Although the absence of access to health linked, patient level data makes it challenging to demonstrate the impact of NPS activities on changes in prescribing, health and economic outcomes, significant advances have been made in our ability to demonstrate improved health outcomes associated with NPS programs. For example, simulation modelling on type 2 diabetes indicated that the potential health benefits associated with the increased use of metformin, following NPS intervention over a 10 year period, would result in 230 fewer myocardial infarctions and 370 fewer deaths amongst Australians.

We also formally commenced collaborative partnerships with UWA and the Sansom Institute to utilise existing linked health data within the Western Australian and the veteran populations respectively. Early evaluative work with this data will enable us to provide a more accurate picture of the impact of NPS and better inform NPS with respect to targeting interventions.

Our achievements come from a multi-strategic approach delivering a comprehensive range of interventions to consumers and health professionals. Overall results from evaluation in 2007-08 strongly suggest NPS activities have resulted in better prescribing, use of medicines and economic outcomes in savings to the PBS. A better understanding of the impact of NPS activities have on health outcomes will require access to better data sources, evaluation methodologies and more time. NPS will continue to work with its partners to facilitate nationwide initiatives to enable better decisions about medicines and create better health and economic outcomes.

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