# 1 Overview

This publication is the eighth annual report of the BEACH (Bettering the Evaluation And Care of Health) program, a continuous national study of general practice activity in Australia. It provides results for the period April 2005 to March 2006 inclusive, using details of 101,700 encounters between general practitioners (GPs) and patients (about a 0.11% sample of all general practice encounters) from a random sample of 1,017 practising GPs across the country. It also reports changes that have occurred in this activity since 1999.

The BEACH program is conducted by the Australian General Practice Statistics and Classification Centre (AGPSCC). The AGPSCC is a collaborating unit of the Family Medicine Research Centre at the University of Sydney and the Australian Institute of Health and Welfare (AIHW). BEACH is currently supported financially by government instrumentalities and private industry.

The BEACH program is unique. It is the only continuous randomised study of general practice activity in the world, and the only national program that provides direct linkage of management actions (such as prescriptions, referrals, investigations) to the problem under management. It began in April 1998 and the BEACH database now includes information for more than 800,000 encounters from 7,991 participants representing more than 6,500 individual GPs.

GPs provided by far the majority of the 90+ million non-specialist services paid by Medicare in 2005–06, at an average rate of 4.5 visits per person per year.[1] BEACH provides knowledge of the content of these encounters and of the services and treatments they provide by giving an important insight into the health of a large proportion of the community.

## 1.1 Background

In describing the health of the community, mortality statistics and hospital statistics are important markers of population health. However, most people do not die and most do not have a hospital stay in any given year. In contrast, about 85% of the Australian population visit a general practitioner (GP) at least once in any year. BEACH data suggest that in the 12 months 2001–02, people in Australia spent on average 83 minutes with a GP per head of population. This compares with about 56 minutes per head in New Zealand and about 30 minutes per head in the United States during the same period.[2] The extent to which this affects health outcomes for the population cannot be measured. However, considering the emphasis on primary health care in Australia, information about the clinical activities of GPs provides a far broader indication of the health and morbidity of the population than mortality statistics and hospital admissions alone.

In 2005 the population of Australia was 20.3 million people. In 2002–03, national expenditure on health was 9.7% of gross domestic product, with governments funding over two-thirds of the $78.6 billion total health expenditure.[3]

- General practitioners (GPs) are the first port of call in the Australian health care system. They act as gatekeepers to the secondary and tertiary sectors, and in 2005 conducted more than 90 million consultations, most of which were claimed through Medicare.
- In 2003 in Australia there were 51,819 medical practitioners working as clinicians, of whom 42% were primary care providers.[4]

- There were 110 practising primary care practitioners per 100,000 people in Australia in 2003. Together they made up 100 full-time equivalents (based on a 45 hour working week) per 100,000 population.[4]
  - 80% of these were recognised general practitioners and 20% were other primary care medical practitioners.[5]
- By far the majority of visits to GPs are funded through the Commonwealth Medicare Benefits Schedule (MBS).
- In the 2005–06 financial year, there were about 90 million unreferred attendances paid by Medicare (A1 and A2 items) at an average rate of 4.5 GP visits per person.[1] This equates with approximately 250,000 visits per day, every day of the year.
- In 2005 the primary cost to Medicare for GP services (A1 and A2 items) was over $3 billion.[1]
- Until 2004 Medicare covered 85% of the government schedule consultation fee.[6] Some patients were not charged the additional 15% of the fee, the GPs accepting the Medicare payment as total payment. Others were charged the difference between the Medicare payment and the government schedule fee. Still others may pay more for these services. From January 2005 Medicare covered 100% of the schedule consultation fee for general practice services.[7]
- From March 2004 the safety threshold for couples and families was extended to cover 80% of out-of-pocket expenses for out-of-hospital medical treatments once the threshold was reached.[8]
- From 1 February 2004 Medicare payments to the GP were increased for all bulk-billed (direct to Medicare) consultations with patients who were aged less than 15 years and for those holding a Commonwealth concession card.[9]

Such changes in policy may affect attendance rates for some sectors of the community and in turn this may affect the types of problems managed by GPs and the management of these problems. The BEACH program can readily measure such effects.

## 1.2 The BEACH program

In summary, the BEACH (Bettering the Evaluation And Care of Health) program is a continuous national study of general practice activity in Australia. It uses details of about 100,000 encounters between GPs and patients (about a 0.11% sample of all general practice encounters) from a random sample of approximately 1,000 recognised practising GPs from across the country. A full description of the BEACH methods is provided in Chapter 5 of this report.

A random sample of GPs who claimed at least 375 general practice Medicare items of service in the previous 3 months is regularly drawn from Medicare Australia data by the Primary Care Division of the Australian Government Department of Health and Ageing. GPs are approached by letter and followed up by telephone recruitment. Each participating GP completes details for 100 consecutive GP–patient encounters on structured paper encounter forms (Appendix 1). They each also provide information about themselves and their major practice (Appendix 2).

## Aims

The BEACH program has three main aims:

- to provide a reliable and valid data collection process for general practice which is responsive to the everchanging needs of information users
- to establish an ongoing database of GP–patient encounter information
- to assess patient risk factors and health states, and the relationship these factors have with health service activity.

## Current status of BEACH

BEACH began in April 1998 and is now in its ninth year. The database for the first 8 years includes data for approximately 800,000 GP–patient encounters from more than 7,000 participating GPs. Each year the AGPSCC publishes an annual report of BEACH results through the Australian Institute of Health and Welfare. This publication reports results from the previous BEACH data year (April 2005 to March 2006) on a national basis to provide an overview of general practice activity.

Other reports use the database for secondary analyses of a selected topic or for a specific research question. The most recent examples are a comparative study of general practice activity in each of the states and territories of Australia[10] and a comparative study of activity in rural and metropolitan areas of Australia.[11] These and other BEACH reports can be downloaded from <www.fmrc.org.au/publications/> (go to Books—General Practice Series) or from < www.aihw.gov.au/publications/index.cfm/subject/19>.

## The advantages of BEACH

BEACH tells us about what happens at clinical encounters between patients and GPs. It tells us about the relationships between the characteristics of the GP workforce, the patients they manage, the problems that are presented to and managed by GPs, and the treatment provided for each problem. It also provides a reliable continuous measure of changes in general practice since 1998.

We are often asked to outline the advantages the BEACH program has over general practice activity data from other sources. These advantages are summarised below.

- BEACH is the only national study of general practice activity in the world that is continuous, relying on a random everchanging sample of GPs and directly linking management actions to the morbidity under management.
- The sheer size of the GP sample (1,000 per year) and the relatively small cluster of encounters around each GP provide more reliable estimates than a smaller number of GPs with large clusters of patients and/or encounters around each participating GP.[12]
- Our access to a regular random sample of recognised GPs currently in active practice, through the Australian Government Department of Health and Ageing (DoHA), ensures that the sample of GPs is drawn from a very reliable sample frame of currently active GPs.
- There are sufficient details about the characteristics of all GPs in the sample frame to test the representativeness of the final sample and to apply post-stratification weighting to correct for any under-representation or over-representation in the sample.

- The everchanging nature of the sample (where each GP can participate only once per triennium) ensures reliable representation of what is happening in general practice across the country. The sampling methods ensure that new entrants to the profession are available for selection because the sample frame is based on the most recent Medicare Australia data.

  Where other data collection programs use a fixed set of GPs over a long period, they are measuring what that group is doing at any one time, or how that group has changed over time, and there may well be a 'training effect' inherent in longer term participation in such programs. Such measures cannot be generalised to the whole of general practice. Further, where GPs in the groups have a particular characteristic in common (e.g. all belong to a professional organisation to which not all GPs belong; all use a selected software system which is not used by all GPs), the group is biased and cannot represent all GPs.
- Each GP records for a set number of encounters (100), but there is wide variance among them in the number of patient consultations they conduct in any one year. The DoHA therefore provides an individual count of activity level (i.e. number of A1 Medicare item numbers claimed in the previous period) for all randomly sampled GPs, allowing us to give a weighting to each GP's set of encounters commensurate with his or her contribution to total general practice encounters. This ensures that the final encounters represent encounters with all GPs.
- The structured paper encounter form leads the GP through each step in the encounter, encouraging entry of data for each element (see Appendix 1). In contrast, systems such as electronic health records rely on the GP to complete all fields of interest without guidance.
- The activities described in BEACH include all patient encounters, not just those covered by Medicare.
- The medication data include all prescriptions, rather than being limited to those prescribed medications covered by the Pharmaceutical Benefits Scheme, PBS (as are PBS data).
- BEACH is the only source of information on medications supplied directly to the patient by the GP, and about the medications GPs advise for over-the-counter (OTC) purchase, the patients to whom they provide such advice and the problems managed in this manner.
- The inclusion of other (non-pharmacological) treatments such as clinical counselling and procedural treatments provides a broader view of the interventions used by GPs in the care of their patients than other data sources.
- The link from all management actions (e.g. prescribing, ordering tests) to the problem under management provides the user with a measure of the 'quality' of care rather than just a count of the number of times an action has occurred (e.g. how often a specific drug has been prescribed).
- The use of a well-structured classification system designed specifically for general practice, together with the use of an extended vocabulary of terms which facilitates reliable classification of the data by trained secondary coders, removes the guesswork often applied in word searches of available records (in free text format) and in classification of a concept.

- The analytical techniques applied to the BEACH data ensure that the clustering inherent in the sampling methods is dealt with. Results are reported with 95% confidence intervals. Users are therefore aware of how reliable any estimate might be.
- Reliability of the methods is demonstrated by the consistency of results over time where change is not expected, and by the measurement of change when it might be expected.

A more detailed discussion of methodological issues associated with BEACH is provided in Section 5.11. Issues surrounding future computerised data collection are discussed in Section 1.4.

## 1.3 BEACH data and other national data sources

Users of the BEACH data might wish to consider the results in relation to data from other sources. Integration of data from multiple sources can provide a more comprehensive picture of the health and health care of the Australian community. This section summarises the differences between BEACH and other national sources of data about general practice in Australia.

### The Pharmaceutical Benefits Scheme

Prescribed medications paid for under the Pharmaceutical Benefits Scheme (PBS) are recorded by Medicare Australia. The PBS data:

- count the prescription each time it crosses the pharmacist's counter (so that one prescription written by the GP with five repeats in BEACH would be counted by the PBS six times if the patient filled all repeats)
- count only those prescribed medications subsidised by the PBS and costing more than the minimum subsidy (and therefore covered by the PBS for all patients), or medications prescribed for those holding a Commonwealth concession card or for those who have reached the safety net threshold
- will change with each change in the PBS safety net threshold—when the threshold increases, as it did in January 2005, fewer prescribed medications are counted in the PBS for non-Commonwealth concession card holders[13]
- have no record of the problem being managed, so that economic cost analyses must rely on assumptions about the indication for specific drug types.

In BEACH:

- total medications include those prescribed (whether covered by the PBS for all or some patients), those supplied to the patient directly by the GP, and those advised for OTC purchase
- each prescription recorded reflects the GP's intent that the patient receives the prescribed medication and the specified number of repeats; the prescription, irrespective of the number of repeats ordered, is counted only once
- the medication is directly linked to the problem being managed by the GP, allowing cost analyses of pharmacological management of specific morbidity
- there is no information on the number of prescriptions not filled by the patient (and this also applies to the PBS).

These differences influence not only the numbers of prescriptions counted but also their distribution. For example, the majority of broad spectrum antibiotics such as amoxycillin fall under the PBS minimum subsidy level and would not be counted in the PBS data except where patients received the medication under the PBS because they are Commonwealth concession card holders or had reached the annual safety net threshold. The PBS would therefore under-estimate the number of antibiotic prescriptions filled and the proportion of total medications accounted for by antibiotics. Changes in the minimum subsidy level (such as the increase in 2004) make the measurement of changes in prescribing through the PBS extremely difficult.[13]

### Medicare Benefits Schedule

Consultations with GPs that are paid for in part or in full under the Medicare Benefits Schedule (MBS) are recorded by Medicare Australia.

- The MBS consultation data provided by DoHA do not usually include data about patients and encounters funded through the Department of Veterans' Affairs.
- The MBS data include only those GP services that have been billed to Medicare. In contrast, the BEACH database includes data about all clinical activities, irrespective of who pays for them (if anyone).
- The MBS data reflect the item number charged to Medicare for a service and some patient demographics but hold no information about the content of the consultation.
- In 2005–06, BEACH participants were able to record up to three Medicare item numbers for each encounter. In contrast, MBS data include all Medicare item numbers claimed at each encounter. In the BEACH data set this may result in a lower number of 'other' Medicare items than would be counted in the Medicare data.

  In the first seven years of BEACH (1998–99 to 2004–05), participants had the opportunity to record only one Medicare item number on each encounter form. They were instructed to select the more general item number where two item numbers apply to the consultation. Additional services attracting their own item MBS number (e.g. 30026—repair of wound) were captured in BEACH as actions recorded in other parts of the form. This resulted in a smaller number of 'other' Medicare items than would be counted in the Medicare data.
- In activities of relatively low frequency with a skewed distribution across individual GPs, the relative frequency of the event in the BEACH data may not reflect that reported in the MBS data. For example, a study of early uptake of some enhanced primary care items by GPs demonstrated that almost half the enhanced primary care items claimed through the MBS came from about 6% of active GPs.[14] Where activity is so skewed across the practising population, a national random sample will provide an under-estimate of activity because the sample reflects the population rather than the minority.

### Pathology data from the MBS

Pathology tests undertaken by pathologists that are charged to Medicare are recorded by Medicare Australia. However, this does not reflect tests ordered by the GP.

- Each pathology company can respond differently to a specific test order label recorded by the GP. So the tests completed by a pathologist in response to a GP order for a full blood count may differ between companies.

- The pathology companies can charge through the MBS only for the three most expensive tests undertaken even when more were actually done. This is called 'coning' and is part of the DoHA pathology payment system. This means that the tests recorded in the MBS include only those charged for, not all those that were done.
- The effect of these factors is that the MBS pathology data include only those tests billed to the MBS after interpretation of the order by the pathologist and after selection of the three most expensive tests. This effect will not be random. For example, in an order for four tests to review the status of a patient with diabetes, it is likely that the HbA1c test will be the least expensive and will 'drop off' the billing process because of coning. This results in an under-estimate of the number of HbA1c tests being ordered by GPs.
- Pathology MBS items contain pathology tests that have been grouped on the basis of cost. An MBS item may not therefore give a clear picture of the precise tests performed.

In BEACH, the pathology data:

- include details of pathology tests ordered by the participating GPs
- reflect the GP's intent that the patient should have the pathology test(s) done, so information about the extent to which patients do not have the test done is not available (nor is it in the MBS data)
- reflect the terms used by GPs in their orders to pathologists, and for reporting purposes these have been grouped by the MBS pathology groups for comparability. The distributions of the two data sets will differ, reflecting on the one hand the GP order and on the other the MBS-billed services after coning and assignment of an MBS item number.

Those interested in GP pathology ordering will find more detailed information from the BEACH program in *Pathology ordering by general practitioners in Australia 1998*.[15] A study of changes in pathology ordering patterns between 1998–99 and 2000–01[16] is also available through the Family Medicine Research Centre (FMRC) website <www.fmrc.org.au/publications/> (go to Books—General Practice Series).

## Imaging data from the MBS

Some of the issues discussed regarding pathology data also apply to imaging data. Although coning is not an issue for imaging, radiologists can decide whether the test ordered by the GP is the most suitable and whether to undertake other tests of their choosing. The MBS data therefore reflect the tests that are actually undertaken by the radiologist, whereas the BEACH data reflect those ordered by the GP. Those interested in GP imaging ordering should view *Imaging orders by general practitioners in Australia 1999–00*,[17] also available from the Family Medicine Research Centre website.

## The National Health Survey

The National Health Survey (NHS), conducted by the Australian Bureau of Statistics, can provide estimates of the population prevalence of specific diseases and a measure of the problems taken to the GP by people in the previous 2 weeks.

- Prevalence estimates are based on self-reported morbidity from a representative sample of the Australian population using a structured interview to elicit health-related information from participants.[18]

- Community surveys such as the NHS have the advantage of accessing people who do not go to a GP. They can therefore provide an estimate of population prevalence of disease and point estimates of incidence.
- Self-report has been demonstrated to be susceptible to misclassification because of a lack of clinical corroboration of diagnoses.[19]

Management rates of health problems in general practice represent GP workload for a health problem. BEACH can be used to estimate the period incidence of diagnosed disease presenting in general practice through the number of new cases of that disease. The management rates of individual health problems and management actions can be extrapolated to patient-population management rates (see Chapter 3). However, problem management rates cannot be extrapolated to either patient-population prevalence or total population prevalence of a disease.

The general practice patient population sits between the more clinical hospital-based population and the general population,[20,21] with around 85% of Australians visiting a GP at least once in any one year (personal communication, Primary Care Division, Australian Government Department of Health and Ageing, August 2002). Disease management rates are a product of both the prevalence of the disease/health problem in the population and the frequency with which a patient visits a GP for the treatment of that problem. Those who are older and/or have more chronic disease are therefore likely to visit more often and have a greater chance of being sampled in the encounter data. Further, some diseases require more frequent visits, so that the specific set of problems experienced by a patient will determine their visit frequency.

## Access to BEACH data

Different bundles of BEACH data are available to the general public, to BEACH participating organisations, and to other organisations and researchers.

### Public domain

In line with standard AIHW practice, this annual publication provides a comprehensive view of general practice activity in Australia. The BEACH program has generated many papers on a wide range of topics available in journals and professional magazines. Appendix 3 lists all published material from BEACH.

Since April 1998, a section on the bottom of each encounter form has been used to investigate aspects of patient health or health care delivery not covered by general practice consultation-based information. These additional substudies are referred to as SAND (Supplementary Analysis of Nominated Data). The SAND methods are described in Section 5.5. Abstracts of results for the substudies conducted in the eighth BEACH year and not reported here are on the website of the FMRC <www.fmrc.org.au/publications/SAND_abstracts.htm>. The subjects covered in the abstracts are listed in Table 1.1 with the sample size for each topic.

### Participating organisations

Organisations providing funding for the BEACH program receive summary reports of the encounter data quarterly and standard reports about their subjects of interest. Participating organisations have direct access to straightforward analyses on any selected problem, medication, pathology or imaging test through an interactive web server.

### External purchasers of standard reports

Non-contributing organisations may purchase standard reports or other ad hoc analyses. Charges are available on request. The AGPSCC should be contacted for further information. Contact details are provided at the front of this publication.

Analysis of the BEACH data is a complex task. The AGPSCC has designed standard reports that cover most aspects of a subject under investigation. Examples of a problem-based standard report (subject warts) and a pharmacological-based standard report (subject allopurinol) for a single year's data are available on <www.fmrc.org.au/purchase.htm>.

Standard reports are available for selected groups of patients (e.g. children aged less than 15 years, or all women with a cardiovascular problem, or all patients residing in New South Wales), or a for a specific non-pharmacological management action.

Individual data analyses can be conducted where the specific research question is not adequately answered through standard reports.

**Table 1.1: SAND abstracts for 2005–06 and sample size for each**

| Abstract number | Subject | Number of respondents | Number of GPs |
|---|---|---|---|
| 82 | Prevalence and management of chronic pain | 3,211 | 109 |
| 83 | Prevalence and management of migraine | 5,663 | 191 |
| 84 | Menopausal status, symptoms and treatment of women aged 18 and over | 1,590 | 106 |
| 85 | Management of osteoporotic fractures in general practice patients | 3,071 | 105 |
| 86 | Diabetes Types 1 and 2 and coronary heart disease | 3,099 | 105 |
| 87 | Management of cardiovascular or diabetes related conditions | 3,015 | 104 |
| 88 | Arthritis rates and NSAID use in general practice patients | 3,076 | 104 |
| 89 | Estimates of the prevalence of chronic illnesses identified as Health Priority Areas among patients attending general practice[(a)] | 9,156 | 305 |
| 90 | Prevalence, management and investigations of chronic heart failure in general practice patients | 2,859 | 98 |
| 91 | Prevalence and management of gastrointestinal symptoms | 5,310 | 181 |
| 92 | Prevalence of metabolic syndrome | 5,594 | 193 |
| 93 | Sexual dysfunction—premature ejaculation | 2,186 | 91 |
| 94 | Type 2 diabetes—investigations and related conditions | 2,713 | 92 |

(a) This is the second report on this topic, using additional data collected following publication of the previous abstract.

## 1.4 Future options for national representative data collection from general practice

The BEACH program is currently a paper-based data collection program. It is labour-intensive for the GPs and for secondary data entry by the research team. Further, the introduction of practice nurse item numbers and the growing role and number of practice nurses in general practices means that some of the work undertaken by GPs in the past will increasingly be transferred to practice nurses who are not completing BEACH forms. We therefore believe that a move to national electronic data collection systems will be essential in the future.

## Requirements for electronic data collection

The structure of electronic clinical systems varies, as do the coding and classification systems used in each. National electronic data collection will require:

- **the development and full adoption of a standardised minimum data set.**

  During 2005 we developed a minimum data set for the Electronic Communication Working Group of the General Practice Computing Group. The project was conducted under the auspice of the RACGP with funding from DoHA. This was one of a series of projects designed to improve inter-operability of GP computer systems and to improve communication between systems by standardising data elements and database systems.

  This project developed a minimum set of data items necessary for reporting from GP computer systems. The data items were derived from established reporting data sets used in general practice in Australia including the Australian Childhood Immunisation Register, the Enhanced Divisional Quality Use of Medicines Program, BEACH and the Cardiab data sets. Although these data items were derived from reporting sets, all the data items have relevance to the clinical activities of general practitioners. After consultation it was decided to format the minimum data set in the National e-Health Transition Authority (NeHTA) format to facilitate use in other related projects. Research was undertaken to elicit standardised data definitions based on commonly used definitions relevant in the context of general practice.

  The final minimum data set comprises 90 data elements and includes data groups of logically associated items and a linkage diagram to specify required linkages between data items. The report 'General practice EHR and data query minimum data set' is available on the web at <www.gpcg.org.au/index.php?option=com_content&task=view&id=41&Itemid=54>.

  We believe that the work already done on this minimum data set is extremely valuable and that the investment should be built on. The minimum dataset would provide an excellent platform for standardising the data set available in every software system, to provide standard electronic data reporting to national data collection programs.

  However, the minimum data set has not been incorporated into GP software and it appears unlikely to be adopted unless adequate incentives are in place.

- **the adoption of standard coding and classification systems in all GP electronic clinical systems and uniform application of these within the clinical software.**

  Currently there are about 12 software providers in Australia with finished product clinical systems being used in general practice that utilise the ICPC-2 PLUS,[22] an interface terminology classified to the International Classification of Primary Care (Version 2) (ICPC-2). ICPC-2 PLUS allows speedy classification of 'problems managed' data (and in some systems, presenting symptoms) to the international standard for classification of data collected in general practice, ICPC-2.[23] This is the same coding and classification system used in BEACH (see Section 5.8 Classification of data). However, the major software provider in Australia does not use ICPC-2 for the classification of any data.

  ICPC-2 and the PLUS terminology can be used for many other aspects of the patient record, including clinical treatments (such as counselling), diagnostic and therapeutic procedures, referrals, pathology and imaging tests ordered. Generally, the software providers do not offer or do not encourage their use for these data.

It has been proposed that the Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT) terminology[24] could be used in the Australian setting as a standardised terminology across all sectors of health care. NeHTA has recently signed a national licence for the use of SNOMED CT. Before the implementation of a standard terminology, considerable work has to be done to ensure that the terminology can integrate with other terminologies and classifications already in use in Australia through the introduction/implementation of maps to and from SNOMED CT.

Pharmaceuticals also need to be coded and classified. Currently NeHTA is developing the Australian Medicines and Devices Terminology as a national standard linked to the SNOMED CT terminology. This system is due to become available in 2007, but implementation across all IT systems in the health sector may take years.

- **resolution of privacy and confidentiality issues.**

  Electronic download of patient data from GP electronic health records (EHRs) software has become a contentious issue for both professionals and consumers. The lack of adequate privacy and ethical controls in the private sector has contributed to the decision to review the National Health and Medical Research Council (NHMRC) Guidelines for Research and to the Law Reform Commission's review of the Privacy Act.

  Consumer and professional concerns need to be addressed even where data collections occur under the auspices of statutory authorities such as the AIHW.

## Passive data collection

Passive data collection is where data is drawn by automatic download from general practice EHRs.

Many people have suggested that with the increased GP uptake of electronic prescribing systems or full clinical systems (i.e. EHRs) data can be drawn directly from the GPs' clinical computers. Some also suggest that patient-based longitudinal data could be gained by such means. This is being done in some divisions of general practice for such projects as the Enhanced Divisional Quality Use of Medicine's program, but obtaining reliable data at the national level for all data elements collected in BEACH presents a major challenge.

To obtain a national random sample of practising GPs, each GP must have an equal chance of selection and this is not possible until all GPs are using EHRs. With the recognised variance between GPs[25] it is likely that those who do not have EHRs differ from those who do. Sampling from only those GPs with EHRs would therefore give a biased national result.

Passive data collection also requires complete records with valid data in all compulsory fields. Proposals to randomly sample current EHRs are based on an assumption that all of the GPs (and the practice nurses) enter all of the required data, all of the time, for all patients—that is, that they are virtually paperless. Many GPs currently have electronic prescribing systems available but not full EHRs, or they use their EHRs for prescribing only (see Chapter 2). Henderson et al. recently published a more detailed analysis of the BEACH data demonstrating the extent to which individual GPs use their computers for clinical purposes. This study demonstrated that only about one in five GPs used all the functions that would be required to collect the BEACH data set and submit it electronically to the Centre.[26]

### Active electronic data collection

Active electronic data collection requires participants to manually enter all compulsory data into an electronic data collection tool (e.g. an Internet-based data collection form). Information would not be extracted from existing electronic records.

A longitudinal crossover study by the FMRC, commissioned by the RACGP and the Western Sydney Division of General Practice in 2001, demonstrated that using a purpose-built data collection software module on the GPs' desktops resulted in low compliance by the GPs and poor data quality with much less data recorded than in the paper-based BEACH collection. The results of this study clearly indicated that any active data collection program must use software that is integrated with, and automatically uses data already in, the GPs' EHRs.[27]

## Ways we could move forward

The methodological studies leading up to BEACH and the BEACH program itself have demonstrated that it is not necessary or practical to collect all of the data for all of the patients all of the time to gain a reliable national picture of GP activity.

Electronic data collection (PC or web-based), in which randomly sampled GPs record data for all the necessary BEACH data elements for a sample of patients—on computer instead of paper— could be introduced as a process integrated with GPs' desktop EHR software. The relevant data already recorded in the EHR could be transferred to a 'plug in' data collection tool. Such a process has been used in a limited way in the National Primary Care Collaboratives Program. At the end of the encounter any BEACH data fields that remain empty could be highlighted for the manual addition of information where required.

This method would mean that a GP only had to provide complete data for a sample of encounters, as is the case with the current BEACH program. However, the issues of standardised coding and classification system still apply in this model—standards will still be needed.

This approach could provide a way forward. When such a system proves reliable (as tested against parallel BEACH paper-based data), and random sampling is possible (when all GPs are using EHRs) paper-based data collection could be phased out. A move to passive data collection can be made once all GPs use complete EHRs and as standards are implemented and rigorously applied in all clinical systems.

However, for both options, the same methodological rigour should be applied as was the case in the development of the BEACH paper-based collection systems over a period of 25 years. The BEACH instrument and methodology provide an excellent jumping-off point for developing any future electronic data collection from general practice.

# 2 Annual results BEACH 2005–06

This chapter provides a summary of the annual results from the eighth year of the BEACH program—data collected between April 2005 and March 2006. The methods are only summarised in this chapter. For those wanting more detailed explanation, a full description of the BEACH methods and a discussion of methodological issues are provided in Chapter 5.

## 2.1 The sample

### The sample frame

A random sample of general practitioners (GPs) who claimed at least 375 general practice Medicare items of service in the previous 3 months is regularly drawn from Medicare Australia data by the Primary Care Division of the Australian Government Department of Health and Ageing (DoHA) (see Chapter 5).

### Response rate

Contact was attempted with 3,620 GPs—9.8% could not be contacted. The majority of these had moved, retired or died and were untraceable. It is notable that of GPs approached who were aged less than 35 years, 27.5% were no longer at that practice and could not be traced. These would largely be registrars moving through practices during training. In contrast, 8.4% of GPs aged 35 years and over were not traceable.

The final participating sample consisted of 1,017 practitioners, representing 31.1% of those who were contacted and available, and 28.1% of those with whom contact was attempted (Table 2.1). Methodological issues related to the response rate are discussed in Section 5.11.

**Table 2.1: Recruitment and participation rates**

| | Number | Per cent of approached (*n*=3,620) | Per cent of contacts established (*n*=3,266) |
|---|---|---|---|
| Letter sent and phone contact attempted | 3,620 | 100.0 | — |
| No contact | 354 | 9.8 | — |
| No phone number | 49 | 1.4 | — |
| Moved/retired/deceased | 168 | 4.6 | — |
| Unavailable | 66 | 1.8 | — |
| No contact after five calls | 71 | 2.0 | — |
| Telephone contact established | 3,266 | 90.2 | 100.0 |
| Declined to participate | 1,988 | 54.9 | 60.9 |
| Agreed but withdrew | 261 | 7.2 | 7.8 |
| Agreed and completed | 1,017 | 28.1 | 31.1 |

## Representativeness of the GP sample

Whenever possible, the study group of GPs should be compared with the population from which the GPs were drawn in order to identify and, if necessary, adjust for any sample bias that may have an impact on the findings of the study.

Statistical comparisons, using the chi-square statistic ($\chi^2$) (significant at the 5% level), were made between BEACH participants and all recognised GPs in the sample frame during the study period (Table 2.2). The GP characteristics data for BEACH participants were drawn from the GP profile questionnaire. The DoHA provided the data for all GPs in the sample frame, drawn from Medicare claims data.

Table 2.2 demonstrates that there were no significant differences in GP characteristics between the final sample and all GPs in the sample frame, in terms of sex, place of graduation and distribution across RRMA classes. However, participants were significantly older and differed in their state distribution when compared with the total sample. The under-representation of young GPs has been experienced through most years of the BEACH program and could to a large degree be due to the fact that more than 25% of those drawn in the sample were not traceable, having moved on to other practices since the sample draw.

Data on the number of Medicare A1 items of service claimed in the previous quarter were also provided by DoHA for each GP in the original sample, but not for all GPs in the sample frame. These data showed there was no significant difference ($p$=0.75) in the mean number of A1 items claimed by GPs in the final BEACH sample (1,300 claims for the quarter) and among those GPs who declined to participate (1,309 for the quarter) (results not tabulated).

**Table 2.2: Comparison of BEACH participants and all active recognised GPs in Australia**

| | BEACH[(a)(b)] | | Australia[(a)(c)] | |
|---|---|---|---|---|
| **Variable** | **Number** | **Per cent of GPs** | **Number** | **Per cent of GPs** |
| Sex ($\chi^2$=2.45, $p$=0.12) | | | | |
| Males | 639 | 62.8 | 11,500 | 65.2 |
| Females | 378 | 37.2 | 6,128 | 34.8 |
| Age ($\chi^2$=36.2, $p$<0.0001) | | | | |
| <35 | 47 | 4.7 | 1,693 | 9.6 |
| 35–44 | 223 | 22.3 | 4,253 | 24.1 |
| 45–54 | 342 | 34.2 | 5,932 | 33.6 |
| 55+ | 387 | 38.7 | 5,770 | 32.7 |
| Place of graduation ($\chi^2$=0.01, $p$=0.93) | | | | |
| Australia | 728 | 72.0 | 12684 | 71.9 |
| Overseas | 283 | 28.0 | 4964 | 28.1 |

*(continued)*

**Table 2.2 (continued): Comparison of BEACH participants and all active recognised GPs in Australia (the sample frame)**

| | BEACH[(a)(b)] | | Australia[(a)(c)] | |
|---|---|---|---|---|
| Variable | Number | Per cent of GPs | Number | Per cent of GPs |
| State ($\chi^2$=26.9, $p$<0.001) | | | | |
| New South Wales | 407 | 40.0 | 5,997 | 34.0 |
| Victoria | 193 | 19.0 | 4,389 | 24.9 |
| Queensland | 197 | 19.4 | 3,287 | 18.6 |
| South Australia | 77 | 7.6 | 1,480 | 8.4 |
| Western Australia | 88 | 8.7 | 1,619 | 9.2 |
| Tasmania | 26 | 2.6 | 480 | 2.7 |
| Australian Capital Territory | 21 | 2.1 | 278 | 1.6 |
| Northern Territory | 8 | 0.8 | 118 | 0.7 |
| RRMA ($\chi^2$=3.8, $p$=0.70) | | | | |
| Capital | 702 | 69.1 | 11,743 | 66.5 |
| Other metropolitan | 69 | 6.8 | 1,369 | 7.8 |
| Large rural | 58 | 5.7 | 1,109 | 6.3 |
| Small rural | 61 | 6.0 | 1,161 | 6.6 |
| Other rural | 113 | 11.1 | 1,988 | 11.3 |
| Remote centre | 5 | 0.5 | 125 | 0.7 |
| Other remote | 8 | 0.8 | 153 | 0.9 |

(a) Missing data removed.

(b) Data drawn from the BEACH GP profile completed by each participating GP.

(c) All GPs who claimed at least 375 A1 Medicare items during the most recent 3-month Medicare Australia data period. Data provided by the Primary Care Division of the Australian Government Department of Health and Ageing.

*Note:* RRMA—Rural, Remote and Metropolitan Area classification.

## Weighting the data

**Activity weights:** In BEACH each GP provides details of 100 consecutive encounters. There is considerable variation in the number of services provided by different GPs in a given year. Encounters were therefore assigned an additional weight that was directly proportional to how busy the recording GP was. GP activity level was measured as the number of Medicare A1 items claimed by the GP in the previous 12 months (data supplied by DoHA).

**Age–sex weights:** In most years, including 2005–06, BEACH has had an under-representation of young GPs. In order to achieve comparable estimates and precision, we applied GP age–sex and activity level weights to the 2005–06 data in post-stratification weighting, as we have done in previous years.

**Total weights:** The final weighted estimates were calculated by multiplying raw rates by the GP age–sex weight and the GP sampling fraction of services in the previous 12 months. Table 2.3 shows the precision ratio calculated before and after weighting the data.

## Representativeness of the final encounter sample

BEACH aims to gain a representative sample of GP–patient encounters. To assess the representativeness of the final weighted sample of encounters, the age–sex distribution of patients at BEACH A1 Medicare-claimable encounters was compared with that of all encounters claimed in the 2005–06 study period (data provided by DoHA) as Medicare A1 items of service.

As shown in Table 2.3, there is an excellent fit of the MBS and BEACH age and sex distribution both with and without weighting, with no age–sex category varying by more than 10% from the population distribution. The range of raw precision ratios (0.9–1.1) indicates that the BEACH sample of encounters is a good representation of Australian GP–patient encounters. After weighting, the precision ratios improved slightly in some aspects, but remained within the 0.9–1.1 range.

**Table 2.3: Age–sex distribution of patients at BEACH and MBS A1 services**

| | BEACH[a] | | Australia[b] | Precision ratios | |
|---|---|---|---|---|---|
| Variable | Number | Per cent | Per cent | Raw[a] | Weighted[c] |
| Male | | | | | |
| <1 year | 1,030 | 1.3 | 1.2 | 0.9 | 0.9 |
| 1–4 years | 2,061 | 2.5 | 2.7 | 1.1 | 1.1 |
| 5–14 years | 2,607 | 3.2 | 3.5 | 1.1 | 1.0 |
| 15–24 years | 2,670 | 3.3 | 3.4 | 1.0 | 0.9 |
| 25–44 years | 6,792 | 8.4 | 8.9 | 1.1 | 1.0 |
| 45–64 years | 9,160 | 11.3 | 11.7 | 1.0 | 1.0 |
| 65–74 years | 4,437 | 5.5 | 5.7 | 1.0 | 1.0 |
| 75+ years | 3,831 | 4.7 | 4.9 | 1.0 | 1.0 |
| Female | | | | | |
| <1 year | 903 | 1.1 | 1.0 | 0.9 | 1.0 |
| 1–4 years | 1,743 | 2.1 | 2.4 | 1.1 | 1.1 |
| 5–14 years | 2,490 | 3.1 | 3.3 | 1.1 | 1.0 |
| 15–24 years | 5,084 | 6.3 | 5.9 | 0.9 | 1.0 |
| 25–44 years | 12,620 | 15.5 | 14.8 | 1.0 | 1.0 |
| 45–64 years | 13,505 | 16.6 | 15.5 | 0.9 | 1.0 |
| 65–74 years | 5,590 | 6.9 | 6.7 | 1.0 | 1.0 |
| 75+ years | 6,705 | 8.3 | 8.4 | 1.0 | 1.1 |

(a) Unweighted data, A1 items only, excluding encounters with patients who hold a DVA Repatriation health card.

(b) Data provided by the Primary Care Division of the Australian Government Department of Health and Ageing.

(c) Calculated from BEACH weighted data, excluding encounters with patients who hold a DVA Repatriation health card.

*Note:* A1 Medicare services—see Glossary. Only encounters with a valid age and sex are included in the comparison.

### The weighted data set

The final unweighted data set from the eighth year of collection contained encounters, reasons for encounters, problems and management/treatments. The apparent number of encounters and medications increased after weighting, whereas reasons for encounter, problems managed, the numbers of referrals, imaging and pathology all decreased after weighting. Raw and weighted totals for each data element are shown in Table 2.4.

**Table 2.4: The BEACH data set**

| Variable | Raw | Weighted |
|---|---|---|
| General practitioners | 1,017 | 1,017 |
| Encounters | 101,700 | 101,993 |
| Reasons for encounter | 154,653 | 153,309 |
| Problems managed | 152,802 | 149,088 |
| Medications | 105,340 | 106,493 |
| Other treatments | 50,517 | 47,847 |
| Referrals | 12,901 | 12,235 |
| Imaging | 9,227 | 9,003 |
| Pathology | 42,854 | 39,357 |

## 2.2 The general practitioners

All participants returned a GP profile questionnaire, although some were incomplete. The results are provided in Table 2.5. Of the 953 participants:

- 63% were male and almost three-quarters were 45 years or older, including almost 40% aged 55 years or more
- more than half had been in general practice for more than 20 years
- more than half were in a practice of five or more GPs and 13% were in solo practice
- 72% of GPs had graduated in Australia
- 69% practised in capital cities
- 28% conducted some consultations in a language other than English
- 41% were Fellows of the Royal Australian College of General Practitioners
- 84% worked in accredited practices
- 60% worked in practices that employed practice nurses
- 42% spent more than 40 hours each week on direct patient care services
- nearly half had provided care in a residential aged care facility in the previous month
- one in ten had worked as a salaried/sessional hospital medical officer at some time in the previous month
- almost half provided their own or cooperative after-hours care and half employed a deputising service for after-hours patient care
- about one-quarter bulk-billed Medicare for all patients; 44% bulk-billed for all consultations with pensioner/Commonwealth concession card holders and one-third bulk-billed for all consultations with children
- half worked in a teaching practice for undergraduates, for registrars, or for both.

**Table 2.5: Characteristics of participating GPs**

| GP characteristic | Number[(a)] | Per cent of GPs[(a)] (*n*=1,017) |
|---|---|---|
| Sex Male | 639 | 62.8 |
| Female | 378 | 37.2 |
| Age (missing=18) | | |
| <35 years | 47 | 4.7 |
| 35–44 years | 223 | 22.3 |
| 45–54 years | 342 | 34.2 |
| 55+ years | 387 | 38.7 |
| Years in general practice (missing=13) | | |
| <2 years | 6 | 0.6 |
| 2–5 years | 49 | 4.9 |
| 6–10 years | 121 | 12.1 |
| 11–19 years | 241 | 24.0 |
| 20+ years | 587 | 58.5 |
| Size of practice (missing=9) | | |
| Solo | 132 | 13.1 |
| 2–4 GPs | 355 | 35.2 |
| 5+ GPs | 521 | 51.7 |
| Practice location by RRMA (missing=1) | | |
| Capital | 702 | 69.1 |
| Other metropolitan | 69 | 6.8 |
| Large rural | 58 | 5.7 |
| Small rural | 61 | 6.0 |
| Other rural | 113 | 11.1 |
| Remote central | 5 | 0.5 |
| Other remote, offshore | 8 | 0.8 |
| Practice location by ASGC Remoteness structure (missing=0) | | |
| Major cities | 733 | 72.1 |
| Inner regional | 191 | 18.8 |
| Outer regional | 79 | 7.8 |
| Remote | 8 | 0.8 |
| Very remote | 6 | 0.6 |
| Place of graduation (missing=6) | | |
| Australia | 728 | 72.0 |
| United Kingdom | 82 | 8.1 |
| Asia | 110 | 10.9 |
| Europe | 21 | 2.1 |
| Africa | 45 | 4.5 |
| New Zealand | 19 | 1.9 |
| Other | 6 | 0.6 |

*(continued)*

**Table 2.5 (continued): Characteristics of participating GPs**

| GP characteristic | Number[(a)] | Per cent of GPs[(a)] (*n*=1,017) |
|---|---|---|
| Consult in languages other than English (missing=9) | 281 | 27.9 |
| <25% | 211 | 21.0 |
| 25–50% | 36 | 3.6 |
| >50% | 34 | 3.4 |
| Currently in general practice training program (missing=13) | 26 | 2.6 |
| Department of Veterans' Affairs registered (missing=25) | 901 | 90.8 |
| Fellow of RACGP (missing=9) | 408 | 40.7 |
| Accredited practice (missing=10) | 847 | 84.0 |
| Practice nurse at major practice address (missing=17) | 594 | 59.4 |
| Sessions per week (missing=6) | | |
| <6 per week | 175 | 17.3 |
| 6–10 per week | 715 | 70.7 |
| 11+ per week | 121 | 12.0 |
| Direct patient care hours (worked) per week (missing=34) | | |
| <= 10 hours | 8 | 0.8 |
| 11–20 hours | 96 | 9.8 |
| 21–40 hours | 463 | 47.1 |
| 41–60 hours | 383 | 39.0 |
| 60+ hours | 33 | 3.4 |
| Patient care provided in previous month (missing=22) | | |
| As a locum | 23 | 2.3 |
| In a deputising service | 20 | 2.0 |
| In a residential aged care facility | 459 | 46.1 |
| As a salaried/sessional hospital medical officer | 96 | 9.7 |
| After-hours arrangements (missing=14) | | |
| Own or cooperative | 475 | 47.4 |
| Deputising service | 509 | 50.8 |
| Bulk-billing (missing=15) | | |
| All patients | 272 | 27.2 |
| All pension/Commonwealth concession card holders | 442 | 44.1 |
| Some pension/Commonwealth concession card holders | 226 | 22.6 |
| All children | 330 | 32.9 |
| Some children | 266 | 26.6 |
| Selected other patients | 577 | 57.6 |
| Major practice a teaching practice (missing=13) | | |
| Not a teaching practice | 499 | 49.7 |
| Yes—for undergraduates only | 240 | 23.9 |
| Yes—for GP registrars only | 88 | 8.8 |
| Yes—for both undergraduates and registrars | 177 | 17.6 |

(a) Missing data removed.

*Note:* GP—general practitioner; RRMA—Rural, Remote and Metropolitan Areas classification; ASGC—Australian Standard Geographical Classification; RACGP—Royal Australian College of General Practitioners.

## Computer use at GP practices

Table 2.6 shows the proportion of participating GPs who worked in a practice in which computers were used for each of five listed activities.

- Only 5.4% of GPs worked in a non-computerised practice.
- Computers were used mainly for prescribing and billing purposes.
- Almost three-quarters had computers available for administrative processes.
- Almost three-quarters had computers available for medical records.
- More than two-thirds were in practices that had Internet and/or email available.

**Table 2.6: Computer use at major practice address**

| Computer use | Number | Per cent of GPs (*n*=1,017)[(a)] | Per cent of GPs with computers (*n*=962)[(a)] |
|---|---|---|---|
| Not at all | 55 | 5.4 | — |
| Billing | 818 | 80.4 | 85.0 |
| Prescribing | 844 | 83.0 | 87.7 |
| Medical records | 744 | 73.2 | 77.3 |
| Other administrative | 742 | 73.0 | 77.1 |
| Internet/email | 705 | 69.3 | 73.3 |
| Missing | 19 | — | — |

(a) Missing data removed.

Table 2.7 lists the top ten combinations of computer use by participants' practices.

- Half the GPs indicated that their practice used computers for all five listed purposes—billing, prescribing, medical records, other administrative purposes and Internet/email.
- Nearly 60% of the GPs reported computer use for both medical records and Internet/email purposes.
- Prescribing was the only use included in all of the top ten combinations.
- Within other top ten combinations of purposes for computer use, billing was the second most frequently available function, with medical records and Internet/email usage ranking equal third.

Note these results refer to computer use at practice level. Information about reported individual GP use of computers at the practice can be found in Henderson et al. 'Extent and utilisation of computerisation in Australian general practice' in the Medical Journal of Australia.[26]

**Table 2.7: Top ten combinations of computer use for GPs**

| Combination | Number | Per cent of GPs (*n*=1,017)[(a)] | Per cent of GPs with computers (*n*=962)[(a)] |
|---|---|---|---|
| All five uses | 521 | 51.2 | 54.2 |
| Billing + prescribing + medical records + other administrative | 70 | 6.9 | 7.3 |
| Billing + prescribing + other admin + Internet/email | 45 | 4.4 | 4.7 |
| Billing + prescribing + medical records | 39 | 3.8 | 4.1 |
| Billing + prescribing + medical records + Internet/email | 36 | 3.5 | 3.7 |
| Billing + prescribing | 21 | 2.1 | 2.2 |
| Prescribing + medical records + other admin + Internet/email | 18 | 1.8 | 1.9 |
| Billing + prescribing + other administrative | 17 | 1.7 | 1.8 |
| Billing + prescribing + Internet/email | 17 | 1.7 | 1.8 |
| Prescribing + medical records + Internet/email | 16 | 1.6 | 1.7 |

(a) Missing data removed.

## 2.3 The encounters

In 2005–06 there were 101,993 encounters (weighted data) from 1,017 GPs. The content of these encounters is summarised in Table 2.8. Reasons for encounter (RFEs) and problems managed are expressed as rates per 100 encounters. Each management action is presented in terms of both a rate per 100 encounters and a rate per 100 problems managed, with 95% confidence limits.

- On average, patients put forward 1.5 RFEs and GPs managed about 1.5 problems per encounter (146 per 100 encounters).
- New problems accounted for nearly 40% of all problems, being managed at a rate of 57 per 100 encounters.
- Chronic problems accounted for 35% of all problems managed at encounter.
- Medications were the most common treatment choice (71 per 100 problems managed) and most of these were medications prescribed (rather than supplied or advised), at a rate of 59 per 100 problems managed.
- Clinical treatments (such as advice and counselling) were provided at a rate of 20 per 100 problems.
- The patient was referred for care elsewhere 8 times for every 100 problems.
- Twenty-six pathology tests were ordered for every 100 problems managed.

**Table 2.8: Summary of morbidity and management**

| Variable | Number | Rate per 100 encounters (*n*=101,993) | 95% LCL | 95% UCL | Rate per 100 problems (*n*=149,088) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|---|
| General practitioners | 1,017 | — | — | — | — | — | — |
| Encounters | 101,993 | — | — | — | — | — | — |
| Reasons for encounter | 153,309 | 150.3 | 148.4 | 152.2 | — | — | — |
| Problems managed | 149,088 | 146.2 | 144.2 | 148.2 | | — | — |
| New problems | 58,002 | 56.9 | 55.5 | 58.2 | 38.9 | 37.9 | 39.9 |
| Work-related | 2,876 | 2.8 | 2.6 | 3.1 | 1.9 | 1.8 | 2.1 |
| Chronic problems | 51,946 | 50.9 | 49.1 | 52.8 | 34.8 | 33.9 | 35.8 |
| Medications | 106,493 | 104.4 | 101.8 | 107.0 | 71.4 | 69.9 | 72.9 |
| Prescribed | 87,544 | 85.8 | 83.3 | 88.4 | 58.7 | 57.2 | 60.3 |
| GP-supplied | 9,950 | 9.8 | 9.0 | 10.5 | 6.7 | 6.2 | 7.2 |
| Advised OTC | 8,999 | 8.8 | 8.2 | 9.5 | 6.0 | 5.6 | 6.5 |
| Other treatments | 44,504 | 43.6 | 41.5 | 45.8 | 29.9 | 28.5 | 31.2 |
| Clinical* | 29,785 | 29.2 | 27.3 | 31.1 | 20.0 | 18.8 | 21.2 |
| Procedural* | 14,719 | 14.4 | 13.7 | 15.1 | 9.9 | 9.4 | 10.3 |
| Referrals | 12,233 | 12.0 | 11.5 | 12.5 | 8.2 | 7.9 | 8.5 |
| Specialist* | 2,932 | 2.9 | 2.7 | 3.1 | 2.0 | 1.8 | 2.1 |
| Allied health services* | 8,342 | 8.2 | 7.8 | 8.5 | 5.6 | 5.4 | 5.8 |
| Hospital* | 192 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 |
| Emergency department* | 373 | 0.4 | 0.3 | 0.4 | 0.3 | 0.2 | 0.3 |
| Other medical services* | 334 | 0.3 | 0.3 | 0.4 | 0.2 | 0.2 | 0.3 |
| Other referrals* | 60 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 |
| Pathology | 39,358 | 38.6 | 36.9 | 40.3 | 26.4 | 25.3 | 27.5 |
| Imaging | 9,003 | 8.8 | 8.4 | 9.2 | 6.0 | 5.8 | 6.3 |
| Other investigations | 1,023 | 1.0 | 0.9 | 1.1 | 0.0 | 0.0 | 0.0 |

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note:* LCL—lower confidence limit; UCL—upper confidence limit; OTC—over-the-counter.

## Encounter type

During the first seven years of the BEACH program, where a Medicare item number was claimable for the encounter the GP was instructed to record only one item number. Where multiple item numbers (for example, an A1 item such as 'standard surgery consultation' and a procedural item number) were claimable for an encounter the GP was instructed to record the lower of the item numbers (usually an A1 item number).

Changes to the BEACH form were made in order to capture practice nurse activity associated with the GP–patient consultations for the 2005–06 BEACH year. One of these changes was to allow GPs to record multiple (up to three) Medicare item numbers per encounter.

Table 2.9 provides an overview of the MBS item numbers recorded in BEACH in 2005–06. Overall there were 89,063 item numbers recorded. At three-quarters of encounters only one item number was recorded.

**Table 2.9: Overview of MBS items recorded**

| Variable | Number | Per cent |
|---|---|---|
| Encounters at which one MBS item was recorded | 67,393 | 75.7 |
| Encounters at which two MBS items were recorded | 20,516 | 23.0 |
| Encounters at which three MBS items were recorded | 1,154 | 1.3 |
| **Total encounters at which at least one item was recorded** | **89,063** | **100.0** |

Table 2.10 reports the breakdown of encounter type (by payment source, place and type) counting a single Medicare item number per encounter (where applicable), the item number selected being the lowest of those recorded. This provides comparable data to that reported in previous years. This table is used as the comparison in Chapter 3.

- Direct encounters (patient was seen by the GP) accounted for 97.8% of all encounters.
- Direct encounters where no charge was made arose on average once per 200 encounters.
- About 96% of all direct encounters were claimable either through Medicare or the Australian Department of Veterans' Affairs (DVA).
- Standard surgery consultations accounted for the majority (83.7%) of Medicare/DVA claimable consultations.
- Almost one in ten Medicare/DVA encounters were long surgery consultations.
- Short and prolonged surgery consultations, home visits and residential aged care consultations were relatively rare, and encounters occurring in hospitals insignificant.
- Encounters payable through workers compensation accounted for 2.3% of encounters.
- Chronic disease management items, case conferences and health assessments were all recorded rarely.

Note that encounters listed as health assessments, chronic disease management visits, case conferences, or encounters involving incentive items or other items may have taken place either at the GPs' consulting rooms, or at the consulting rooms of other health professionals, at residential aged care facilities, or at the patient's home.

Table 2.11 provides the distribution of all Medicare item numbers recorded across Medicare item number groups. Overall, there were 111,888 MBS item numbers recorded in BEACH in 2005–06. An average of 1.3 items was recorded at encounters where at least one MBS item was recorded.

Surgery consultations (including short, standard, long and prolonged) accounted for three-quarters of all MBS items recorded in BEACH. Items for surgery consultations were the most commonly recorded type of item number, at 95.1% of the encounters where at least one item was recorded (Table 2.11).

The second most commonly recorded were items for bulk-billed services, which accounted for 16.9% of all items recorded. Items for hospital, residential aged care and home visits were recorded at one in every fifty encounters. Practice nurse items were recorded at 1.5% of all encounters (Table 2.11). Section 2.11, Table 2.47 provides a more detailed breakdown of practice nurse item numbers.

## Table 2.10: Type of encounter

| Variable | Number | Rate per 100 encounters[a] (*n*=101,993) | 95% LCL | 95% UCL | Per cent of direct encounters (*n*=92,617) | Per cent of Medicare-paid (*n*=89,011) |
|---|---|---|---|---|---|---|
| General practitioners | 1,017 | — | — | — | — | — |
| Direct encounters | 92,617 | 97.8 | 97.5 | 98.1 | 100.0 | — |
| No charge | 431 | 0.5 | 0.4 | 0.5 | 0.5 | — |
| MBS items of service | 89,011 | 94.0 | 93.4 | 94.6 | 96.1 | 100.0 |
| Short surgery consultations | 855 | 0.9 | 0.8 | 1.1 | — | 1.0 |
| Standard surgery consultations | 74,477 | 78.7 | 77.5 | 79.8 | — | 83.7 |
| Long surgery consultations | 8,739 | 9.2 | 8.6 | 9.9 | — | 9.8 |
| Prolonged surgery consultations | 588 | 0.6 | 0.5 | 0.7 | — | 0.7 |
| Home visits | 1,078 | 1.1 | 0.9 | 1.4 | — | 1.2 |
| Hospital | 171 | 0.2 | 0.1 | 0.3 | — | 0.2 |
| Residential aged care facility | 1,138 | 1.2 | 0.9 | 1.5 | — | 1.3 |
| Health assessments | 162 | 0.2 | 0.1 | 0.2 | — | 0.2 |
| Chronic disease management items | 258 | 0.3 | 0.2 | 0.3 | — | 0.3 |
| Case conferences | 2 | 0.0Ŧ | 0.0 | 0.0 | — | 0.0 |
| Incentive payments | 139 | 0.1 | 0.1 | 0.2 | — | 0.2 |
| Other items | 1,405 | 1.5 | 1.3 | 1.7 | — | 1.6 |
| Workers compensation | 2,190 | 2.3 | 2.1 | 2.5 | 2.4 | — |
| Other paid (hospital, state, etc.) | 995 | 1.1 | 0.6 | 1.5 | 1.1 | — |
| Indirect encounters[b] | 2,066 | 2.2 | 1.9 | 2.5 | — | — |
| Missing | 7,310 | — | — | — | — | — |
| **Total encounters** | **101,993** | **—** | **—** | **—** | **—** | **—** |

(a) Missing data removed from analysis.

(b) If the 'Patient not seen' box was ticked, and MBS items were recorded, the encounters were regarded as indirect encounters. Eleven of these encounters involved chronic disease management or case conference items.

Ŧ Rates are reported to one decimal place. This indicates that the rate is <0.05 per 100 encounters.

*Note:* LCL—lower confidence limit; UCL—upper confidence limit; MBS—Medicare Benefits Schedule.

**Table 2.11: Medicare item number distribution across item number groups**

| | All MBS items[a] | | At least one item recorded[b] | | | |
|---|---|---|---|---|---|---|
| Variable | Number | Per cent | Number | Per cent | 95% LCL | 95% UCL |
| Surgery consultations | 84,659 | 75.7 | 84,659 | 95.1 | 94.5 | 95.6 |
| Hospital, residential aged care and home visits | 2,388 | 2.1 | 2,388 | 2.7 | 2.2 | 3.2 |
| Health assessments | 182 | 0.2 | 182 | 0.2 | 0.2 | 0.3 |
| Chronic disease management items (including case conferences) | 432 | 0.4 | 381 | 0.4 | 0.3 | 0.5 |
| Incentive payments | 146 | 0.1 | 146 | 0.2 | 0.1 | 0.2 |
| Acupuncture | 232 | 0.2 | 232 | 0.3 | 0.2 | 0.4 |
| Bulk-billed services[c] | 18,857 | 16.9 | 18,857 | 21.2 | 19.1 | 23.3 |
| Practice nurse services | 1,695 | 1.5 | 1,682 | 1.9 | 1.6 | 2.2 |
| Diagnostic procedures and investigations | 464 | 0.4 | 462 | 0.5 | 0.4 | 0.6 |
| Therapeutic procedures | 487 | 0.4 | 486 | 0.5 | 0.4 | 0.7 |
| Surgical operations | 1,334 | 1.2 | 1,304 | 1.5 | 1.3 | 1.6 |
| Diagnostic imaging services | 8 | 0.0 | 8 | 0.0 | 0.0 | 0.0 |
| Pathology services | 300 | 0.3 | 295 | 0.3 | 0.2 | 0.4 |
| Other items | 703 | 0.6 | 394 | 0.4 | 0.3 | 0.6 |
| **Total items** | **111,888** | **100.0** | — | — | — | — |

(a) Up to 3 MBS items could be recorded at each encounter. Missing data removed from analysis.

(b) Identifies encounters where at least one item from a MBS group was recorded. Per cent base *n*=89,063.

(c) Includes 15 encounters with only a bulk-billing service item recorded at the encounter.

# 2.4 The patients

## Age–sex distribution of patients at encounter

The age–sex distribution of patients at the 101,993 encounters is shown in Figure 2.1. Females accounted for the greater proportion of encounters (56.0%). This was reflected across all age groups except for children aged less than 15 years, and was greatest among the younger adults (15–24 years and 25–44 years) (Figure 2.1).

## Other patient characteristics

Table 2.12 provides a view of other characteristics of the patients. In summary:

- the patient was new to the practice at one in ten encounters (9.1%)
- over 40% of encounters were with patients who held a Commonwealth concession card and 3.1% were with persons who held a Repatriation health card
- at one in ten encounters the patient was from a non-English-speaking background
- at 0.9% of encounters the patient identified themselves as an Aboriginal person or Torres Strait Islander.

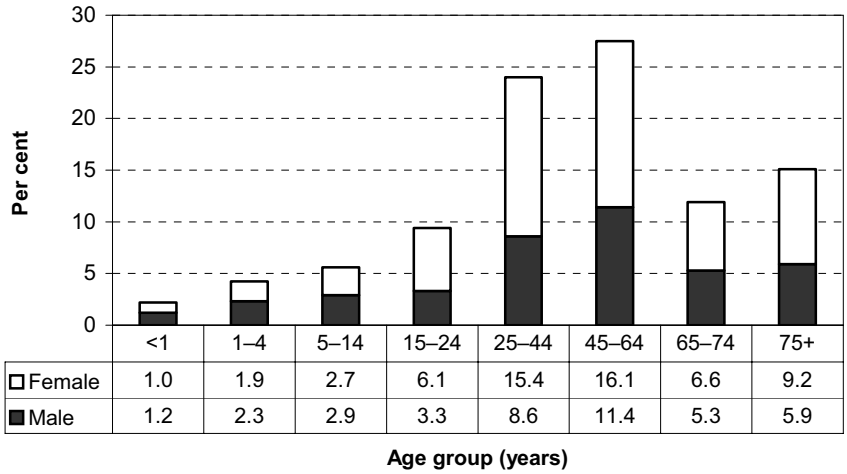



**Figure 2.1: Age–sex distribution of patients at encounter**

*Note:* Missing data removed. The distributions will not agree perfectly with those in Table 2.12 because of to missing data in either age or sex fields.

## Table 2.12: Characteristics of the patients at encounters

| Patient variable | Number | Per cent of encounters (*n*=101,993)[(a)] | 95% UCL | 95% UCL |
|---|---|---|---|---|
| Sex (Missing=788) | | | | |
| Males | 44,486 | 44.0 | 43.2 | 44.7 |
| Females | 56,719 | 56.0 | 55.3 | 56.8 |
| Age group (Missing=769) | | | | |
| <1 year | 2,098 | 2.1 | 1.9 | 2.2 |
| 1–4 years | 4,301 | 4.2 | 4.0 | 4.5 |
| 5–14 years | 6,100 | 6.0 | 5.7 | 6.3 |
| 15–24 years | 9,486 | 9.4 | 9.0 | 9.8 |
| 25–44 years | 24,226 | 23.9 | 23.2 | 24.7 |
| 45–64 years | 27,980 | 27.6 | 27.0 | 28.2 |
| 65–74 years | 12,302 | 12.2 | 11.7 | 12.6 |
| 75+ years | 14,731 | 14.6 | 13.7 | 15.4 |
| Other characteristics | | | | |
| New patient to practice | 9,098 | 9.1 | 8.3 | 9.9 |
| Commonwealth concession card | 42,983 | 42.1 | 40.6 | 43.7 |
| Repatriation health card | 3,141 | 3.1 | 2.8 | 3.3 |
| Non-English-speaking background | 10,000 | 9.8 | 8.2 | 11.4 |
| Aboriginal person | 723 | 0.7 | 0.5 | 0.9 |
| Torres Strait Islander | 133 | 0.1 | 0.0 | 0.3 |
| Aboriginal person and Torres Strait Islander | 29 | 0.0[Ŧ] | — | — |

(a) Missing data removed.

Ŧ Rates are reported to one decimal place. This indicates that the rate is <0.05 per 100 encounters. The confidence interval could not be calculated because of the small sample size.

*Note:* LCL—lower confidence limit; UCL—upper confidence limit.

## Patient reasons for encounter

International interest in reasons for encounter (RFEs) has been developing over the past three decades. RFEs reflect the patient's demand for care and can provide an indication of service utilisation patterns, which may benefit from intervention on a population level.[28]

RFEs are those concerns and expectations that patients bring to the GP. Participating GPs were asked to record at least one and up to three patient RFEs in words as close as possible to those used by the patient, before the diagnostic or management process had begun. These reflect the patient's view of their reasons for consulting the GP. RFEs can be expressed in terms of one or more symptoms (e.g. 'itchy eyes', 'chest pain'), in diagnostic terms (e.g. 'about my diabetes', 'for my hypertension'), a request for a service ('I need more scripts', 'I want a referral'), an expressed fear of disease, or a need for a check-up.

Patient RFEs have a many-to-many relationship to problems managed; that is, the patient may describe multiple symptoms that relate to a single problem managed at the encounter or may describe one RFE that relates to multiple problems.

### Number of reasons for encounter

Table 2.13 shows the number of RFEs presented by patients at encounters. At 60% of encounters only one RFE was recorded. Patients presented on average with 150.3 RFEs per 100 encounters, or 1.5 RFEs per encounter (Table 2.14).

**Table 2.13: Number of patient reasons for encounter**

| Number of RFEs at encounter | Number of encounters (*n*=101,993) | Per cent of encounters | 95% LCL | 95% UCL |
|---|---|---|---|---|
| One RFE | 62,142 | 60.9 | 59.7 | 62.2 |
| Two RFEs | 28,386 | 27.8 | 27.1 | 28.5 |
| Three RFEs | 11,465 | 11.2 | 10.5 | 11.9 |
| **Total** | 101,993 | 100.0 | — | — |

*Note:* RFEs—reasons for encounter; LCL—lower confidence limit; UCL—upper confidence limit.

### Reasons for encounter by ICPC-2 chapter

The distribution of patient RFEs by ICPC-2 chapter and the most common RFEs within each chapter are presented in Table 2.14. Each chapter and individual RFE is expressed as a percentage of all RFEs and as a rate per 100 encounters with 95% confidence limits.

**Table 2.14: Distribution of patient reasons for encounter, by ICPC-2 chapter and most frequent individual reasons for encounter within chapter**

| Reasons for encounter | Number | Per cent of total RFEs[a] (*n*=153,309) | Rate per 100 encounters[b] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| **General & unspecified** | **37,041** | **24.2** | **36.3** | **35.2** | **37.4** |
| Prescription NOS | 8,139 | 5.3 | 8.0 | 7.5 | 8.5 |
| Results tests/procedures NOS | 5,421 | 3.5 | 5.3 | 5.0 | 5.6 |
| Check-up—general* | 3,697 | 2.4 | 3.6 | 3.4 | 3.9 |
| Immunisation/vaccination—general | 2,370 | 1.5 | 2.3 | 2.1 | 2.6 |
| Fever | 2,236 | 1.5 | 2.2 | 1.9 | 2.5 |
| Administrative procedure NOS | 1,457 | 1.0 | 1.4 | 1.3 | 1.6 |
| Weakness/tiredness | 1,294 | 0.8 | 1.3 | 1.2 | 1.4 |
| Blood test NOS | 1,179 | 0.8 | 1.2 | 1.0 | 1.3 |
| Chest pain NOS | 1,134 | 0.7 | 1.1 | 1.0 | 1.2 |
| Other reason for encounter NEC | 1,013 | 0.7 | 1.0 | 0.8 | 1.1 |
| Other referrals NEC NOS | 840 | 0.5 | 0.8 | 0.7 | 0.9 |
| Trauma/injury, NOS | 820 | 0.5 | 0.8 | 0.7 | 0.9 |
| Observation/health educat/advice/diet NOS | 756 | 0.5 | 0.7 | 0.7 | 0.8 |
| **Respiratory** | **22,351** | **14.6** | **21.9** | **21.1** | **22.7** |
| Cough | 6,533 | 4.3 | 6.4 | 6.0 | 6.8 |
| Throat complaint | 3,328 | 2.2 | 3.3 | 3.0 | 3.5 |
| Upper respiratory tract infection | 2,399 | 1.6 | 2.4 | 2.0 | 2.7 |
| Immunisation/vaccination—respiratory | 2,299 | 1.5 | 2.3 | 1.9 | 2.6 |
| Nasal congestion/sneezing | 1,364 | 0.9 | 1.3 | 1.1 | 1.6 |
| Asthma | 815 | 0.5 | 0.8 | 0.7 | 0.9 |
| Shortness of breath, dyspnoea | 775 | 0.5 | 0.8 | 0.7 | 0.8 |
| Influenza | 726 | 0.5 | 0.7 | 0.5 | 0.9 |
| **Musculoskeletal** | **16,690** | **10.9** | **16.4** | **15.8** | **16.9** |
| Back complaint* | 3,515 | 2.3 | 3.5 | 3.2 | 3.7 |
| Knee complaint | 1,414 | 0.9 | 1.4 | 1.3 | 1.5 |
| Shoulder complaint | 1,149 | 0.7 | 1.1 | 1.0 | 1.2 |
| Foot/toe complaint | 1,124 | 0.7 | 1.1 | 1.0 | 1.2 |
| Leg/thigh complaint | 1,045 | 0.7 | 1.0 | 0.9 | 1.1 |
| Neck complaint | 965 | 0.6 | 1.0 | 0.8 | 1.1 |
| Injury musculoskeletal NOS | 858 | 0.6 | 0.8 | 0.7 | 0.9 |
| **Skin** | **15,321** | **10.0** | **15.0** | **14.5** | **15.6** |
| Rash* | 2,697 | 1.8 | 2.6 | 2.5 | 2.8 |
| Skin complaint | 1,410 | 0.9 | 1.4 | 1.3 | 1.5 |
| Check-up—skin* | 1,331 | 0.9 | 1.3 | 1.0 | 1.6 |
| Swelling* | 1,161 | 0.8 | 1.1 | 1.0 | 1.2 |

*(continued)*

**Table 2.14 (continued): Distribution of patient reasons for encounter, by ICPC-2 chapter and most frequent individual reasons for encounter within chapter**

| Reasons for encounter | Number | Per cent of total RFEs[(a)] (*n*=153,309) | Rate per 100 encounters[(b)] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| **Cardiovascular** | **10,965** | **7.2** | **10.8** | **10.2** | **11.3** |
| Check-up—cardiovascular* | 5,109 | 3.3 | 5.0 | 4.6 | 5.4 |
| Hypertension/high blood pressure* | 1,890 | 1.2 | 1.9 | 1.6 | 2.1 |
| Prescription—cardiovascular | 929 | 0.6 | 0.9 | 0.8 | 1.1 |
| **Digestive** | **10,111** | **6.6** | **9.9** | **9.5** | **10.3** |
| Abdominal pain* | 1,837 | 1.2 | 1.8 | 1.7 | 1.9 |
| Diarrhoea | 1,371 | 0.9 | 1.3 | 1.2 | 1.4 |
| Vomiting | 966 | 0.6 | 1.0 | 0.8 | 1.0 |
| **Psychological** | **7,990** | **5.2** | **7.8** | **7.3** | **8.3** |
| Depression* | 1,908 | 1.2 | 1.9 | 1.7 | 2.0 |
| Sleep disturbance | 1,184 | 0.8 | 1.2 | 1.0 | 1.3 |
| Anxiety* | 1,182 | 0.8 | 1.2 | 1.1 | 1.3 |
| **Endocrine & metabolic** | **6,307** | **4.1** | **6.2** | **5.8** | **6.5** |
| Prescription—endocrine/metabolic | 1,028 | 0.7 | 1.0 | 0.9 | 1.1 |
| Diabetes (non-gestational)* | 1,036 | 0.7 | 1.0 | 0.9 | 1.1 |
| Check-up—endocrine/metabolic* | 732 | 0.5 | 0.7 | 0.6 | 0.8 |
| **Female genital system** | **5,221** | **3.4** | **5.1** | **4.8** | **5.5** |
| Check-up/Pap smear* | 1,932 | 1.3 | 1.9 | 1.7 | 2.1 |
| Menstrual problems* | 753 | 0.5 | 0.7 | 0.6 | 0.8 |
| **Neurological** | **5,046** | **3.3** | **4.9** | **4.7** | **5.2** |
| Headache | 1,711 | 1.1 | 1.7 | 1.6 | 1.8 |
| Vertigo/dizziness | 1,168 | 0.8 | 1.1 | 1.1 | 1.2 |
| **Ear** | **3,956** | **2.6** | **3.9** | **3.7** | **4.1** |
| Ear pain | 1,631 | 1.1 | 1.6 | 1.5 | 1.7 |
| **Pregnancy & family planning** | **3,423** | **2.2** | **3.4** | **3.1** | **3.6** |
| Oral contraception* | 814 | 0.5 | 0.8 | 0.7 | 0.9 |
| Pre/postnatal check-up* | 810 | 0.5 | 0.8 | 0.7 | 0.9 |
| **Eye** | **2,809** | **1.8** | **2.8** | **2.6** | **2.9** |
| **Urology** | **2,658** | **1.7** | **2.6** | **2.5** | **2.8** |
| **Male genital system** | **1,322** | **0.9** | **1.3** | **1.2** | **1.4** |
| **Blood** | **1,179** | **0.8** | **1.2** | **1.0** | **1.3** |
| **Social** | **918** | **0.6** | **0.9** | **0.8** | **1.0** |
| **Total RFEs** | **153,309** | **100.0** | **150.3** | **148.4** | **152.2** |

(a) Only those individual RFEs accounting for >=0.5% of total RFEs are included.

(b) Figures do not total 100 as more than one RFE can be recorded at each encounter.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note:* RFEs—reasons for encounter; LCL—lower confidence limit; UCL—upper confidence limit; NOS—not otherwise specified; NEC—not elsewhere classified; educat—education.

## Distribution of RFEs by ICPC-2 component

The distribution of patient RFEs by ICPC-2 component is presented in Table 2.15 expressed as a percentage of all RFEs and as a rate per 100 encounters with 95% confidence limits.

**Table 2.15: Distribution of RFEs by ICPC-2 component**

| ICPC-2 component | Number | Per cent of total RFEs (*n*=153,309) | Rate per 100 encounters[(a)] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Symptoms & complaints | 71,070 | 46.4 | 69.7 | 67.9 | 71.5 |
| Diagnoses, diseases | 27,319 | 17.8 | 26.8 | 25.4 | 28.2 |
| Diagnostic & preventive procedures | 24,831 | 16.2 | 24.4 | 23.4 | 25.3 |
| Medications, treatments & therapeutics | 14,692 | 9.6 | 14.4 | 13.7 | 15.1 |
| Referral & other RFE | 7,079 | 4.6 | 6.9 | 6.5 | 7.4 |
| Results | 6,618 | 4.3 | 6.5 | 6.1 | 6.9 |
| Administrative | 1,700 | 1.1 | 1.7 | 1.5 | 1.8 |
| **Total RFEs** | **153,309** | **100.0** | **150.3** | **148.4** | **152.2** |

(a) Figures do not total 100 as more than one RFE can be recorded at each encounter.

*Note:* RFEs—reasons for encounter; LCL—lower confidence limit; UCL—upper confidence limit.

## Most frequent patient reasons for encounter

The 30 most commonly recorded RFEs, listed in order of frequency in Table 2.16, accounted for more than half of all RFEs. In this analysis the specific ICPC-2 chapter to which an across-chapter RFE belongs is disregarded, so that, for example, 'check-up—all' includes all check-ups from all body systems irrespective of whether the type was specified.

**Table 2.16: Most frequent patient reasons for encounter**

| Patient reason for encounter | Number | Per cent of total RFEs (*n*=153,309) | Rate per100 encounters[(a)] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Check-up—all* | 14,402 | 9.4 | 14.1 | 13.4 | 14.8 |
| Prescription—all* | 12,260 | 8.0 | 12.1 | 11.4 | 12.7 |
| Test results* | 6,618 | 4.3 | 6.5 | 6.1 | 6.9 |
| Cough | 6,533 | 4.3 | 6.4 | 6.0 | 6.8 |
| Immunisation/vaccination—all* | 4,872 | 3.2 | 4.8 | 4.4 | 5.2 |
| Back complaint* | 3,515 | 2.3 | 3.5 | 3.2 | 3.7 |
| Throat complaint | 3,328 | 2.2 | 3.3 | 3.0 | 3.5 |
| Rash* | 2,697 | 1.8 | 2.6 | 2.5 | 2.8 |
| Upper respiratory tract infection | 2,399 | 1.6 | 2.4 | 2.0 | 2.7 |
| Fever | 2,236 | 1.5 | 2.2 | 1.9 | 2.5 |
| Depression* | 1,908 | 1.2 | 1.9 | 1.7 | 2.0 |
| Hypertension/high blood pressure* | 1,890 | 1.2 | 1.9 | 1.6 | 2.1 |
| Abdominal pain* | 1,837 | 1.2 | 1.8 | 1.7 | 1.9 |
| Headache | 1,711 | 1.1 | 1.7 | 1.6 | 1.8 |

*(continued)*

**Table 2.16 (continued): Most frequent patient reasons for encounter**

| Patient reason for encounter | Number | Per cent of total RFEs (*n*=153,309) | Rate per100 encounters[(a)] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Ear pain | 1,631 | 1.1 | 1.6 | 1.5 | 1.7 |
| Administrative procedure NOS | 1,457 | 1.0 | 1.4 | 1.3 | 1.6 |
| Knee complaint | 1,414 | 0.9 | 1.4 | 1.3 | 1.5 |
| Skin complaint | 1,410 | 0.9 | 1.4 | 1.3 | 1.5 |
| Diarrhoea | 1,371 | 0.9 | 1.3 | 1.2 | 1.4 |
| Nasal congestion/sneezing | 1,364 | 0.9 | 1.3 | 1.1 | 1.6 |
| Weakness/tiredness | 1,294 | 0.8 | 1.3 | 1.2 | 1.4 |
| Blood test NOS | 1,179 | 0.8 | 1.2 | 1.0 | 1.3 |
| Anxiety* | 1,182 | 0.8 | 1.2 | 1.0 | 1.3 |
| Sleep disturbance | 1,184 | 0.8 | 1.2 | 1.1 | 1.3 |
| Swelling* | 1,161 | 0.8 | 1.1 | 1.0 | 1.2 |
| Vertigo/dizziness | 1,168 | 0.8 | 1.1 | 1.1 | 1.2 |
| Shoulder complaint | 1,149 | 0.8 | 1.1 | 1.0 | 1.2 |
| Chest pain NOS | 1,134 | 0.7 | 1.1 | 1.0 | 1.2 |
| Foot/toe complaint | 1,124 | 0.7 | 1.1 | 1.0 | 1.2 |
| Leg/thigh complaint | 1,045 | 0.7 | 1.0 | 0.9 | 1.1 |
| *Subtotal* | *86,474* | *56.4* | — | — | — |
| **Total RFEs** | **153,309** | **100.0** | **150.3** | **148.4** | **152.2** |

(a) Figures do not total 100 as more than one RFE can be recorded at each encounter. Also, only the most frequent RFEs are included.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note:* RFEs—reasons for encounter; LCL—lower confidence limit; UCL—upper confidence limit; NOS—not otherwise specified.

# 2.5 Problems managed

A 'problem managed' is a formal statement of the provider's understanding of a health problem presented by the patient, family or community, and can be described in terms of a disease, symptom or complaint, social problem or ill-defined condition managed at the encounter. As GPs were instructed to record each problem to the most specific level possible from the information available, the problem managed may at times be limited to the level of a presenting symptom.

At each patient encounter, up to four problems could be recorded by the GP. A minimum of one problem was compulsory. The status of each problem to the patient—new (first presentation to a medical practitioner) or old (follow-up of previous problem)—was also indicated. The concept of a principal diagnosis, which is often used in hospital statistics, is not adopted in studies of general practice where multiple problem management is the norm rather than the exception. Further, the range of problems managed at the encounter often crosses multiple body systems and may include undiagnosed symptoms, psychosocial problems or chronic disease, which makes the designation of a principal diagnosis difficult. Thus the order in which the problems were recorded by the GP is not significant. All problems managed in general practice are included in this section including those which involved management by a practice nurse. Problems that specifically included management by a practice nurse are reported separately in Section 2.11.

There are two ways to describe the relative frequency of problems managed: as a percentage of all problems managed in the study, or as a rate of problems managed per 100 encounters. Where groups of problems are reported (e.g. cardiovascular problems), it must be remembered that more than one type of problem (e.g. hypertension and heart failure) may have been managed at a single encounter. In considering these results, the reader must be mindful that although a rate per 100 encounters for a single ungrouped problem (e.g. asthma, 2.6 per 100 encounters) can be regarded as equivalent to 'asthma is managed at 2.6% of encounters', such a statement cannot be made for grouped concepts (ICPC-2 chapters and those marked with an asterisk in the tables).

## Number of problems managed at encounter

Table 2.17 shows the number of problems managed at each encounter. Only one problem was managed at two-thirds of encounters.

**Table 2.17: Number of problems managed at an encounter**

| Number of problems managed at encounter | Number of encounters | Per cent | 95% LCL | 95% UCL |
|---|---|---|---|---|
| One problem | 67,687 | 66.4 | 65.1 | 67.6 |
| Two problems | 23,887 | 23.4 | 22.7 | 24.1 |
| Three problems | 8,048 | 7.9 | 7.4 | 8.4 |
| Four problems | 2,371 | 2.3 | 2.1 | 2.6 |
| **Total** | **101,993** | **100.0** | — | — |

*Note:* LCL—lower confidence limit; UCL—upper confidence limit.

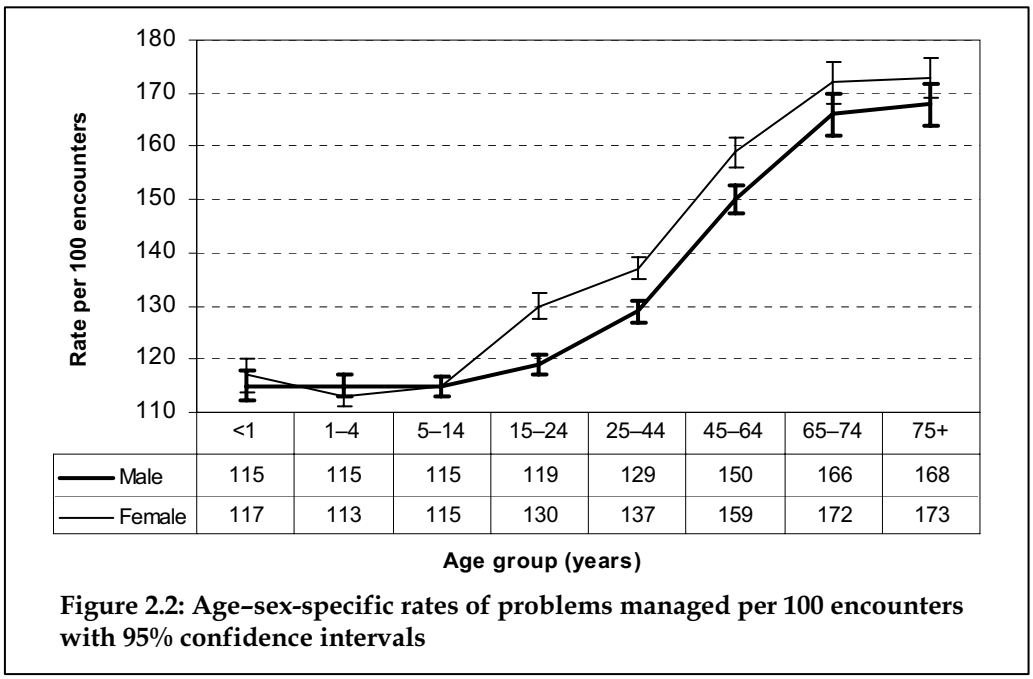



**Figure 2.2: Age–sex-specific rates of problems managed per 100 encounters with 95% confidence intervals**

The number of problems managed at encounters increased steadily with the age of the patient. Significantly more problems were managed overall at encounters with female patients (149.4 per 100 encounters, 95% CI: 147.2–151.6) than at those with male patients (142.1 per 100 encounters, 95% CI: 140.1–144.2). Figure 2.2 shows the age–sex-specific rates of problems managed, and demonstrates that this difference was particularly evident in the 15–24, 25–44 and 45–64 years age groups.

## Nature of morbidity

### Problems managed by ICPC-2 chapter

The frequency and the distribution of problems managed, by ICPC-2 chapter, are presented in Table 2.18. Rates per 100 encounters and the proportion of total problems are provided at the ICPC-2 chapter level and for individual problems. Only those problems accounting for at least 0.5% of all problems managed are listed in the table, in decreasing order of frequency within a chapter.

**Table 2.18: Distribution of problems managed, by ICPC-2 chapter and most frequent individual problems within chapter**

| Problem managed | Number | Per cent total problems[(a)] (*n*=149,088) | Rate per 100 encounters[(b)] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| **Respiratory** | **21,020** | **14.1** | **20.6** | **19.9** | **21.3** |
| Upper respiratory tract infection | 6,332 | 4.2 | 6.2 | 5.8 | 6.6 |
| Immunisation/vaccination—respiratory | 2,711 | 1.8 | 2.7 | 2.3 | 3.0 |
| Acute bronchitis/bronchiolitis | 2,590 | 1.7 | 2.5 | 2.3 | 2.7 |
| Asthma | 2,319 | 1.6 | 2.3 | 2.1 | 2.4 |
| Sinusitis | 1,308 | 0.9 | 1.3 | 1.2 | 1.4 |
| Tonsillitis* | 1,108 | 0.7 | 1.1 | 1.0 | 1.2 |
| Chronic obstructive pulmonary disease | 742 | 0.5 | 0.7 | 0.6 | 0.8 |
| **Musculoskeletal** | **17,527** | **11.8** | **17.2** | **16.7** | **17.7** |
| Osteoarthritis* | 2,737 | 1.8 | 2.7 | 2.5 | 2.9 |
| Back complaint* | 2,698 | 1.8 | 2.6 | 2.5 | 2.8 |
| Sprain/strain* | 1,787 | 1.2 | 1.8 | 1.6 | 1.9 |
| Fracture* | 1,039 | 0.7 | 1.0 | 0.9 | 1.1 |
| Osteoporosis | 955 | 0.6 | 0.9 | 0.8 | 1.0 |
| Injury musculoskeletal NOS | 825 | 0.6 | 0.8 | 0.7 | 0.9 |
| Bursitis/tendonitis/synovitis NOS | 779 | 0.5 | 0.8 | 0.7 | 0.8 |
| Musculoskeletal disease, other | 755 | 0.5 | 0.7 | 0.7 | 0.8 |
| **Cardiovascular** | **17,241** | **11.6** | **16.9** | **16.1** | **17.7** |
| Hypertension* | 9,635 | 6.5 | 9.4 | 8.9 | 10.0 |
| Ischaemic heart disease* | 1,320 | 0.9 | 1.3 | 1.2 | 1.4 |
| Cardiac check-up* | 1,174 | 0.8 | 1.2 | 1.0 | 1.3 |
| Atrial fibrillation/flutter | 953 | 0.6 | 0.9 | 0.8 | 1.0 |

*(continued)*

**Table 2.18 (continued): Distribution of problems managed, by ICPC-2 chapter and most frequent individual problems within chapter**

| Problem managed | Number | Per cent total problems[(a)] (*n*=149,088) | Rate per 100 encounters[(b)] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| **Skin** | **16,966** | **11.4** | **16.6** | **16.1** | **17.2** |
| Contact dermatitis | 1,840 | 1.2 | 1.8 | 1.7 | 1.9 |
| Solar keratosis/sunburn | 1,236 | 0.8 | 1.2 | 1.1 | 1.3 |
| Malignant neoplasm skin | 1,035 | 0.7 | 1.0 | 0.9 | 1.1 |
| Laceration/cut | 857 | 0.6 | 0.8 | 0.7 | 0.9 |
| Skin disease, other | 825 | 0.6 | 0.8 | 0.7 | 0.9 |
| Skin injury, other | 712 | 0.5 | 0.7 | 0.6 | 0.8 |
| Dermatophytosis | 693 | 0.5 | 0.7 | 0.6 | 0.7 |
| Warts | 693 | 0.5 | 0.7 | 0.6 | 0.8 |
| **General & unspecified** | **15,426** | **10.4** | **15.1** | **14.5** | **15.7** |
| General immunisation/vaccination | 2,121 | 1.4 | 2.1 | 1.9 | 2.3 |
| General check-up* | 2,106 | 1.4 | 2.1 | 1.9 | 2.2 |
| Medication/script/request/renew/inject NOS | 1,376 | 0.9 | 1.3 | 1.1 | 1.6 |
| Viral disease, other/NOS | 1,221 | 0.8 | 1.2 | 1.0 | 1.4 |
| Results tests/procedures NOS | 1,013 | 0.7 | 1.0 | 0.9 | 1.1 |
| **Endocrine & metabolic** | **11,818** | **7.9** | **11.6** | **11.0** | **12.1** |
| Diabetes, non-gestational* | 3,603 | 2.4 | 3.5 | 3.3 | 3.8 |
| Lipid disorder* | 3,479 | 2.3 | 3.4 | 3.1 | 3.7 |
| **Psychological** | **11,286** | **7.6** | **11.1** | **10.5** | **11.7** |
| Depression* | 3,688 | 2.5 | 3.6 | 3.4 | 3.8 |
| Anxiety* | 1,837 | 1.2 | 1.8 | 1.6 | 2.0 |
| Sleep disturbance | 1,621 | 1.1 | 1.6 | 1.5 | 1.7 |
| Drug abuse | 674 | 0.5 | 0.7 | 0.4 | 1.0 |
| **Digestive** | **10,260** | **609** | **10.1** | **9.8** | **10.4** |
| Oesophageal disease | 2,397 | 1.6 | 2.4 | 2.2 | 2.5 |
| Gastroenteritis, presumed infection | 1,109 | 0.7 | 1.1 | 1.0 | 1.2 |
| **Female genital system** | **5,899** | **4.0** | **5.8** | **5.4** | **6.2** |
| Female genital check-up/Pap smear* | 1,829 | 1.2 | 1.8 | 1.6 | 2.0 |
| Menopausal complaint | 884 | 0.6 | 0.9 | 0.8 | 0.9 |
| Menstrual problems* | 694 | 0.5 | 0.7 | 0.6 | 0.8 |
| **Ear** | **4,076** | **2.7** | **4.0** | **3.8** | **4.2** |
| Acute otitis media/myringitis | 1,180 | 0.8 | 1.2 | 1.0 | 1.3 |
| **Pregnancy & family planning** | **3,903** | **2.6** | **3.8** | **3.6** | **4.1** |
| Oral contraception* | 1,219 | 0.8 | 1.2 | 1.1 | 1.3 |
| Pregnancy* | 895 | 0.6 | 0.9 | 0.8 | 1.0 |
| Contraception, other | 503 | 0.3 | 0.5 | 0.4 | 0.6 |

*(continued)*

**Table 2.18 (continued): Distribution of problems managed, by ICPC-2 chapter and most frequent individual problems within chapter**

| Problem managed | Number | Per cent total problems[(a)] (*n*=149,088) | Rate per 100 encounters[(b)] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| **Neurological** | **3,665** | **2.5** | **3.6** | **3.4** | **3.8** |
| Migraine | 713 | 0.5 | 0.7 | 0.6 | 0.8 |
| **Urology** | **3,127** | **2.1** | **3.1** | **2.9** | **3.2** |
| Urinary tract infection* | 1,788 | 1.2 | 1.8 | 1.6 | 1.9 |
| **Eye** | **2,818** | **1.9** | **2.8** | **2.6** | **2.9** |
| Infectious conjunctivitis | 829 | 0.6 | 0.8 | 0.7 | 0.9 |
| **Male genital system** | **1,910** | **1.3** | **1.9** | **1.7** | **2.0** |
| **Blood** | **1,509** | **1.0** | **1.5** | **1.4** | **1.6** |
| **Social** | **638** | **0.4** | **0.6** | **0.5** | **0.7** |
| **Total problems** | **149,088** | **100.0** | **146.2** | **144.2** | **148.2** |

(a) Figures do not total 100 as more than one problem can be recorded at each encounter.
(b) Only those individual problems accounting for >=0.5% of total problems are included.
* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).
*Note:* LCL—lower confidence limit; UCL—upper confidence limit; NOS—not otherwise specified.

## Problems managed by ICPC-2 component

Problems managed in general practice may also be examined using the components of the ICPC-2 classification to provide a more thorough understanding of the types of problems managed during general practice encounters. Table 2.19 lists the distribution of problems managed by ICPC-2 component.

In the BEACH program, participating GPs are instructed to record the problem being managed at the encounter at the highest diagnostic level possible using the currently available evidence. As such, almost two-thirds of problems were expressed as diagnoses or diseases, with the majority of other problems described as symptoms or complaints (20.8%), or as diagnostic or preventive procedures such as check-ups (9.4%). However, in some situations, rather than providing clinical details about the problem under management, a 'process' was recorded. That is, the problem was described in terms of a test result, an administrative procedure, or as a prescription.

**Table 2.19: Distribution of problems managed, by ICPC-2 component**

| ICPC-2 component | Number | Per cent of total problems (*n*=149,088) | Rate per 100 encounters[(a)] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Diagnosis, diseases | 97,359 | 65.3 | 95.5 | 93.6 | 97.3 |
| Symptoms & complaints | 31,034 | 20.8 | 30.4 | 29.6 | 31.2 |
| Diagnostic & preventive procedures | 14,000 | 9.4 | 13.7 | 13.1 | 14.4 |
| Medications, treatments & therapeutics | 3,299 | 2.2 | 3.2 | 3.0 | 3.5 |
| Results | 1,462 | 1.0 | 1.4 | 1.3 | 1.6 |
| Referral & other RFE | 1,249 | 0.8 | 1.2 | 1.1 | 1.4 |
| Administrative | 684 | 0.5 | 0.7 | 0.6 | 0.8 |
| **Total problems** | **149,088** | **100.0** | **146.2** | **144.2** | **148.2** |

(a) Figures do not total 100 as more than one problem can be managed at each encounter.
*Note:* LCL—lower confidence limit; UCL—upper confidence limit, RFE—reason for encounter.

## Most frequently managed problems

Overall, there were 146.2 problems managed per 100 encounters. Table 2.20 shows the most frequently managed individual problems in general practice, in decreasing order of frequency. These 30 problems accounted for almost half of all problems managed.

In this analysis, the specific chapter to which 'across chapter concepts' (check-ups, immunisation/vaccination, and prescriptions) apply is ignored and the concept is grouped with all similar concepts. For example, immunisation/vaccination includes influenza vaccinations, along with immunisations for childhood diseases, and vaccinations for hepatitis.

The far right-hand column in Table 2.20 lists the percentage of each problem that was new to the patient, indicating the first presentation of a problem to a medical practitioner. This can provide a measure of general practice incidence. For example, only 6.1% of all contacts with diabetes were new problems to the patient. In contrast, more than three-quarters of upper respiratory tract infection (URTI) problems were new to the patient.

**Table 2.20: Most frequently managed problems**

| Problem managed | Number | Per cent of total problems (*n*=149,088) | Rate per 100 encounters[(a)] (*n*=101,993) | 95% LCL | 95% UCL | Per cent new problems[(b)] |
|---|---|---|---|---|---|---|
| Hypertension* | 9,635 | 6.5 | 9.4 | 8.9 | 10.0 | 6.1 |
| Upper respiratory tract infection | 6,332 | 4.2 | 6.2 | 5.8 | 6.6 | 77.9 |
| Immunisation/vaccination—all* | 5,115 | 3.4 | 5.0 | 4.6 | 5.4 | 54.7 |
| Depression* | 3,688 | 2.5 | 3.6 | 3.4 | 3.8 | 16.6 |
| Diabetes* | 3,618 | 2.4 | 3.5 | 3.3 | 3.8 | 6.1 |
| Lipid disorders* | 3,479 | 2.3 | 3.4 | 3.1 | 3.7 | 11.2 |
| Osteoarthritis* | 2,737 | 1.8 | 2.7 | 2.5 | 2.9 | 17.3 |
| Back complaint* | 2,698 | 1.8 | 2.6 | 2.5 | 2.8 | 25.2 |
| Acute bronchitis/bronchiolitis | 2,590 | 1.7 | 2.5 | 2.3 | 2.7 | 74.3 |
| Oesophageal disease | 2,397 | 1.6 | 2.4 | 2.2 | 2.5 | 19.0 |
| Asthma | 2,319 | 1.6 | 2.3 | 2.1 | 2.4 | 18.3 |
| General check-up* | 2,106 | 1.4 | 2.1 | 1.9 | 2.2 | 46.2 |
| Prescription all* | 2,035 | 1.4 | 2.0 | 1.7 | 2.2 | 5.9 |
| Contact dermatitis | 1,840 | 1.2 | 1.8 | 1.7 | 1.9 | 47.3 |
| Anxiety* | 1,837 | 1.2 | 1.8 | 1.6 | 2.0 | 21.0 |
| Female genital check-up* | 1,829 | 1.2 | 1.8 | 1.6 | 2.0 | 41.7 |
| Urinary tract infection* | 1,788 | 1.2 | 1.8 | 1.6 | 1.9 | 67.5 |
| Sprain/strain* | 1,787 | 1.2 | 1.8 | 1.6 | 1.9 | 61.4 |
| Sleep disturbance | 1,621 | 1.1 | 1.6 | 1.5 | 1.7 | 16.6 |
| Test results* | 1,462 | 1.0 | 1.4 | 1.3 | 1.6 | 29.4 |
| Ischaemic heart disease* | 1,320 | 0.9 | 1.3 | 1.2 | 1.4 | 13.5 |
| Sinusitis acute/chronic | 1,308 | 0.9 | 1.3 | 1.2 | 1.4 | 70.8 |
| Solar keratosis/sunburn | 1,236 | 0.8 | 1.2 | 1.1 | 1.3 | 47.7 |
| Viral disease, other/NOS | 1,221 | 0.8 | 1.2 | 1.0 | 1.4 | 75.6 |

*(continued)*

**Table 2.20 (continued): Most frequently managed problems**

| Problem managed | Number | Per cent of total problems (*n*=149,088) | Rate per 100 encounters[(a)] (*n*=101,993) | 95% LCL | 95% UCL | Per cent new problems[(b)] |
|---|---|---|---|---|---|---|
| Oral contraception* | 1,219 | 0.8 | 1.2 | 1.1 | 1.3 | 18.7 |
| Acute otitis media/myringitis | 1,180 | 0.8 | 1.2 | 1.0 | 1.3 | 74.0 |
| Cardiac check-up* | 1,174 | 0.8 | 1.2 | 1.0 | 1.3 | 10.7 |
| Gastroenteritis, presumed infection | 1,109 | 0.7 | 1.1 | 1.0 | 1.2 | 80.5 |
| Tonsillitis* | 1,108 | 0.7 | 1.1 | 1.0 | 1.2 | 76.9 |
| Fracture* | 1,039 | 0.7 | 1.0 | 0.9 | 1.1 | 52.5 |
| *Subtotal* | *72,827* | *48.8* | — | — | — | — |
| **Total problems** | **149,088** | **100.0** | **146.2** | **144.2** | **148.2** | **38.9** |

(a) Figures do not total 100 as more than one problem can be recorded at each encounter. Also, only more frequently managed problems are included.

(b) The proportion of problems of this type that were new problems (the first presentation of a problem, including the first presentation of a recurrence of a previously resolved problem, but excluding the presentation of a problem first assessed by another provider).

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note:* UCL—upper confidence limit; LCL—lower confidence limit; NOS—not otherwise specified.

## Most common new problems

For each problem managed, participating GPs are asked to indicate whether the problem under management is a new problem for the patient, or a problem that has been managed previously by any medical practitioner. Table 2.21 lists the most common new problems managed in general practice in 2005–06, in decreasing order of frequency. Overall, in 2005–06, 58,002 problems were specified as being 'new', being managed at a rate of 56.9 per 100 encounters.

The far right-hand column of this table shows the proportion of total contacts with this problem that were reported as being new problems to the patient. For example, the 614 new cases of depression represented only 17% of all GP contacts with diagnosed depression. In contrast, almost three-quarters of the acute otitis media cases were first consultations to medical practitioners for this episode of acute otitis media. The balance (26%) would have been follow-up consultations for this episode of this problem.

## Most frequently managed chronic problems

Table 2.22 shows the most frequently managed chronic problems in Australian general practice in decreasing order of frequency. To identify chronic conditions, a chronic condition list classified according to ICPC-2 was applied to the BEACH data set.[29] Nearly 35% of the problems managed in general practice were chronic in nature in 2005–06. At least one chronic problem was managed at 39.0% of encounters (95% CI: 38.0–40.1), and chronic problems were managed at an average of 50.9 per 100 encounters.

In other parts of this chapter, both chronic and non-chronic conditions (e.g. hypertension and gestational hypertension) may be found in the groups reported (e.g. hypertension, Table 2.20). In this section, only problems regarded as 'chronic' have been included in the analysis. For this reason, the condition labels and figures in this analysis may differ from those in Table 2.20. Where the group used for the chronic analysis differs from that used in other analyses in this report, they are marked with a double asterisk. Codes included in the group may be found in Appendix 6, <www.aihw.gov.au/publications/index.cfm/subject/19>.

## Table 2.21: Most frequently managed new problems

| New problem managed | Number | Per cent of total new problems (*n*=58,002) | Rate per 100 encounters[a] (*n*=101,993) | 95% LCL | 95% UCL | Per cent of this problem[b] |
|---|---|---|---|---|---|---|
| Upper respiratory tract infection | 4,933 | 8.5 | 4.8 | 4.4 | 5.2 | 77.9 |
| Immunisation/vaccination—all* | 2,797 | 4.8 | 2.7 | 2.5 | 3.0 | 54.7 |
| Acute bronchitis/bronchiolitis | 1,925 | 3.3 | 1.9 | 1.7 | 2.1 | 74.3 |
| Urinary tract infection* | 1,206 | 2.1 | 1.2 | 1.1 | 1.3 | 67.5 |
| Sprain/strain* | 1,096 | 1.9 | 1.1 | 1.0 | 1.2 | 61.4 |
| General check-up* | 973 | 1.7 | 1.0 | 0.8 | 1.1 | 46.2 |
| Sinusitis acute/chronic | 926 | 1.6 | 0.9 | 0.8 | 1.0 | 70.8 |
| Viral disease, other/NOS | 923 | 1.6 | 0.9 | 0.8 | 1.0 | 75.6 |
| Gastroenteritis, presumed infection | 893 | 1.5 | 0.9 | 0.8 | 1.0 | 80.5 |
| Acute otitis media/myringitis | 873 | 1.5 | 0.9 | 0.8 | 1.0 | 74.0 |
| Contact dermatitis | 870 | 1.5 | 0.9 | 0.8 | 0.9 | 47.3 |
| Tonsillitis* | 852 | 1.5 | 0.8 | 0.7 | 1.0 | 76.9 |
| Female genital check-up* | 763 | 1.3 | 0.7 | 0.6 | 0.9 | 41.7 |
| Back complaint* | 679 | 1.2 | 0.7 | 0.6 | 0.7 | 25.2 |
| Infectious conjunctivitis | 646 | 1.1 | 0.6 | 0.6 | 0.7 | 77.9 |
| Depression* | 614 | 1.1 | 0.6 | 0.5 | 0.7 | 16.6 |
| Solar keratosis/sunburn | 589 | 1.0 | 0.6 | 0.5 | 0.7 | 47.7 |
| Hypertension* | 588 | 1.0 | 0.6 | 0.5 | 0.6 | 6.1 |
| Malignant neoplasm skin | 581 | 1.0 | 0.6 | 0.5 | 0.6 | 56.1 |
| Fracture* | 546 | 0.9 | 0.5 | 0.5 | 0.6 | 52.5 |
| Excessive ear wax | 509 | 0.9 | 0.5 | 0.4 | 0.6 | 62.5 |
| Otitis externa | 497 | 0.9 | 0.5 | 0.4 | 0.5 | 71.8 |
| Osteoarthritis* | 474 | 0.8 | 0.5 | 0.4 | 0.5 | 17.3 |
| Bursitis/tendonitis/synovitis NOS | 459 | 0.8 | 0.4 | 0.4 | 0.5 | 58.9 |
| Oesophageal disease | 456 | 0.8 | 0.4 | 0.4 | 0.5 | 19.0 |
| Skin injury, other | 445 | 0.8 | 0.4 | 0.4 | 0.5 | 62.6 |
| Skin disease, other | 441 | 0.8 | 0.4 | 0.4 | 0.5 | 53.5 |
| Dermatophytosis | 437 | 0.8 | 0.4 | 0.4 | 0.5 | 63.1 |
| Pregnancy* | 432 | 0.7 | 0.4 | 0.4 | 0.5 | 48.3 |
| Test results* | 430 | 0.7 | 0.4 | 0.3 | 0.5 | 29.4 |
| *Subtotal* | *27,853* | *48.0* | — | — | — | — |
| **Total new problems** | **58,002** | **100.0** | **56.9** | **55.5** | **58.2** | **—** |

(a) Figures do not total 100 as more than one new problem can be recorded at each encounter. Also, only the most frequently managed new problems are included.

(b) The proportion of total contacts with this problem that were accounted for by new problems.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note:* LCL—lower confidence limit; UCL—upper confidence limit; NOS—not otherwise specified.

## Table 2.22: Most frequently managed chronic problems

| Chronic problem managed | Number | Per cent of total chronic problems (*n*=51,946) | Rate per 100 encounters[(a)] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Hypertension (non-gestational)** | 9,629 | 18.5 | 9.4 | 8.9 | 10.0 |
| Depressive disorder | 3,662 | 7.1 | 3.6 | 3.4 | 3.8 |
| Diabetes (non-gestational)** | 3,603 | 6.9 | 3.5 | 3.3 | 3.8 |
| Lipid disorders* | 3,479 | 6.7 | 3.4 | 3.1 | 3.7 |
| Osteoarthritis* | 2,737 | 5.3 | 2.7 | 2.5 | 2.9 |
| Oesophageal disease | 2,397 | 4.6 | 2.4 | 2.2 | 2.5 |
| Asthma | 2,319 | 4.5 | 2.3 | 2.1 | 2.4 |
| Ischaemic heart disease* | 1,320 | 2.5 | 1.3 | 1.2 | 1.4 |
| Malignant neoplasm skin | 1,035 | 2.0 | 1.0 | 0.9 | 1.1 |
| Back complaint* | 965 | 1.9 | 0.9 | 0.8 | 1.0 |
| Osteoporosis | 955 | 1.8 | 0.9 | 0.8 | 1.0 |
| Atrial fibrillation/flutter | 953 | 1.8 | 0.9 | 0.8 | 1.0 |
| Chronic obstructive pulmonary disease | 742 | 1.4 | 0.7 | 0.6 | 0.8 |
| Migraine | 713 | 1.4 | 0.7 | 0.6 | 0.8 |
| Hypothyroidism/myxoedema | 670 | 1.3 | 0.7 | 0.6 | 0.7 |
| Heart failure | 645 | 1.2 | 0.6 | 0.6 | 0.7 |
| Obesity (BMI >30) | 582 | 1.1 | 0.6 | 0.5 | 0.6 |
| Gout | 581 | 1.1 | 0.6 | 0.5 | 0.6 |
| Arthritis** | 574 | 1.1 | 0.6 | 0.5 | 0.6 |
| Dementia | 535 | 1.0 | 0.5 | 0.4 | 0.6 |
| Rheumatoid arthritis | 522 | 1.0 | 0.5 | 0.5 | 0.6 |
| Shoulder syndrome | 497 | 1.0 | 0.5 | 0.4 | 0.6 |
| Schizophrenia | 482 | 0.9 | 0.5 | 0.4 | 0.5 |
| Anaemia (chronic)** | 466 | 0.9 | 0.5 | 0.4 | 0.5 |
| Anxiety disorder | 442 | 0.9 | 0.4 | 0.4 | 0.5 |
| Acne (chronic)** | 418 | 0.8 | 0.4 | 0.4 | 0.5 |
| Vertiginous syndromes | 349 | 0.7 | 0.3 | 0.3 | 0.4 |
| Neck syndrome | 341 | 0.7 | 0.3 | 0.3 | 0.4 |
| Epilepsy | 332 | 0.6 | 0.3 | 0.3 | 0.4 |
| Malignant neoplasm prostate | 320 | 0.6 | 0.3 | 0.3 | 0.4 |
| *Subtotal* | *42,264* | *81.4* | — | — | — |
| **Total chronic problems** | **51,946** | **100.0** | **50.9** | **49.1** | **52.8** |

(a) Figures do not total 100 as more than one chronic problem can be recorded at each encounter. Also, only the most frequently managed chronic problems are included.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).

** Indicates that this group differs from that used for analysis in other sections of this chapter, as only chronic conditions have been included in this analysis (see Appendix 6 <www.aihw.gov.au/publications/index.cfm/subject/19> for codes included in analysis of chronic conditions).

*Note:* LCL—lower confidence limit; UCL—upper confidence limit; BMI—body mass index.

# 2.6 Overview of management

The BEACH survey form allowed GPs to record several aspects of patient management for each problem managed at each encounter. Pharmaceutical management was recorded in detail. Other modes of treatment, including clinical treatments (e.g. counselling) and procedures recorded briefly in the GP's own words, were also related to a single problem. Provision was made on the form for referrals and hospital admissions, and for pathology and imaging orders to be related to multiple problems.

GPs undertook 212,614 management activities in total. Of these:

- the most common management form was medication, either prescribed, GP-supplied, or advised for over-the-counter purchase
- other treatments were the second most common management activity, with clinical treatments occurring more frequently than procedural treatments (Table 2.23).

**Table 2.23: Summary of management**

| Management type | Number | Rate per 100 encounters (*n*=101,993) | 95% LCL | 95% UCL | Rate per 100 problems (*n*=149,088) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|---|
| Medications | 106,493 | 104.4 | 101.8 | 107.0 | 71.4 | 69.9 | 72.9 |
| Prescribed | 87,544 | 85.8 | 83.3 | 88.4 | 58.7 | 57.2 | 60.3 |
| GP-supplied | 8,999 | 8.8 | 8.2 | 9.5 | 6.0 | 5.6 | 6.5 |
| Advised OTC | 9,950 | 9.8 | 9.0 | 10.5 | 6.7 | 6.2 | 7.2 |
| Other treatments | 44,504 | 43.6 | 41.5 | 45.8 | 29.9 | 28.5 | 31.2 |
| Clinical | 29,785 | 29.2 | 27.3 | 31.1 | 20.0 | 18.8 | 21.2 |
| Procedural | 14,719 | 14.4 | 13.7 | 15.1 | 9.9 | 9.4 | 10.3 |
| Referrals | 12,233 | 12.0 | 11.5 | 12.5 | 8.2 | 7.9 | 8.5 |
| Specialist | 8,342 | 8.2 | 7.8 | 8.5 | 5.6 | 5.4 | 5.8 |
| Allied health | 2,932 | 2.9 | 2.7 | 3.1 | 2.0 | 1.8 | 2.1 |
| Hospital | 373 | 0.4 | 0.3 | 0.4 | 0.3 | 0.2 | 0.3 |
| Emergency dept | 192 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 |
| Other medical services | 60 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 |
| Other referral | 334 | 0.3 | 0.3 | 0.4 | 0.2 | 0.2 | 0.3 |
| Pathology | 39,358 | 38.6 | 36.9 | 40.3 | 26.4 | 25.3 | 27.5 |
| Imaging | 9,003 | 8.8 | 8.4 | 9.2 | 6.0 | 5.8 | 6.3 |
| Other investigations | 1,023 | 1.0 | 0.9 | 1.1 | 0.0 | 0.0 | 0.0 |
| **Total management activities** | **212,614** | **208.5** | — | — | **142.6** | — | — |

*Note:* LCL—lower confidence limit; UCL—upper confidence limit; OTC—over-the-counter.

Another perspective emerges in analysis of the number of encounters or problems for which at least one form of management was recorded by the GP (Table 2.24). At least one management action was recorded at 91.2% of encounters and for 86.2% of problems managed.

- At least one medication or other treatment was given for three-quarters of the problems managed.

- At least one medication (most commonly prescribed) was prescribed, supplied or advised for over half the problems managed.
- At least one other treatment (most commonly clinical) was provided for one-quarter of problems managed.
- At least one referral (most commonly to a specialist) was made for 8% of problems managed.
- At least one investigation (most commonly pathology) was requested for 18% of problems managed.

**Table 2.24: Encounters and problems for which management was recorded**

| Management type | Number of encounters | Per cent of total encs[(a)] (*n*=101,993) | Number of problems | Per cent of total probs[(a)] (*n*=149,088) |
|---|---|---|---|---|
| **At least one management type** | **93,034** | **91.2** | **128,574** | **86.2** |
| **At least one medication or other treatment** | **82,989** | **81.4** | **109,650** | **73.5** |
| **At least one medication** | **66,541** | **65.2** | **84,161** | **56.5** |
| At least one prescription | 56,664 | 55.6 | 71,073 | 47.7 |
| At least one GP-supplied | 6,566 | 6.4 | 6,772 | 4.5 |
| At least one OTC advised | 8,792 | 8.6 | 9,002 | 6.0 |
| **At least one other treatment** | **35,822** | **35.1** | **40,133** | **26.9** |
| At least one clinical treatment | 24,514 | 24.0 | 27,210 | 18.3 |
| At least one procedural treatment | 13,444 | 13.2 | 13,833 | 9.3 |
| **At least one referral** | **11,543** | **11.3** | **12,225** | **8.2** |
| At least one referral to a specialist | 8,029 | 7.9 | 8,414 | 5.6 |
| At least one referral to allied health | 2,809 | 2.8 | 2,943 | 2.0 |
| At least one referral to hospital | 373 | 0.4 | 393 | 0.3 |
| At least one referral to emergency department | 192 | 0.2 | 196 | 0.1 |
| At least one referral to other medical services | 60 | 0.1 | 65 | 0.0 |
| At least one referral NOS | 333 | 0.3 | 343 | 0.2 |
| **At least one investigation** | **23,060** | **22.6** | **26,241** | **17.6** |
| At least one pathology order | 16,693 | 16.4 | 18,938 | 12.7 |
| At least one imaging order | 7,928 | 7.8 | 8,192 | 5.5 |
| At least one other investigation | 986 | 1.0 | 994 | 0.7 |

(a) Figures will not total 100 as multiple events may occur in one encounter or in the management of one problem at encounter.

*Note:* Encs—encounters; probs—problems; OTC—over-the-counter; NOS—not otherwise specified.

The combinations of management types related to each problem were then investigated. The majority of treatments occurred either as a single component or in combination with one other component. Management was provided:

- as a single component for almost two-thirds of the problems managed
- as a double component for just over 16% of problems managed
- rarely with more than two components.

Table 2.25 lists the most common management combinations. Medication alone was the most common management, followed by the combination of a medication and a clinical treatment.

**Table 2.25: Most common management combinations**

| 1+ medication | 1+ clinical treatment | 1+ procedural treatment | 1+ referral | 1+ imaging order | 1+ pathology order | Per cent of total encs (*n*=101,993) | Per cent of total probs (*n*=149,088) |
|---|---|---|---|---|---|---|---|
| **No recorded management** | | | | | | **8.8** | **13.8** |
| **1+ management recorded** | | | | | | **91.2** | **86.2** |
| ✓ | | | | | | 35.0 | 40.2 |
| ✓ | ✓ | | | | | 9.1 | 5.5 |
| | ✓ | | | | | 6.8 | 8.9 |
| ✓ | | | | | ✓ | 4.7 | 3.2 |
| ✓ | | ✓ | | | | 3.9 | 2.4 |
| | | ✓ | | | | 3.9 | 4.3 |
| | | | ✓ | | | 3.3 | 4.2 |
| | | | | | ✓ | 3.2 | 4.9 |
| ✓ | | | ✓ | | | 2.9 | 1.4 |
| ✓ | | | | ✓ | | 1.9 | 1.1 |
| | | | | ✓ | | 1.7 | 2.0 |
| ✓ | ✓ | | | | ✓ | 1.4 | 0.5 |
| | ✓ | | | | ✓ | 1.1 | 1.0 |
| | | ✓ | | | ✓ | 1.0 | 1.0 |
| | ✓ | | ✓ | | | 0.9 | 0.7 |
| ✓ | ✓ | | ✓ | | | 0.9 | 0.3 |
| ✓ | ✓ | ✓ | | | | 0.8 | 0.2 |

*Note:* 1+—at least one specified management type; encs—encounters; probs—problems.

# 2.7 Medications

- GPs could record up to four medications for each of four problems—a maximum of 16 medications per encounter.
- Each medication could be recorded as prescribed (the default), supplied by the GP or recommended for over-the-counter (OTC) purchase.
- GPs were asked to:
  - enter the generic or brand name, the strength, regimen and number of repeats ordered for each medication
  - to designate this as a new or continued medication for that patient for this problem.
- Generic or brand names were entered into the database in the form recorded by the GP.
- Medications were coded using the Coding Atlas of Pharmaceutical Substances (CAPS) system (developed by the Family Medicine Research Centre) from which they were classified to the international Anatomical Therapeutic Chemical (ATC) classification (see Chapter 5).[30]
- Results are reported in this chapter at drug group and generic level using ATC levels 3 and 5.

## Source of medications

A total of 106,493 medications were recorded at rates of 104 per 100 encounters and 71 per 100 problems managed (Table 2.23).

- Four out of five medications (82.2% of all medications) were prescribed.
- Less than one in ten (8.5%) medications were supplied to the patient by the GP.
- About one in ten medications (9.3%) were recommended by the GP for OTC purchase.

If we extrapolate to the 93 million A1 and A2 Medicare-claimed encounters in Australia in 2005, GPs in Australia:

- prescribed over 79 million medications (not counting repeats)
- supplied over eight million medications directly to the patient
- recommended over nine million medications for OTC purchase.

## Prescribed medications

There were 87,544 prescriptions recorded, at rates of 86 per 100 encounters and 59 per 100 problems managed. On a per problem basis:

- no prescription was given for half (52.3%) of all problems managed
- one prescription was given for almost 40% of problems managed
- two prescriptions were given for 7% of problems managed
- three or more prescriptions were rarely given (2% of problems managed) (Figure 2.3).

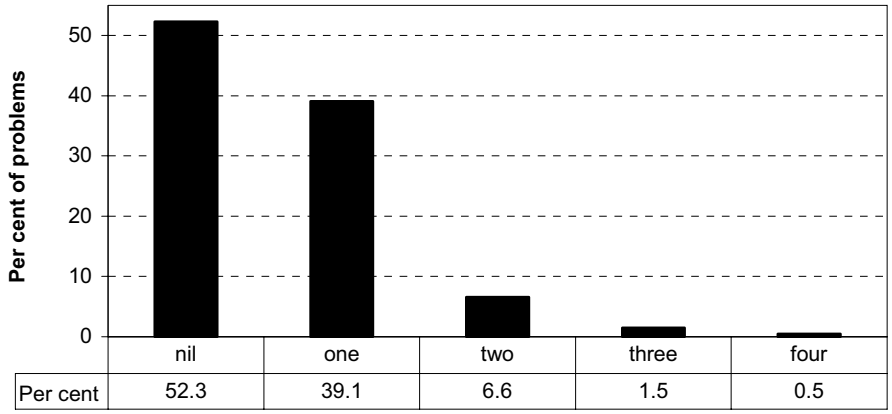



**Figure 2.3: Number of medications prescribed per problem**

### Number of repeats

For the 65,124 prescriptions for which the GPs recorded 'number of repeats', the distribution of the specified number of repeats (from nil to more than five) is provided in Figure 2.4. For 36.0% of these prescriptions, the GP specified that no repeats had been prescribed and for 31.7%, five repeats were ordered. The latter proportion reflects the Pharmaceutical Benefits Scheme (PBS) provision of one month's supply and five repeats for many medications used for chronic conditions such as hypertension. The ordering of one or two repeats (17.6% and 10.2%) was also common.

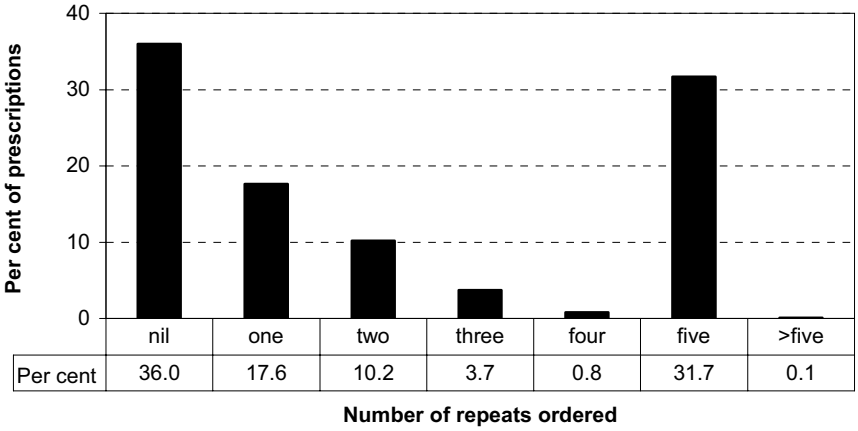



**Figure 2.4: Number of repeats ordered per prescription**

## Age–sex-specific rates of prescribed medications

Age–sex-specific analysis found similar prescription rates per 100 encounters for males and females (results not shown). It also showed the well-described tendency for the number of prescriptions written at each encounter to rise with advancing age of the patient, with a rate of about 60 per 100 encounters with patients aged less than 25 years rising to over 100 per 100 encounters for patients aged 65 years or more (results not shown).

Figure 2.5, however, demonstrates that the age-based increase lessens if the prescription rate is related to problems. This suggests that the increased prescription rate in older patients is largely accounted for by the increased number of health problems they have managed at an encounter.

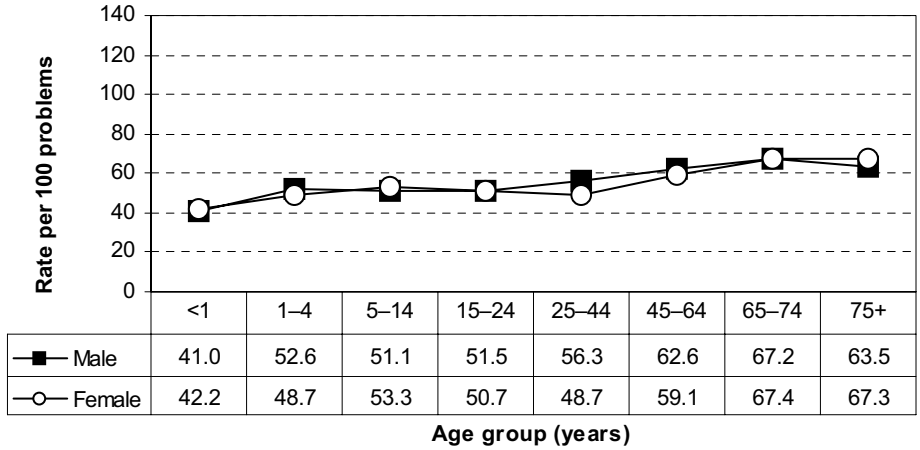



**Figure 2.5: Age–sex-specific prescription rates per 100 problems managed**

## Types of medications prescribed

Table 2.26 shows the distribution of prescribed medications using the WHO ATC classification.[30] This allows comparison with other data sources such as those produced by Medicare Australia for PBS data. The table lists medications in frequency order within ATC Levels 1, 3 and 5. Prescriptions are presented as a percentage of total prescriptions and as a rate per 100 encounters with 95% confidence intervals.

**Table 2.26: Distribution of prescribed medications, by ATC Levels 1, 3 and 5**

| ATC Level 1 | ATC Level 3 | ATC Level 5 | Number | Per cent of scripts (*n*=87,544) | Rate per 100 encs[a] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|---|
| **Nervous system** | | | **18,999** | **21.7** | **18.6** | **17.8** | **19.5** |
| | Other analgesics and anti-pyretics | | 5,157 | 6.6 | 5.5 | 5.1 | 5.8 |
| | | Paracetamol | 3,073 | 3.5 | 3.0 | 2.7 | 3.3 |
| | Paracetamol, combinations excl. psycholeptics | | 2,135 | 2.4 | 2.1 | 1.9 | 2.3 |
| | | Acetylsalicylic acid | 756 | 0.9 | 0.7 | 0.7 | 0.8 |
| | Anti-depressants | | 3,272 | 3.7 | 3.2 | 3.0 | 3.4 |
| | | Sertraline | 671 | 0.8 | 0.7 | 0.6 | 0.7 |
| | Opioids | | 2,862 | 3.3 | 2.8 | 2.5 | 3.1 |
| | | Tramadol | 966 | 1.1 | 0.9 | 0.9 | 1.0 |
| | | Oxycodone | 771 | 0.9 | 0.8 | 0.7 | 0.9 |
| | | Morphine | 440 | 0.6 | 0.5 | 0.2 | 0.8 |
| | Anxiolytics | | 2,112 | 2.4 | 2.1 | 1.9 | 2.3 |
| | | Diazepam | 1,125 | 1.3 | 1.1 | 1.0 | 1.2 |
| | | Oxazepam | 725 | 0.8 | 0.7 | 0.6 | 0.8 |
| | Hypnotics and sedatives | | 1,800 | 2.1 | 1.8 | 1.6 | 1.9 |
| | | Temazepam | 1,111 | 1.3 | 1.1 | 1.0 | 1.2 |
| | Anti-psychotics | | 1,146 | 1.3 | 1.1 | 1.0 | 1.2 |
| | | Prochlorperazine | 578 | 0.7 | 0.6 | 0.5 | 0.6 |
| | Anti-epileptics | | 640 | 0.7 | 0.6 | 0.6 | 0.7 |
| | Drugs used in addictive disorders | | 545 | 0.6 | 0.5 | 0.4 | 0.7 |
| **Anti-infectives for systemic use** | | | **17,848** | **20.4** | **17.5** | **16.9** | **18.1** |
| | Beta-lactam antibacterials, penicillins | | 6,421 | 7.3 | 6.3 | 6.0 | 6.6 |
| | | Amoxicillin | 3,640 | 4.2 | 3.6 | 3.3 | 3.8 |
| | | Amoxicillin and enzyme inhibitor | 1,679 | 1.9 | 1.7 | 1.5 | 1.8 |
| | Other beta-lactam antibacterials | | 3,454 | 4.0 | 3.4 | 3.1 | 3.6 |
| | | Cefalexin | 2,573 | 2.9 | 2.5 | 2.3 | 2.7 |
| | | Cefaclor | 817 | 0.9 | 0.8 | 0.6 | 1.0 |
| | Macrolides, lincosamides and streptogramins | | 2,582 | 3.0 | 2.5 | 2.3 | 2.8 |
| | | Roxithromycin | 1,499 | 1.7 | 1.5 | 1.3 | 1.7 |
| | | Erythromycin | 519 | 0.6 | 0.5 | 0.4 | 0.6 |
| | Viral vaccines | | 1,616 | 1.9 | 1.6 | 1.3 | 1.8 |
| | | Influenza, inactivated, whole virus | 1,091 | 1.3 | 1.1 | 0.8 | 1.3 |
| | Tetracyclines | | 968 | 1.1 | 1.0 | 0.9 | 1.0 |
| | | Doxycycline | 783 | 0.9 | 0.8 | 0.7 | 0.9 |
| | Bacterial vaccines | | 749 | 0.9 | 0.7 | 0.6 | 0.8 |
| | Sulfonamides and trimethoprim | | 683 | 0.8 | 0.7 | 0.6 | 0.7 |
| | | Trimethoprim | 414 | 0.5 | 0.4 | 0.2 | 0.6 |
| | Other antibacterials | | 483 | 0.6 | 0.5 | 0.4 | 0.5 |

*(continued)*

**Table 2.26 (continued): Distribution of prescribed medications, by ATC Levels 1, 3 and 5**

| ATC Level 1 | ATC Level 3 | ATC Level 5 | Number | Per cent of scripts (*n*=87,544) | Rate per 100 encs[(a)] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|---|
| **Cardiovascular system** | | | **16,592** | **19.0** | **16.3** | **15.2** | **17.3** |
| | Lipid modifying agents, plain | | 3,376 | 3.9 | 3.3 | 3.0 | 3.6 |
| | | Atorvastatin | 1,631 | 1.9 | 1.6 | 1.4 | 1.8 |
| | | Simvastatin | 1,182 | 1.4 | 1.2 | 1.0 | 1.3 |
| | ACE inhibitors, plain | | 2,679 | 3.1 | 2.6 | 2.4 | 2.8 |
| | | Perindopril | 996 | 1.1 | 1.0 | 0.9 | 1.1 |
| | | Ramipril | 811 | 0.9 | 0.8 | 0.7 | 0.9 |
| | Beta blocking agents | | 1,954 | 2.2 | 1.9 | 1.8 | 2.1 |
| | | Atenolol | 976 | 1.1 | 1.0 | 0.9 | 1.1 |
| | | Metoprolol | 522 | 0.6 | 0.5 | 0.4 | 0.6 |
| | Angiotensin II antagonists, plain | | 1,924 | 2.2 | 1.9 | 1.7 | 2.0 |
| | | Irbesartan | 1,090 | 1.3 | 1.1 | 1.0 | 1.2 |
| | Selective calcium channel blockers with mainly vascular effects | | 1,637 | 1.9 | 1.6 | 1.4 | 1.8 |
| | | Amlodipine | 742 | 0.9 | 0.7 | 0.6 | 0.8 |
| | Angiotensin II antagonists, combinations | | 1,072 | 1.2 | 1.1 | 0.9 | 1.2 |
| | | Irbesartan and diuretics | 719 | 0.8 | 0.7 | 0.6 | 0.8 |
| | High-ceiling diuretics | | 653 | 0.8 | 0.6 | 0.6 | 0.7 |
| | | Furosemide | 647 | 0.7 | 0.6 | 0.6 | 0.7 |
| | Selective calcium channel blockers with direct cardiac effects | | 582 | 0.7 | 0.6 | 0.5 | 0.7 |
| | ACE inhibitors, combinations | | 581 | 0.7 | 0.6 | 0.5 | 0.6 |
| | Vasodilators used in cardiac diseases | | 578 | 0.7 | 0.6 | 0.5 | 0.6 |
| | Low-ceiling diuretics, excl. thiazides | | 493 | 0.6 | 0.5 | 0.4 | 0.6 |
| **Alimentary tract and metabolism** | | | **8,271** | **9.5** | **8.1** | **7.6** | **8.6** |
| | Drugs for peptic ulcer and GORD | | 3,051 | 3.5 | 3.0 | 2.8 | 3.2 |
| | | Esomeprazole | 924 | 1.1 | 0.9 | 0.8 | 1.0 |
| | | Omeprazole | 638 | 0.7 | 0.6 | 0.6 | 0.7 |
| | | Pantoprazole | 518 | 0.6 | 0.5 | 0.4 | 0.6 |
| | Oral blood glucose lowering drugs | | 2,137 | 2.4 | 2.1 | 1.8 | 2.3 |
| | | Metformin | 1,187 | 1.4 | 1.2 | 1.0 | 1.3 |
| | | Gliclazide | 564 | 0.6 | 0.6 | 0.5 | 0.6 |
| | Propulsives | | 685 | 0.8 | 0.7 | 0.6 | 0.7 |
| | | Metoclopramide | 572 | 0.7 | 0.6 | 0.5 | 0.6 |
| **Respiratory system** | | | **5,383** | **6.2** | **5.3** | **4.9** | **5.6** |
| | Adrenergics, inhalants | | 2,952 | 3.4 | 2.9 | 2.7 | 3.1 |
| | | Salbutamol | 1,494 | 1.7 | 1.5 | 1.3 | 1.6 |
| | | Salmeterol with other drugs for obstructive airway disease | 890 | 1.0 | 0.9 | 0.8 | 1.0 |

*(continued)*

**Table 2.26 (continued): Distribution of prescribed medications, by ATC Levels 1, 3 and 5**

| ATC Level 1 | ATC Level 3 | ATC Level 5 | Number | Per cent of scripts (*n*=87,544) | Rate per 100 encs[(a)] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|---|
| | Other drugs for obstructive airway disease, inhalants | | 914 | 1.0 | 0.9 | 0.8 | 1.0 |
| | Decongestants and other nasal preparations for topical use | | 648 | 0.7 | 0.6 | 0.5 | 0.7 |
| | Antihistamines for systemic use | | 440 | 0.5 | 0.4 | 0.3 | 0.6 |
| **Musculoskeletal system** | | | **5,285** | **6.0** | **5.2** | **4.9** | **5.5** |
| | Anti-inflammatory and antirheumatic products, non-steroids | | 3,953 | 4.5 | 3.9 | 3.6 | 4.1 |
| | | Diclofenac | 1,157 | 1.3 | 1.1 | 1.0 | 1.3 |
| | | Meloxicam | 917 | 1.1 | 0.9 | 0.8 | 1.0 |
| | | Celecoxib | 524 | 0.6 | 0.5 | 0.5 | 0.6 |
| | Drugs affecting bone structure and mineralisation | | 611 | 0.7 | 0.6 | 0.5 | 0.7 |
| | Anti-gout preparations | | 463 | 0.5 | 0.5 | 0.4 | 0.5 |
| **Dermatologicals** | | | **3,906** | **4.5** | **3.8** | **3.6** | **4.0** |
| | Corticosteroids, plain | | 2,390 | 2.7 | 2.3 | 2.2 | 2.5 |
| | | Betamethasone | 720 | 0.8 | 0.7 | 0.6 | 0.8 |
| | | Mometasone | 686 | 0.8 | 0.7 | 0.6 | 0.7 |
| **Genitourinary system and sex hormones** | | | **3,547** | **4.1** | **3.5** | **3.3** | **3.7** |
| | Hormonal contraceptives for systemic use | | 1,891 | 2.2 | 1.9 | 1.7 | 2.0 |
| | | | 1,003 | 1.2 | 1.0 | 0.9 | 1.1 |
| | Oestrogens | | 596 | 0.7 | 0.6 | 0.5 | 0.6 |
| **Sensory organs** | | | **2,730** | **3.1** | **2.7** | **2.5** | **2.8** |
| | Anti-infectives ophthalmological | | 1,164 | 1.3 | 1.1 | 1.0 | 1.2 |
| | | Chloramphenicol | 1,076 | 1.2 | 1.1 | 1.0 | 1.1 |
| | Corticosteroids with anti-infectives otological | | 636 | 0.7 | 0.6 | 0.6 | 0.7 |
| **Blood and blood-forming organs** | | | **2,042** | **2.3** | **2.0** | **1.8** | **2.2** |
| | Anti-thrombotic agents | | 1,336 | 1.5 | 1.3 | 1.2 | 1.4 |
| | | Warfarin | 936 | 1.1 | 0.9 | 0.8 | 1.0 |
| | Vitamin B12 and folic acid | | 461 | 0.5 | 0.5 | 0.4 | 0.5 |
| **Systemic hormonal preparations, excl. sex hormones and insulins** | | | **2,040** | **2.3** | **2.0** | **1.8** | **2.2** |
| | Corticosteroids for systemic use, plain | | 1,322 | 1.5 | 1.3 | 1.2 | 1.4 |
| | | Prednisolone | 724 | 0.8 | 0.7 | 0.6 | 0.8 |
| | Thyroid preparations | | 656 | 0.8 | 0.6 | 0.6 | 0.7 |
| | | Levothyroxine sodium | 652 | 0.8 | 0.6 | 0.6 | 0.7 |
| **Anti-neoplastic and immunomodulating agents** | | | **417** | **0.5** | **0.4** | **0.4** | **0.5** |
| **Various** | | | **341** | **0.4** | **0.3** | **0.3** | **0.4** |
| **Anti-parasitic products, insecticides and repellents** | | | **141** | **0.2** | **0.1** | **0.1** | **0.2** |

(a) Column will not add to 100 because multiple prescriptions could be written at each encounter and only the most frequent Level 3 and Level 5 drugs are included.

*Note:* Scripts—prescriptions; encs—encounters; LCL—lower confidence limit; UCL—upper confidence limit; excl—excluding; ACE—angiotensin converting enzyme; GORD—gastro-oesophageal reflux disease.

## Most frequently prescribed medications

The most frequently prescribed individual medications are reported at the generic level in Table 2.27. Together, these 30 medications accounted for 44.3% of all prescribed medications.

**Table 2.27: Most frequently prescribed medications (CAPS generic level)**

| Generic medication | Number | Per cent of scripts (*n*=87,544) | Rate per 100 encs[(a)] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Amoxycillin | 3,640 | 4.2 | 3.6 | 3.3 | 3.8 |
| Paracetamol | 3,073 | 3.5 | 3.0 | 2.7 | 3.3 |
| Cephalexin | 2,573 | 2.9 | 2.5 | 2.3 | 2.7 |
| Paracetamol/codeine | 2,032 | 2.3 | 2.0 | 1.8 | 2.2 |
| Amoxycillin/potassium clavulanate | 1,679 | 1.9 | 1.7 | 1.5 | 1.8 |
| Atorvastatin | 1,631 | 1.9 | 1.6 | 1.4 | 1.8 |
| Salbutamol | 1,521 | 1.7 | 1.5 | 1.4 | 1.6 |
| Roxithromycin | 1,498 | 1.7 | 1.5 | 1.3 | 1.7 |
| Metformin | 1,187 | 1.4 | 1.2 | 1.0 | 1.3 |
| Simvastatin | 1,182 | 1.4 | 1.2 | 1.0 | 1.3 |
| Diazepam | 1,125 | 1.3 | 1.1 | 1.0 | 1.2 |
| Temazepam | 1,110 | 1.3 | 1.1 | 1.0 | 1.2 |
| Influenza virus vaccine | 1,091 | 1.3 | 1.1 | 0.9 | 1.3 |
| Irbesartan | 1,090 | 1.3 | 1.1 | 1.0 | 1.2 |
| Chloramphenicol eye | 1,075 | 1.2 | 1.1 | 1.0 | 1.1 |
| Diclofenac sodium systemic | 1,011 | 1.2 | 1.0 | 0.9 | 1.1 |
| Levonorgestrel/ethinyloestradiol | 1,003 | 1.2 | 1.0 | 0.9 | 1.1 |
| Perindopril | 996 | 1.1 | 1.0 | 0.9 | 1.1 |
| Atenolol | 976 | 1.1 | 1.0 | 0.9 | 1.1 |
| Tramadol | 966 | 1.1 | 0.9 | 0.9 | 1.0 |
| Warfarin sodium | 936 | 1.1 | 0.9 | 0.8 | 1.0 |
| Esomeprazole | 924 | 1.1 | 0.9 | 0.8 | 1.0 |
| Meloxicam | 917 | 1.1 | 0.9 | 0.8 | 1.0 |
| Fluticasone/salmeterol | 890 | 1.0 | 0.9 | 0.8 | 1.0 |
| Cefaclor monohydrate | 816 | 0.9 | 0.8 | 0.6 | 1.0 |
| Ramipril | 811 | 0.9 | 0.8 | 0.7 | 0.9 |
| Doxycycline | 783 | 0.9 | 0.8 | 0.7 | 0.9 |
| Oxycodone | 771 | 0.9 | 0.8 | 0.7 | 0.9 |
| Aspirin | 756 | 0.9 | 0.7 | 0.7 | 0.8 |
| Amlodipine | 742 | 0.9 | 0.7 | 0.6 | 0.8 |
| *Subtotal* | *38,807* | *44.3* | — | — | — |
| **Total prescribed medications** | **87,544** | **100.0** | **85.8** | **83.3** | **88.4** |

(a) Column will not add to 100 because multiple prescriptions could be written at each encounter and only the most frequently prescribed medications are included in this table.

*Note:* Scripts—prescriptions; encs—encounters; LCL—lower confidence limit; UCL—upper confidence limit.

## Medications supplied by GPs

GPs supplied their patients with a total of 8,999 medications in this study, at a rate of 8.8 medications per 100 encounters. At least one medication was supplied at 6.4% of encounters for 4.5% of problems. Vaccines constituted 58.4% of GP-supplied medications by group, and central nervous system medications accounted for 7.3% of medications (results not presented). Table 2.28 shows the wide range of the most commonly supplied medications.

**Table 2.28: Medications most frequently supplied by GPs**

| Generic medication | Number | Per cent of GP-supplied (*n*=8,999) | Rate per 100 encounters[(a)] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Influenza virus vaccine | 1,582 | 17.6 | 1.6 | 1.3 | 1.8 |
| Pneumococcal vaccine | 893 | 9.9 | 0.9 | 0.8 | 1.0 |
| Polio vaccine oral sabin/injection | 456 | 5.1 | 0.5 | 0.4 | 0.5 |
| Diphtheria/pertussis/tetanus/hepatitis B vaccine | 310 | 3.5 | 0.3 | 0.2 | 0.4 |
| Mumps/measles/rubella vaccine | 307 | 3.4 | 0.3 | 0.3 | 0.4 |
| Haemophilus B vaccine | 306 | 3.4 | 0.3 | 0.2 | 0.4 |
| ADT/CDT (diphtheria/tetanus) vaccine | 243 | 2.7 | 0.2 | 0.2 | 0.3 |
| Vitamin B12 (cobalamin) | 224 | 2.5 | 0.2 | 0.2 | 0.3 |
| Meningitis vaccine | 180 | 2.0 | 0.2 | 0.1 | 0.2 |
| Triple antigen(diphtheria/pertussis/tetanus) | 176 | 2.0 | 0.2 | 0.1 | 0.2 |
| Meloxicam | 146 | 1.6 | 0.1 | 0.1 | 0.2 |
| Metoclopramide | 102 | 1.1 | 0.1 | 0.1 | 0.1 |
| Chickenpox (varicella zoster) vaccine | 96 | 1.1 | 0.1 | 0.1 | 0.1 |
| Esomeprazole | 95 | 1.1 | 0.1 | 0.1 | 0.1 |
| Allergen treatment | 95 | 1.1 | 0.1 | 0.1 | 0.1 |
| Hepatitis B vaccine | 93 | 1.0 | 0.1 | 0.1 | 0.1 |
| Hepatitis A and B vaccine | 93 | 1.0 | 0.1 | 0.1 | 0.1 |
| Budesonide/eformoterol | 75 | 0.8 | 0.1 | 0.1 | 0.1 |
| Typhoid vaccine (salmonella typhi) | 73 | 0.8 | 0.1 | 0.1 | 0.1 |
| Betamethasone systemic | 72 | 0.8 | 0.1 | 0.0 | 0.1 |
| Diphtheria/pertussis/tetanus /polio vaccine | 72 | 0.8 | 0.1 | 0.0 | 0.1 |
| Methylprednisolone | 68 | 0.8 | 0.1 | 0.0 | 0.1 |
| Medroxyprogesterone | 68 | 0.8 | 0.1 | 0.1 | 0.1 |
| Diphtheria/pertussis/tetanus/hepB/polio/hib vaccine | 67 | 0.8 | 0.1 | 0.0 | 0.1 |
| Hepatitis A vaccine | 66 | 0.7 | 0.1 | 0.0 | 0.1 |
| Haemophilus B/hepatitis B vaccine | 64 | 0.7 | 0.1 | 0.0 | 0.1 |
| Paracetamol | 58 | 0.6 | 0.1 | 0.0 | 0.1 |
| Celecoxib | 57 | 0.6 | 0.1 | 0.0 | 0.1 |
| Lignocaine injection | 55 | 0.6 | 0.1 | 0.0 | 0.1 |
| Pethidine hydrochloride | 50 | 0.6 | 0.1 | 0.0 | 0.1 |
| *Subtotal* | *6,241* | *69.4* | — | — | — |
| **Total medications supplied** | **8,999** | **100.0** | **8.8** | **8.2** | **9.5** |

(a) Column will not add to 100 because multiple medications could be given at each encounter and only the medications most frequently supplied by GPs are included. *Note:* LCL—lower confidence limit; UCL—upper confidence limit.

## Medications advised for over-the-counter purchase

The GPs recorded 9,950 medications as recommended for OTC purchase, at rates of 9.8 per 100 encounters and 6.7 per 100 problems managed. At least one OTC medication was recorded as advised at 8.6% of encounters and for 6.0% of problems.

Central nervous system medications predominated in those advised to patients, with almost one-third in that group. Respiratory medication accounted for one-fifth of advised medications (results not presented).

Table 2.29 shows the wide range of advised medications. It includes analgesic, anti-inflammatory and skin products. The 30 listed medications accounted for over 60% of all OTC medications.

**Table 2.29: Most frequently advised over-the-counter medications**

| Generic medication | Number | Per cent of OTCs (*n*=9,950) | Rate per 100 encounters[(a)] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Paracetamol | 2,578 | 25.9 | 2.5 | 2.2 | 2.8 |
| Ibuprofen | 576 | 5.8 | 0.6 | 0.5 | 0.7 |
| Diclofenac topical | 183 | 1.8 | 0.2 | 0.1 | 0.2 |
| Clotrimazole topical | 168 | 1.7 | 0.2 | 0.1 | 0.2 |
| Sodium chloride topical nasal | 157 | 1.6 | 0.2 | 0.1 | 0.2 |
| Glucosamine | 154 | 1.6 | 0.2 | 0.1 | 0.2 |
| Loratadine | 149 | 1.5 | 0.2 | 0.1 | 0.2 |
| Sodium/potassium/citric/glucose | 139 | 1.4 | 0.1 | 0.1 | 0.2 |
| Paracetamol/codeine | 135 | 1.4 | 0.1 | 0.1 | 0.2 |
| Fexofenadine | 118 | 1.2 | 0.1 | 0.1 | 0.2 |
| Cetirzine | 112 | 1.1 | 0.1 | 0.1 | 0.1 |
| Aspirin | 110 | 1.1 | 0.1 | 0.1 | 0.1 |
| Mouthwash/gargle other | 110 | 1.1 | 0.1 | 0.1 | 0.2 |
| Chlorpheniramine/pseudoephedrine | 103 | 1.0 | 0.1 | 0.1 | 0.2 |
| Bromhexine | 102 | 1.0 | 0.1 | 0.1 | 0.1 |
| Saline bath/solution/gargle | 99 | 1.0 | 0.1 | 0.1 | 0.1 |
| Codeine/paracet/pseudoephedrine | 98 | 1.0 | 0.1 | 0.1 | 0.1 |
| Brompheniramine/phenylephrine | 96 | 1.0 | 0.1 | 0.1 | 0.1 |
| Chlorpheniramine/phenylephrine | 92 | 0.9 | 0.1 | 0.1 | 0.1 |
| Clotrimazole vaginal | 88 | 0.9 | 0.1 | 0.1 | 0.1 |
| Promethazine hydrochloride | 87 | 0.9 | 0.1 | 0.1 | 0.1 |
| Cold and flu medication NEC | 86 | 0.9 | 0.1 | 0.1 | 0.1 |
| Hyoscine butylbromide | 83 | 0.8 | 0.1 | 0.1 | 0.1 |
| Sod bicarb/citrate/tartaric | 80 | 0.8 | 0.1 | 0.1 | 0.1 |
| Sorbolene/glycerol/cetomac | 76 | 0.8 | 0.1 | 0.1 | 0.1 |
| Pholcodine | 75 | 0.8 | 0.1 | 0.0 | 0.1 |
| Psyllium hydrophilic mucilloid | 72 | 0.7 | 0.1 | 0.1 | 0.1 |

*(continued)*

**Table 2.29 (continued): Most frequently advised over-the-counter medications**

| Generic medication | Number | Per cent of OTCs (*n*=9,950) | Rate per 100 encounters[(a)] (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Cinchocaine and hydrocortisone | 70 | 0.7 | 0.1 | 0.1 | 0.1 |
| Folic acid | 69 | 0.7 | 0.1 | 0.1 | 0.1 |
| Hydrocortisone topical skin | 68 | 0.7 | 0.1 | 0.1 | 0.1 |
| *Subtotal* | *6,132* | *61.6* | — | — | — |
| **Total medications advised** | **9,950** | **100.0** | **9.8** | **9.0** | **10.5** |

(a) Column will not add to 100 because multiple medications could be given at each encounter and only the medications most frequently advised for over-the-counter purchase are included.

*Note:* OTCs—over-the-counter medications; LCL—lower confidence limit; UCL—upper confidence limit; NEC—not elsewhere classified.

# 2.8 Other treatments

The survey form allowed GPs to record up to two other treatments for each problem managed at the encounter. Other treatments included all clinical and procedural treatments provided by the GPs at the encounters. These groups are defined in Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>. Patient observations that were regarded as routine clinical measurements, such as measurements of blood pressure, were not included.

The GPs were also asked to indicate whether the treatment was undertaken by a practice nurse (tick box). In this section all 'other treatments' are reported, irrespective of whether they were done by the GP or by the practice nurse. Those treatments provided by the practice nurse are reported separately in Section 2.11.

## Number of other treatments

Other treatments were commonly provided by GPs to manage patient morbidity. In 2005–06, a total of 44,504 other treatments were recorded, at a rate of 43.6 per 100 encounters. The majority of these were clinical treatments (Table 2.30).

**Table 2.30: Summary of other treatments**

| | Number | Rate per 100 encs (*n*=101,993) | 95% LCL | 95% UCL | Rate per 100 problems (*n*=149,088) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|---|
| **Other treatments** | 44,504 | 43.6 | 41.5 | 45.8 | 29.9 | 28.5 | 31.2 |
| Clinical treatments | 29,785 | 29.2 | 27.3 | 31.1 | 20.0 | 18.8 | 21.2 |
| Procedural treatments | 14,719 | 14.4 | 13.7 | 15.1 | 9.9 | 9.4 | 10.3 |
| At least one other treatment | 35,822 | 35.1 | 33.7 | 36.6 | — | — | — |

*Note:* Encs—encounters; UCL—upper confidence limit; LCL—lower confidence limit.

Table 2.31 shows the proportion of problems for which at least one other treatment was given. In summary:

- for nearly two-thirds of the problems managed with another treatment, no pharmacological treatment was provided
- nearly one in five problems were managed with a clinical treatment, and no medications were provided at the majority of these encounters
- GPs undertook a procedure in the management of 9.3% of problems, with no pharmacological management given at two-thirds of these encounters.

**Table 2.31: Relationship of other treatments with pharmacological treatments**

| Co-management of problems with other treatments | Number of problems | Per cent within class | Per cent of problems (*n*=149,088) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| At least one other treatment | 40,133 | 100.0 | 26.9 | 25.8 | 28.1 |
| Without pharmacological treatment | 25,489 | 63.5 | 17.1 | 16.3 | 17.9 |
| At least one clinical treatment | 27,210 | 100.0 | 18.3 | 17.2 | 19.3 |
| Without pharmacological treatment | 16,906 | 62.1 | 11.3 | 10.7 | 12.0 |
| At least one procedural treatment | 13,833 | 100.0 | 9.3 | 8.9 | 9.7 |
| Without pharmacological treatment | 9,033 | 65.3 | 6.1 | 5.8 | 6.4 |

*Note:* LCL—lower confidence limit; UCL—upper confidence limit.

## Clinical treatments

Clinical treatments include general and specific advice, counselling or education, family planning, and administrative processes. During 2005–06, there were 29,785 clinical treatments recorded (Table 2.30).

### Most frequent clinical treatments

Table 2.32 lists the most common clinical treatments provided. Each treatment is expressed as a percentage of all other treatments and as a rate per 100 encounters with 95% confidence limits.

**Table 2.32: Most frequent clinical treatments**

| Treatment | Number | Per cent of other treatments (*n*=44,504) | Rate per 100 encounters (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Counselling—problem* | 4,887 | 11.0 | 4.8 | 4.1 | 5.4 |
| Advice/education* | 4,858 | 10.9 | 4.8 | 4.1 | 5.4 |
| Counselling/advice—nutrition/weight* | 3,678 | 8.3 | 3.6 | 3.2 | 4.0 |
| Advice/education—treatment* | 3,111 | 7.0 | 3.1 | 2.6 | 3.5 |
| Counselling—psychological* | 3,110 | 7.0 | 3.1 | 2.8 | 3.3 |
| Sickness certificate* | 1,644 | 3.7 | 1.6 | 1.4 | 1.9 |
| Advice/education—medication* | 1,597 | 3.6 | 1.6 | 1.4 | 1.7 |
| Counselling/advice—exercise* | 1,116 | 2.5 | 1.1 | 0.9 | 1.2 |

*(continued)*

**Table 2.32 (continued): Most frequent clinical treatments**

| Treatment | Number | Per cent of other treatments (*n*=44,504) | Rate per 100 encounters (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Reassurance, support | 1,023 | 2.3 | 1.0 | 0.8 | 1.2 |
| Other admin/document* | 1,012 | 2.3 | 1.0 | 0.9 | 1.1 |
| Counselling/advice—smoking* | 530 | 1.2 | 0.5 | 0.4 | 0.6 |
| Counselling/advice—life style* | 470 | 1.1 | 0.5 | 0.3 | 0.6 |
| Counselling/advice—alcohol* | 307 | 0.7 | 0.3 | 0.3 | 0.3 |
| Observe/wait* | 304 | 0.7 | 0.3 | 0.2 | 0.4 |
| Counselling/advice—pregnancy* | 298 | 0.7 | 0.3 | 0.2 | 0.4 |
| Family planning* | 282 | 0.6 | 0.3 | 0.2 | 0.3 |
| Counselling/advice—relaxation* | 239 | 0.5 | 0.2 | 0.2 | 0.3 |
| *Subtotal* | *28,692* | *64.5* | — | — | — |
| **Total clinical treatments** | **29,785** | **66.9** | **29.2** | **27.3** | **31.1** |

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note:* LCL—lower confidence limit; UCL—upper confidence limit.

## Problems managed with clinical treatments

Table 2.33 lists the top ten problems managed with a clinical treatment. It also shows the extent to which a clinical treatment was used for that problem and the relationship between the use of a clinical treatment and a medication for individual problems.

- Clinical treatments were provided in the management of 27,210 problems (18.3% of all problems).
- The ten most common problems managed with a clinical treatment accounted for almost one-third of all problems for which a clinical treatment was provided.
- Almost half the contacts with depression involved a clinical treatment. Of these, half were also managed with a medication.
- One-quarter of upper respiratory tract infection contacts involved a clinical treatment, with over 60% of these encounters managed without medication.
- Only 11% of hypertension contacts resulted in a clinical treatment. For half of these a medication was also prescribed, supplied or advised.
- At one-quarter of both lipid disorder and diabetes contacts a clinical treatment was used, and two-thirds of these did not involve medication.

**Table 2.33: The ten most common problems managed with a clinical treatment**

| Problem managed | Number | Per cent of problems with clinical treatment | Rate per 100 encounters[(a)] (*n*=101,993) | 95% LCL | 95% UCL | Per cent of this problem[(b)] | Per cent of treated problems no meds[(c)] |
|---|---|---|---|---|---|---|---|
| Depression* | 1,683 | 6.2 | 1.7 | 1.5 | 1.8 | 45.7 | 49.9 |
| Upper respiratory tract infection | 1,584 | 5.8 | 1.6 | 1.3 | 1.8 | 25.0 | 61.8 |
| Hypertension* | 1,031 | 3.8 | 1.0 | 0.9 | 1.2 | 10.7 | 50.4 |
| Diabetes* | 845 | 3.1 | 0.8 | 0.7 | 0.9 | 23.3 | 63.4 |
| Anxiety* | 811 | 3.0 | 0.8 | 0.7 | 0.9 | 44.2 | 65.7 |
| Lipid disorders* | 814 | 3.0 | 0.8 | 0.7 | 0.9 | 23.4 | 63.7 |
| Back complaint* | 533 | 2.0 | 0.5 | 0.4 | 0.6 | 19.8 | 56.4 |
| Gastroenteritis, presumed infectious | 467 | 1.7 | 0.5 | 0.4 | 0.5 | 42.1 | 63.0 |
| Sprain/strain* | 465 | 1.7 | 0.5 | 0.4 | 0.5 | 26.0 | 62.8 |
| Test results* | 460 | 1.7 | 0.5 | 0.3 | 0.6 | 31.5 | 95.2 |
| *Subtotal* | *8,694* | *32.0* | — | — | — | — | — |
| **Total problems** | **27,210** | **100.0** | **26.7** | **25.1** | **28.3** | **—** | **—** |

(a) Rate of provision of clinical treatment for selected problem per 100 total encounters.

(b) Per cent of contacts with this problem that generated at least one clinical treatment.

(c) The numerator is the number of cases of this problem that generated at least one clinical treatment but generated no medications. The denominator is the total number of contacts for this problem that generated at least one clinical treatment (with or without medications).

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note:* LCL—lower confidence limit; UCL—upper confidence limit; meds—medications.

## Procedural treatments

Procedural treatments included therapeutic actions and diagnostic procedures undertaken at the encounter. However, they do not include injections for immunisations/vaccinations given by either the GP or a practice nurse, as these have already been counted as medications (see Section 2.7). There were a total number of 14,719 procedural treatments provided in general practice during the study year (Table 2.30).

### Most frequent procedures

Table 2.34 lists the most common procedural treatments provided by GPs. Each treatment is expressed as a percentage of all other treatments and as a rate per 100 encounters with 95% confidence limits. To find the total number of diagnostic procedures ordered or performed by the GP, the numbers of investigations in Table 2.34 need to be added to those in Table 2.46, which reports the most common other investigations ordered by GPs.

**Table 2.34: Most frequent procedural treatments**

| Treatment | Number | Per cent of other treatments[(a)] (*n*=44,504) | Rate per 100 encounters (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Excision/removal tissue/biopsy/destruction/ debridement/cauterisation* | 3,043 | 6.8 | 3.0 | 2.7 | 3.2 |
| Dressing/pressure/compression/tamponade* | 2,119 | 4.8 | 2.1 | 1.9 | 2.3 |
| Local injection/infiltration* | 2,006 | 4.5 | 2.0 | 1.8 | 2.2 |
| Physical medicine/rehabilitation* | 1,406 | 3.2 | 1.4 | 1.1 | 1.6 |
| Incision/drainage/flushing/aspiration/removal body fluid* | 1,304 | 2.9 | 1.3 | 1.2 | 1.4 |
| Pap smear* | 983 | 2.2 | 1.0 | 0.8 | 1.1 |
| Repair/fixation—suture/cast/prosthetic device (apply/remove)* | 982 | 2.2 | 1.0 | 0.9 | 1.1 |
| Other therapeutic procedures/surgery NEC* | 794 | 1.8 | 0.8 | 0.6 | 0.9 |
| Electrical tracings* | 416 | 0.9 | 0.4 | 0.3 | 0.5 |
| Physical function test* | 409 | 0.9 | 0.4 | 0.3 | 0.5 |
| Urine test* | 291 | 0.7 | 0.3 | 0.2 | 0.3 |
| Other preventive procedures/high-risk medication, condition* | 224 | 0.5 | 0.2 | 0.2 | 0.3 |
| *Subtotal* | *13,977* | *31.4* | — | — | — |
| **Total procedural treatments** | **14,719** | **33.1** | **14.4** | **13.7** | **15.1** |

(a) Only the most common procedural treatments are included, those accounting for >0.5% of all other treatments.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).

\+ Excludes all local injection/infiltrations performed for immunisations.

*Note:* LCL—lower confidence limit; UCL—upper confidence limit; NEC—not elsewhere classified.

## Problems managed with a procedural treatment

Table 2.35 lists the top ten problems managed with a procedural treatment. It also demonstrates the proportion of contacts with each problem managed with a procedure and the proportion of problems managed with a procedure but without a concomitant medication.

- A total of 13,833 problems involved a procedural treatment in their management (9.3% of all problems).
- The top ten problems accounted for less than 40% of all problems for which a procedure was used.
- Solar keratosis/sunburn was the most common problem managed with a procedure, undertaken for 70% of all solar keratosis/sunburn contacts.
- Over 70% of malignant skin neoplasms were managed with a procedural treatment, and the vast majority of these did not have a medication prescribed, supplied or advised.

**Table 2.35: The ten most common problems managed with a procedural treatment**

| Problem managed | Number | Per cent of problems with procedure | Rate per 100 encs[(a)] (*n*=101,993) | 95% LCL | 95% UCL | Per cent of this problem[(b)] | Per cent of treated problems no meds[(c)] |
|---|---|---|---|---|---|---|---|
| Solar keratosis/sunburn | 874 | 6.3 | 0.9 | 0.8 | 1.0 | 70.7 | 97.6 |
| Female genital check-up* | 799 | 5.8 | 0.8 | 0.7 | 0.9 | 43.7 | 97.6 |
| Excessive ear wax | 679 | 4.9 | 0.7 | 0.6 | 0.8 | 79.2 | 71.7 |
| Malignant neoplasm skin | 586 | 4.2 | 0.6 | 0.5 | 0.6 | 71.8 | 94.7 |
| Laceration/cut | 534 | 3.9 | 0.5 | 0.5 | 0.6 | 77.1 | 97.5 |
| Back complaint* | 433 | 3.1 | 0.4 | 0.4 | 0.5 | 41.8 | 97.1 |
| Warts | 429 | 3.1 | 0.4 | 0.4 | 0.5 | 72.1 | 80.7 |
| Sprain/strain* | 359 | 2.6 | 0.4 | 0.3 | 0.4 | 20.1 | 53.2 |
| Chronic skin ulcer (incl varicose ulcer) | 319 | 2.3 | 0.3 | 0.2 | 0.4 | 11.8 | 57.8 |
| Skin disease, other | 218 | 1.6 | 0.2 | 0.2 | 0.3 | 26.4 | 94.0 |
| *Subtotal* | *5,228* | *37.8* | — | — | — | — | — |
| **Total problems** | **13,833** | **100.0** | **13.6** | **12.9** | **14.2** | **—** | **—** |

(a) Rate of provision of procedural treatment for selected problem per 100 total encounters.

(b) Percentage of contacts with this problem that generated at least one procedural treatment.

(c) The numerator is the number of cases of this problem that generated at least one procedural treatment but generated no medications. The denominator is the total number of contacts (for this problem) that generated at least one procedural treatment (with or without medications).

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note:* Encs—encounters; LCL—lower confidence limit; UCL—upper confidence limit; meds—medications; incl—including.

# 2.9 Referrals and admissions

A referral is defined as the process by which the responsibility for part or all of the care of a patient is temporarily transferred to another health care provider. Only new referrals arising at the encounter were included (i.e. continuations were not recorded). For each encounter, GPs could record up to two referrals. These included referrals to specialists, allied health professionals, hospitals for admission, emergency departments or other medical services. Referrals to hospital outpatient clinics and other GPs were classified as referrals to other medical services.

## Number of referrals and admissions

Table 2.36 provides a summary of referrals and admissions, and the rates per 100 encounters and per 100 problems for which referrals were provided. The patient was given at least one referral at 11.3% of all encounters, and for 8.2% of all problems managed. The most frequent referrals were to specialists, followed by referrals to allied health services. Very few patients were referred to hospitals, to the hospital emergency department, or to other medical services.

**Table 2.36: Summary of referrals and admissions**

| Variable | Number | Rate per 100 encounters (*n*=101,993) | 95% LCL | 95% UCL | Rate per 100 problems (*n*=149,088) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|---|
| At least one referral[(a)] | 11,543 | 11.3 | 10.9 | 11.8 | 8.2 | 7.9 | 8.5 |
| Referrals | 12,233 | 12.0 | 11.5 | 12.5 | 8.2 | 7.9 | 8.5 |
| Specialist | 8,342 | 8.2 | 7.8 | 8.5 | 5.6 | 5.4 | 5.8 |
| Allied health service | 2,932 | 2.9 | 2.7 | 3.1 | 2.0 | 1.8 | 2.1 |
| Hospital | 373 | 0.4 | 0.3 | 0.4 | 0.3 | 0.2 | 0.3 |
| Emergency department | 192 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 |
| Other medical services | 60 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 |
| Other referrals | 334 | 0.3 | 0.3 | 0.4 | 0.2 | 0.2 | 0.3 |

(a) Rate per 100 problems for at least one referral is calculated using a numerator of number of individual problems with a referral (*n*=12,225).

*Note:* LCL—lower confidence limit; UCL—upper confidence limit.

## Most frequent referrals

Table 2.37 shows the specialists and allied health service groups to whom GPs most often refer. The most common referrals were to ophthalmologists, surgeons and dermatologists. Almost 40% of referrals to allied health services were to physiotherapists.

**Table 2.37: The most frequent referrals by type**

| Professional/organisation | Number | Per cent of referrals[(a)] | Per cent of referral group | Rate per 100 encounters (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|
| **Medical specialist** | **8,342** | **74.0** | **100.0** | **8.2** | **7.8** | **8.5** |
| Ophthalmologist | 820 | 7.3 | 9.8 | 0.8 | 0.7 | 0.9 |
| Surgeon | 773 | 6.9 | 9.3 | 0.8 | 0.7 | 0.8 |
| Dermatologist | 715 | 6.3 | 8.6 | 0.7 | 0.6 | 0.8 |
| Orthopaedic surgeon | 709 | 6.3 | 8.5 | 0.7 | 0.6 | 0.8 |
| Cardiologist | 619 | 5.5 | 7.4 | 0.6 | 0.5 | 0.7 |
| Gynaecologist | 548 | 4.9 | 6.6 | 0.5 | 0.5 | 0.6 |
| Gastroenterologist | 530 | 4.7 | 6.4 | 0.5 | 0.5 | 0.6 |
| Ear, nose and throat | 499 | 4.4 | 6.0 | 0.5 | 0.4 | 0.5 |
| Urologist | 332 | 2.9 | 4.0 | 0.3 | 0.3 | 0.4 |
| Neurologist | 266 | 2.4 | 3.2 | 0.3 | 0.2 | 0.3 |
| *Subtotal: top ten specialist referrals* | *5,811* | *51.5* | *69.7* | — | — | — |
| **Allied health and other professionals** | **2,932** | **26.0** | **100.0** | **2.9** | **2.7** | **3.1** |
| Physiotherapy | 1,161 | 10.3 | 39.6 | 1.1 | 1.0 | 1.3 |
| Psychologist | 286 | 2.5 | 9.7 | 0.3 | 0.2 | 0.3 |
| Podiatrist/chiropodist | 233 | 2.1 | 8.0 | 0.2 | 0.2 | 0.3 |
| Dietitian/nutritionist | 232 | 2.1 | 7.9 | 0.2 | 0.2 | 0.3 |
| Dentist | 159 | 1.4 | 5.4 | 0.2 | 0.1 | 0.2 |

*(continued)*

**Table 2.37 (continued): The most frequent referrals by type**

| Professional/organisation | Number | Per cent of referrals[(a)] | Per cent of referral group | Rate per 100 encounters (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|
| Optometrist | 79 | 0.7 | 2.7 | 0.1 | 0.1 | 0.1 |
| Counsellor | 75 | 0.7 | 2.6 | 0.1 | 0.0 | 0.1 |
| Audiologist | 72 | 0.6 | 2.4 | 0.1 | 0.0 | 0.1 |
| Diabetes education | 57 | 0.5 | 2.0 | 0.1 | 0.0 | 0.1 |
| Mental health team | 50 | 0.4 | 1.7 | 0.1 | 0.0 | 0.1 |
| *Subtotal: top ten allied health referrals* | *2,404* | *21.3* | *82.0* | — | — | — |
| **Total specialist and allied health referrals** | **11,274** | **100.0** | **—** | **11.1** | **10.6** | **11.6** |

(a) Per cent of referrals to specialists and allied health services.

*Note:* LCL—lower confidence limit; UCL—upper confidence limit.

## Problems most often referred

A referral to a specialist was provided in the management of 8,524 problems. The ten problems most commonly referred to a specialist accounted for 18.7% of all problems referred to a specialist. The problems most often referred were diabetes (2.9% of problems referred to a specialist), malignant skin neoplasm, pregnancy and back complaint (Table 2.38).

Table 2.38 also shows the rate of referral per 100 contacts for each problem. Although diabetes accounted for the greatest proportion of problems referred, the problem most likely to result in a referral to a specialist was cataract, with GPs referring more than two out of every three contacts with a cataract problem.

**Table 2.38: The ten problems most frequently referred to a medical specialist**

| Problem managed | Number | Per cent of problems referred | Rate per 100 encs (*n*=101,993) | 95% LCL | 95% UCL | Rate per 100 contacts of this problem[(a)] |
|---|---|---|---|---|---|---|
| Diabetes* | 249 | 2.9 | 0.2 | 0.2 | 0.3 | 6.9 |
| Malignant skin neoplasm | 217 | 2.6 | 0.2 | 0.2 | 0.3 | 21.0 |
| Pregnancy* | 185 | 2.2 | 0.2 | 0.2 | 0.2 | 20.6 |
| Back complaint* | 161 | 1.9 | 0.2 | 0.1 | 0.2 | 6.0 |
| Ischaemic heart disease* | 155 | 1.8 | 0.2 | 0.1 | 0.2 | 11.7 |
| Depression* | 139 | 1.6 | 0.1 | 0.1 | 0.2 | 3.8 |
| Osteoarthritis* | 130 | 1.5 | 0.1 | 0.1 | 0.2 | 4.8 |
| Oesophagus disease | 122 | 1.4 | 0.1 | 0.1 | 0.2 | 5.1 |
| Hypertension* | 122 | 1.4 | 0.1 | 0.1 | 0.2 | 1.3 |
| Cataract | 116 | 1.4 | 0.1 | 0.1 | 0.1 | 70.7 |
| *Subtotal: top ten problems referred to a specialist* | *1,596* | *18.7* | — | — | — | — |
| **Total problems referred to specialist** | **8,524** | **100.0** | **8.4** | **8.0** | **8.7** | **—** |

(a) The rate of referrals to medical specialists per 100 contacts with the problem.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note:* Encs—encounters; LCL—lower confidence limit; UCL—upper confidence limit.

There were 3,034 problems referred to an allied health professional or service. The ten most common of these accounted for 44.8% of all problems referred to allied health services, with back complaint the most common. However, the problem most likely to result in a referral to an allied health service was teeth/gum disease, with one in four contacts resulting in referral (Table 2.39).

The ten problems most frequently referred to hospital are shown in Table 2.40.

**Table 2.39: The ten problems most frequently referred to allied health services**

| Problem managed | Number | Per cent of problems referred | Rate per 100 encs (*n*=101,993) | 95% LCL | 95% UCL | Rate per 100 contacts of this problem[(a)] |
|---|---|---|---|---|---|---|
| Back complaint* | 257 | 8.5 | 0.3 | 0.2 | 0.3 | 9.5 |
| Sprain/strain* | 224 | 7.4 | 0.2 | 0.2 | 0.3 | 12.5 |
| Depression* | 200 | 6.6 | 0.2 | 0.2 | 0.2 | 5.4 |
| Diabetes* | 175 | 5.8 | 0.2 | 0.1 | 0.2 | 4.8 |
| Osteoarthritis* | 114 | 3.8 | 0.1 | 0.1 | 0.1 | 4.2 |
| Teeth/gum disease | 101 | 3.3 | 0.1 | 0.1 | 0.1 | 26.6 |
| Anxiety* | 87 | 2.9 | 0.1 | 0.1 | 0.1 | 4.7 |
| Musculoskeletal injury NOS | 76 | 2.5 | 0.1 | 0.1 | 0.1 | 9.2 |
| Shoulder syndrome | 69 | 2.3 | 0.1 | 0.1 | 0.1 | 13.9 |
| Musculoskeletal disease, other | 55 | 1.8 | 0.1 | 0.0 | 0.1 | 7.3 |
| *Subtotal: top ten problems referred to AHS* | *1,358* | *44.8* | — | — | — | — |
| **Total problems referred to AHS** | **3,034** | **100.0** | **3.0** | **2.7** | **3.2** | **—** |

(a) The rate of referrals to allied health services per 100 contacts with the problem.
* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).
*Note:* Encs—encounters; LCL—lower confidence limit; UCL—upper confidence limit; NOS—not otherwise specified; AHS—allied health service.

**Table 2.40: The ten problems most frequently referred to hospital**

| Problem managed | Number | Per cent of problems referred | Rate per 100 encs (*n*=101,993) | 95% LCL | 95% UCL | Rate per 100 contacts of this problem[(a)] |
|---|---|---|---|---|---|---|
| Ischaemic heart disease* | 20 | 5.0 | 0.02 | 0.01 | 0.03 | 1.5 |
| Fracture* | 17 | 4.3 | 0.02 | 0.01 | 0.03 | 1.6 |
| Pregnancy* | 16 | 4.1 | 0.02 | 0.01 | 0.02 | 1.8 |
| Appendicitis | 13 | 3.2 | 0.01 | 0.00 | 0.02 | 23.9 |
| Pneumonia | 12 | 3.1 | 0.01 | 0.00 | 0.02 | 3.4 |
| Chronic obstructive pulmonary disease | 10 | 2.6 | 0.01 | 0.00 | 0.02 | 1.4 |
| Stroke/cerebrovascular accident | 8 | 2.1 | 0.01 | 0.00 | 0.01 | 4.0 |
| Pre/postnatal check-up* | 8 | 2.1 | 0.01 | 0.00 | 0.01 | 1.4 |
| Depression* | 7 | 1.9 | 0.01 | 0.00 | 0.01 | 0.2 |
| Musculoskeletal injury NOS | 7 | 1.9 | 0.01 | 0.00 | 0.01 | 0.9 |
| *Subtotal: top ten problems referred for admission* | *119* | *30.2* | — | — | — | — |
| **Total problems referred to hospital** | **393** | **100.0** | **0.4** | **0.3** | **0.5** | **—** |

(a) The rate of referrals to hospital per 100 contacts with the problem.
* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).
Note: Encs—encounters; LCL—lower confidence limit; UCL—upper confidence limit; NOS—not otherwise specified.

# 2.10 Investigations

The GPs participating in the study were asked to record (in free text) any pathology, imaging or other tests ordered or undertaken at the encounter and to nominate the patient problem(s) associated with each test order placed. This allows the linkage of test orders to a single problem or multiple problems. Up to five orders for pathology and two for imaging and other tests could be recorded at each encounter. A single test may have been ordered for the management of multiple problems, and multiple tests may have been used in the management of a single problem.

A pathology test order may be for a single test (e.g. Pap smear, HbA1c) or for a battery of tests (e.g. lipids, full blood count). Where a battery of tests was ordered, the battery name was recorded rather than each individual test. GPs also recorded the body site for any imaging ordered (e.g. X-ray chest, CT head).

## Numbers of investigations

Table 2.41 shows the number of encounters and problems at which a pathology or imaging test was ordered. There were no tests recorded at the vast majority (77.9%) of encounters.

At least one pathology test order was recorded at 16.4% of encounters (for 12.7% of problems managed) and at least one imaging test was ordered at 7.8% of encounters (for 5.5% of problems managed).

**Table 2.41: Number of encounters and problems for which pathology or imaging ordered**

| Variable | Number of encs | Per cent of encs (*n*=101,993) | 95% LCL | 95% UCL | Number of problems | Per cent of problems (*n*=149,088) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|---|---|
| Pathology and imaging ordered | 2,110 | 2.1 | 1.9 | 2.2 | 1,526 | 1.0 | 0.9 | 1.1 |
| Pathology only ordered | 14,583 | 14.3 | 13.8 | 14.8 | 17,411 | 11.7 | 11.3 | 12.1 |
| Imaging only ordered | 5,818 | 5.7 | 5.4 | 6.0 | 6,665 | 4.5 | 4.3 | 4.7 |
| No tests ordered | 79,482 | 77.9 | 77.3 | 78.6 | 123,485 | 82.8 | 82.3 | 83.4 |
| At least one pathology ordered | 16,693 | 16.4 | 15.8 | 16.9 | 18,938 | 12.7 | 12.2 | 13.2 |
| At least one imaging ordered | 7,928 | 7.8 | 7.4 | 8.1 | 8,192 | 5.5 | 5.3 | 5.7 |

*Note:* Encs—encounters; LCL—lower confidence limit; UCL—upper confidence limit.

## Pathology ordering

A comprehensive report on pathology ordering by GPs in Australia in 1998, written by the then General Practice Statistics and Classification Unit (GPSCU) using BEACH data, was published on the Internet by the Diagnostics and Technology Branch of the Department of Health and Aged Care during 2000.[15] A report on changes in pathology ordering by GPs from 1998 to 2001 was also published by the GPSCU in 2003.[16] Readers may wish to compare those results with the information presented below.

## Nature of pathology orders at encounter

The distribution of pathology tests by Medicare Benefits Schedule (MBS) group and the most common tests within each group are presented in Table 2.42. Each group and individual test is expressed as a percentage of all pathology tests, as a percentage of the group and as a rate per 100 encounters with 95% confidence limits.

The pathology tests recorded were grouped according to the categories set out in Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>. The main pathology groups reflect those used in previous analyses by Medicare Australia of pathology tests recorded.[31]

**Table 2.42: Distribution of pathology orders across MBS pathology groups and most frequent individual test orders within group**

| Pathology test ordered | Number | Per cent of all pathology | Per cent of group | Rate per 100 encs (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|
| **Chemistry** | **22,185** | **56.4** | **100.0** | **21.8** | **20.6** | **22.9** |
| Lipids | 3,859 | 9.8 | 17.4 | 3.8 | 3.5 | 4.1 |
| EUC | 2,807 | 7.1 | 12.7 | 2.8 | 2.5 | 3.0 |
| Liver function | 2,578 | 6.6 | 11.6 | 2.5 | 2.3 | 2.7 |
| Glucose/tolerance | 2,367 | 6.0 | 10.7 | 2.3 | 2.1 | 2.6 |
| Thyroid function | 2,168 | 5.5 | 9.8 | 2.1 | 2.0 | 2.3 |
| Multibiochemical analysis | 1,875 | 4.8 | 8.4 | 1.8 | 1.6 | 2.1 |
| Chemistry; other | 1,056 | 2.7 | 4.8 | 1.0 | 0.9 | 1.2 |
| HbA1c | 1,027 | 2.6 | 4.6 | 1.0 | 0.9 | 1.1 |
| Ferritin | 925 | 2.4 | 4.2 | 0.9 | 0.8 | 1.0 |
| Prostate specific antigen | 756 | 1.9 | 3.4 | 0.7 | 0.7 | 0.8 |
| Hormone assay | 749 | 1.9 | 3.4 | 0.7 | 0.6 | 0.8 |
| C reactive protein | 495 | 1.3 | 2.2 | 0.5 | 0.4 | 0.6 |
| **Haematology** | **7,460** | **19.0** | **100.0** | **7.3** | **6.9** | **7.7** |
| Full blood count | 5,379 | 13.7 | 72.1 | 5.3 | 5.0 | 5.6 |
| ESR | 925 | 2.4 | 12.4 | 0.9 | 0.8 | 1.0 |
| Coagulation | 891 | 2.3 | 11.9 | 0.9 | 0.8 | 1.0 |
| **Microbiology** | **5,677** | **14.4** | **100.0** | **5.6** | **5.2** | **5.9** |
| Urine MC&S | 1,846 | 4.7 | 32.5 | 1.8 | 1.7 | 1.9 |
| Microbiology; other | 776 | 2.0 | 13.7 | 0.8 | 0.7 | 0.8 |
| Hepatitis serology | 604 | 1.5 | 10.6 | 0.6 | 0.5 | 0.7 |
| Faeces MC&S | 333 | 0.9 | 5.9 | 0.3 | 0.3 | 0.4 |
| Chlamydia | 317 | 0.8 | 5.6 | 0.3 | 0.2 | 0.4 |
| Vaginal swab and C&S | 316 | 0.8 | 5.6 | 0.3 | 0.3 | 0.4 |
| HIV | 307 | 0.8 | 5.4 | 0.3 | 0.2 | 0.4 |
| **Cytology** | **1,773** | **4.5** | **100.0** | **1.7** | **1.6** | **1.9** |
| Pap smear | 1,731 | 4.4 | 97.6 | 1.7 | 1.5 | 1.9 |

*(continued)*

**Table 2.42 (continued): Distribution of pathology orders across MBS pathology groups and most frequent individual test orders within group**

| Pathology test ordered | Number | Per cent of all pathology | Per cent of group | Rate per 100 encs (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|
| **Other NEC** | **709** | **1.8** | **100.0** | **0.7** | **0.6** | **0.8** |
| Blood test | 296 | 0.8 | 41.7 | 0.3 | 0.2 | 0.4 |
| **Infertility/pregnancy** | **224** | **0.6** | **100.0** | **0.2** | **0.2** | **0.3** |
| **Tissue pathology** | **591** | **1.5** | **100.0** | **0.6** | **0.5** | **0.7** |
| Histology, skin | 547 | 1.4 | 92.4 | 0.5 | 0.5 | 0.6 |
| **Immunology** | **593** | **1.5** | **100.0** | **0.6** | **0.5** | **0.7** |
| Immunology, other | 268 | 0.7 | 45.2 | 0.3 | 0.2 | 0.3 |
| **Simple basic tests** | **145** | **0.4** | **100.0** | **0.1** | **0.1** | **0.2** |
| **Total pathology tests** | **39,358** | **100.0** | **—** | **38.6** | **36.9** | **40.3** |

*Note:* Encs—encounters; LCL—lower confidence limit; UCL—upper confidence limit; NEC—not elsewhere classified.

## Problems for which pathology tests were ordered

Table 2.43 describes, in decreasing frequency order of problem–pathology combinations, the most common problems for which pathology was ordered. The two right-hand columns show the proportion of each problem that resulted in a pathology order and the rate of pathology orders per 100 specified problems when at least one test is ordered. For example, 30% of contacts with diabetes result in pathology orders, and when at least one pathology test is ordered for diabetes, 263 tests are ordered per 100 diabetes contacts.

**Table 2.43: The ten problems for which pathology was most frequently ordered**

| Problem managed | Number of problems | Number of problem–path combinations[(a)] | Per cent of problem–path combinations[(a)] | Per cent of problems with test[(b)] | Rate of path orders per 100 problems with pathology[(c)] |
|---|---|---|---|---|---|
| Diabetes* | 3,618 | 2,849 | 7.0 | 30.0 | 262.8 |
| Hypertension* | 9,635 | 2,734 | 6.7 | 11.6 | 244.8 |
| Lipid disorders* | 3,479 | 2,207 | 5.4 | 31.0 | 204.7 |
| General check-up* | 2,106 | 1,655 | 4.1 | 26.3 | 299.0 |
| Female genital check-up* | 1,829 | 1,503 | 3.7 | 70.7 | 116.3 |
| Weakness/tiredness general | 589 | 1,399 | 3.4 | 63.6 | 373.7 |
| Urinary tract infection* | 1,788 | 1,066 | 2.6 | 54.6 | 109.3 |
| Blood test NOS | 325 | 932 | 2.3 | 86.8 | 330.4 |
| Pregnancy* | 895 | 799 | 2.0 | 39.9 | 223.5 |
| Microbiology/immunology NOS | 208 | 600 | 1.5 | 87.7 | 330.0 |
| *Subtotal* | *24,472* | *15,744* | *38.7* | — | — |
| **Total** | **149,088** | **40,648** | **100.0** | **12.7** | **207.8** |

(a) A test was counted more than once if it was ordered for the management of more than one problem at an encounter. There were 39,358 pathology test orders and 40,648 problem–pathology combinations.

(b) The percentage of total contacts with the problem that generated at least one order for pathology.

(c) The rate of pathology orders placed per 100 contacts with that problem generating at least one order for pathology.

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note:* Path—pathology; NOS—not otherwise specified.

## Imaging ordering

Readers wanting a more detailed study of imaging orders should consult the comprehensive report on imaging orders by GPs in Australia in 1999–00, written by the GPSCU using BEACH data, published by the AIHW in 2001.[17]

### Nature of imaging orders at encounter

The distribution of imaging tests by MBS group and the most common tests within each group are presented in Table 2.44. Each group and individual test is expressed as a percentage of all imaging tests, as a percentage of the group and as a rate per 100 encounters with 95% confidence limits.

**Table 2.44: The most frequent imaging tests ordered, by MBS group**

| Imaging test ordered | Number | Per cent of tests | Per cent of group | Rate per 100 encounters (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|
| **Diagnostic radiology** | **4,877** | **54.2** | **100.0** | **4.8** | **4.5** | **5.0** |
| X-ray; chest | 1,126 | 12.5 | 23.1 | 1.1 | 1.0 | 1.2 |
| X-ray; knee | 491 | 5.5 | 10.1 | 0.5 | 0.4 | 0.5 |
| Mammography; female | 375 | 4.2 | 7.7 | 0.4 | 0.3 | 0.4 |
| X-ray; ankle | 251 | 2.8 | 5.1 | 0.3 | 0.2 | 0.3 |
| X-ray; foot/feet | 221 | 2.5 | 4.5 | 0.2 | 0.2 | 0.2 |
| X-ray; shoulder | 206 | 2.3 | 4.2 | 0.2 | 0.2 | 0.2 |
| Test; densitometry | 189 | 2.1 | 3.9 | 0.2 | 0.2 | 0.2 |
| X-ray; spine; lumbosacral | 187 | 2.1 | 3.8 | 0.2 | 0.1 | 0.2 |
| X-ray; hip | 176 | 2.0 | 3.6 | 0.2 | 0.1 | 0.2 |
| X-ray; wrist | 151 | 1.7 | 3.1 | 0.2 | 0.1 | 0.2 |
| X-ray; spine; lumbar | 148 | 1.7 | 3.0 | 0.2 | 0.1 | 0.2 |
| X-ray; hand | 145 | 1.6 | 3.0 | 0.1 | 0.1 | 0.2 |
| X-ray; finger(s)/thumb | 121 | 1.3 | 2.5 | 0.1 | 0.1 | 0.1 |
| X-ray; spine; cervical | 121 | 1.3 | 2.5 | 0.1 | 0.1 | 0.1 |
| X-ray; abdomen | 84 | 0.9 | 1.7 | 0.1 | 0.1 | 0.1 |
| **Ultrasound** | **2,947** | **32.7** | **100.0** | **2.9** | **2.7** | **3.1** |
| Ultrasound; pelvis | 498 | 5.5 | 16.9 | 0.5 | 0.4 | 0.6 |
| Ultrasound; abdomen | 314 | 3.5 | 10.7 | 0.3 | 0.3 | 0.4 |
| Ultrasound; breast; female | 287 | 3.2 | 9.7 | 0.3 | 0.2 | 0.3 |
| Ultrasound; shoulder | 285 | 3.2 | 9.7 | 0.3 | 0.2 | 0.3 |
| Ultrasound; obstetric | 234 | 2.6 | 7.9 | 0.2 | 0.2 | 0.3 |
| Ultrasound; renal tract | 126 | 1.4 | 4.3 | 0.1 | 0.1 | 0.1 |
| Test; doppler | 123 | 1.4 | 4.2 | 0.1 | 0.1 | 0.1 |
| Echocardiography | 121 | 1.4 | 4.1 | 0.1 | 0.1 | 0.1 |
| Ultrasound; thyroid | 101 | 1.1 | 3.4 | 0.1 | 0.1 | 0.1 |
| Ultrasound; scrotum | 80 | 1.0 | 3.2 | 0.1 | 0.0 | 0.4 |

*(continued)*

**Table 2.44 (continued): The most frequent imaging tests ordered, by MBS group**

| Imaging test ordered | Number | Per cent of tests | Per cent of group | Rate per 100 encounters (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|
| **Computerised tomography** | **1,025** | **11.4** | **100.0** | **1.0** | **0.9** | **1.1** |
| CT scan; brain | 207 | 2.3 | 20.2 | 0.2 | 0.2 | 0.2 |
| CT scan; spine; lumbar | 125 | 1.4 | 12.2 | 0.1 | 0.1 | 0.2 |
| CT scan; abdomen | 114 | 1.3 | 11.1 | 0.1 | 0.1 | 0.1 |
| CT scan; head | 103 | 1.1 | 10.0 | 0.1 | 0.1 | 0.1 |
| **Nuclear medicine imaging** | **106** | **1.2** | **100.0** | **0.1** | **0.1** | **0.1** |
| Scan; bone(s) | 92 | 1.0 | 86.7 | 0.1 | 0.1 | 0.1 |
| **Magnetic resonance imaging** | **48** | **0.5** | **100.0** | **0.1** | **0.0** | **0.1** |
| **Total imaging tests** | **9,003** | **100.0** | **—** | **8.8** | **8.4** | **9.2** |

*Note:* LCL—lower confidence limit; UCL—upper confidence limit; CT—computerised tomography.

## Problems for which imaging tests were ordered

Table 2.45 describes, in decreasing frequency order of problem–imaging combinations, the most common problems for which imaging was ordered. The two right-hand columns show the proportion of each problem that resulted in an imaging test and the rate of imaging tests per 100 specified problems when at least one test is ordered—for example, 43% of contacts with fractures result in an imaging test and 109.8 tests are ordered per 100 fracture contacts when at least one test is ordered.

**Table 2.45: The ten problems for which an imaging test was most frequently ordered**

| Problem managed | Number of probs | Number of problem–imaging combinations[(a)] | Per cent of problem–imaging combinations | Per cent of problems with test[(b)] | Rate of imaging orders per 100 tested problems[(c)] |
|---|---|---|---|---|---|
| Back complaint* | 2,698 | 501.4 | 5.5 | 16.1 | 115.6 |
| Fracture* | 1,039 | 492.9 | 5.4 | 43.2 | 109.8 |
| Osteoarthritis* | 2,737 | 431.5 | 4.7 | 14.3 | 110.4 |
| Sprain/strain* | 1,787 | 372.0 | 4.1 | 18.0 | 115.4 |
| Injury musculoskeletal NOS | 825 | 247.5 | 2.7 | 25.6 | 117.3 |
| Abdominal pain* | 573 | 234.7 | 2.6 | 36.9 | 111.0 |
| Injury skin, other | 712 | 212.3 | 2.3 | 26.9 | 111.0 |
| Pregnancy* | 895 | 201.0 | 2.2 | 22.2 | 101.2 |
| Breast lump/mass (female) | 201 | 195.1 | 2.1 | 67.7 | 143.0 |
| Shoulder syndrome | 497 | 161.7 | 1.8 | 23.1 | 140.9 |
| *Subtotal* | *11,964* | *3,050.2* | *33.5* | — | — |
| **Total** | **149,088** | **9,096** | **100.0** | **5.5** | **109.9** |

(a) A test was counted more than once if it was ordered for the management of more than one problem at an encounter. There were 9,003 imaging test orders and 9,096 problem–imaging combinations.

(b) The percentage of total contacts with the problem that generated at least one order for imaging.

(c) The rate of imaging orders placed per 100 contacts with that problem generating at least one order for imaging.

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note*: Probs—problems; NOS—not otherwise specified.

## Other investigations ordered

Other investigations include diagnostic procedures ordered by the GP at the encounter. There were a total of 1,040 other investigations ordered by GPs during the study year (Table 2.23).

### Most frequent procedures

Table 2.46 lists the most common other investigations ordered by GPs. Each investigation is expressed as a percentage of all 'other investigations' and as a rate per 100 encounters with 95% confidence limits.

To find the total number of these investigations ordered or performed by the GP, the numbers of investigations in Table 2.46 need to be added to those in Table 2.34, which reports the diagnostic procedures performed by the GP at the encounter.

**Table 2.46: Most frequent other investigations**

| Treatment | Number | Per cent of other investigations | Rate per 100 encounters (*n*=101,993) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Electrical tracings* | 523 | 51.4 | 0.5 | 0.4 | 0.6 |
| Diagnostic endoscopy* | 330 | 32.4 | 0.3 | 0.3 | 0.4 |
| Physical function test* | 147 | 14.5 | 0.1 | 0.1 | 0.2 |
| *Subtotal* | *1,000* | *98.3* | — | — | — |
| **Total other investigations** | **1,017** | **100.0** | **1.0** | **0.9** | **1.1** |

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note:* LCL—lower confidence limit; UCL—upper confidence limit.

# 2.11 Practice nurse activity

This section describes the activities of practice nurses that were directly associated with the GP–patient encounters recorded by the GPs in BEACH. New Medicare item numbers were introduced in November 2004 that allowed GPs to claim for specific tasks undertaken by a practice nurse under the direction of the GP. Changes in the recording form were made for the 2005–06 BEACH year to allow capture of this information. The changes in the form, and the methods of reporting, are described in Chapter 5. In summary: for the first time GPs were allowed to record multiple (up to three) Medicare item numbers where appropriate, rather than be limited to one item number. In the 'other treatments' section, for each problem managed, GPs were asked to tick the practice nurse box if the treatment recorded was provided by the practice nurse, rather than by the GP. If the box was not ticked it was assumed that the GP gave the 'other treatment'. The survey form allowed GPs to record up to two other treatments for each problem managed at the encounter. Other treatments included all clinical and procedural treatments provided at the encounters. These groups are defined in Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>. Patient observations that were regarded as routine clinical measurements, such as measurements of blood pressure, were not included.

This section investigates:

- the distribution of the Medicare items claimed for practice nurses (we reported the total number of these items as one group in Section 2.3, Table 2.11)
- the treatments provided by practice nurses in direct association with the GP-recorded encounters
- problems for which the practice nurse provided the treatment in direct association with the GP-recorded encounters.

In Section 2.8, we reported all treatments (other than medications) recorded by the GPs, irrespective of whether they were provided by the GP or by a practice nurse. As in previous years we did not include 'injections' recorded in the provision of immunisations and vaccinations, as these are already counted as pharmacological management. In contrast, in this section, being a description of practice nurse activity, we report only the activities ticked as being conducted by a practice nurse. We also include the injections for immunisation that were not counted in Section 2.8.

When viewing these results, it must be remembered that these 'practice nurse' data will not include activities undertaken by the practice nurse during the GP's BEACH recording period that were outside (not associated with) the recorded encounter. Such activities could include Medicare claimable activities (e.g. immunisations/vaccinations) provided under instruction from the GP but not at the time of the encounter recorded in BEACH, or provision of other activities not currently claimable from Medicare (e.g. dietary advice on a one-to-one basis, or in a group situation).

## Practice nurse Medicare claims versus practice nurse activity

Practice nurses were involved in 4,013 GP–patient encounters but only 1,696 encounters (42.3%) were claimable for Medicare under the practice nurse item numbers. Items for practice nurse activities accounted for 1.5% of all items recorded in 2005–06 (Table 2.11).

### Distribution of practice nurse item numbers claimed at encounters

By far the majority (79.5%) of the 1,696 practice nurse item numbers recorded for the BEACH encounters were for the provision of immunisations by the practice nurse. A further 30% were for wound treatment. Items claimed for practice nurse conduct of Pap smears were very few, and the item for cervical smears for women who had not had a smear in the previous 4 years was never recorded (Table 2.47).

**Table 2.47: Distribution of practice nurse item numbers recorded at encounter**

| Medicare item number | Short descriptor | Number | Per cent of total |
|---|---|---|---|
| 10993 | Immunisation | 1179 | 69.5 |
| 10996 | Wound treatment | 509 | 30.0 |
| 10998 | Cervical smear—in regional, rural or remote area (RRMA 3–7) | 0 | 0.0 |
| 10999 | Cervical smear—women 20–69, no smear in past 4 years—in regional, rural or remote area (RRMA 3–7) | 8 | 0.5 |
| **Total** | **All Medicare practice nurse item numbers** | **1,696** | **100.0** |

*Note:* RRMA—Rural, Remote and Metropolitan Area classification. One encounter at which the patient was not seen by the GP but a practice nurse item number was recorded has been included in this table, but is not counted in the total practice nurse item numbers in Table 2.11.

## Treatments provided by practice nurses

There were 44,504 other treatments recorded by the GP that were reported in Section 2.8. There were a further 3,356 injections given, in the provision of immunisation (not reported in Section 2.8). In total there were 47,860 other treatments recorded.

At least one practice nurse activity was recorded at 4,013 encounters—3.9% of all encounters. They were involved in the management of 4,110 problems (2.8% of all problems managed by the participating GPs). Total other treatments given by practice nurses numbered 4,310, representing 9.0% of all other treatments recorded at BEACH encounters. The majority (95.2%) of the practice nurse activity was procedural in nature. These procedures represented almost a quarter (22.7%) of all procedures recorded. In contrast, the practice nurse undertook less than 1% of all clinical treatments recorded (Table 2.48).

**Table 2.48: Summary of other treatments given by practice nurse**

| | Performed by the practice nurse | | Performed by the GP | | |
|---|---|---|---|---|---|
| Treatment | Number | Per cent of total | Number | Per cent of total | Total number recorded[(a)] |
| Clinical treatments | 208 | 0.7 | 29,577 | 99.3 | 29,785 |
| Procedural treatments[(a)] | 4,103 | 22.7 | 14,147 | 77.3 | 18,075 |
| **Total other treatments** | **4,310** | **9.0** | **43,724** | **91.4** | **47,860** |

(a) Procedural treatments include all injections given for immunisations/vaccinations.

Table 2.49 provides a breakdown of the treatments undertaken by a practice nurse at the recorded encounters. As previously stated, procedures made up the vast majority of the practice nurse activity. Of the 4,103 procedures recorded, 40.1% were injections (which in the majority were for immunisations) and a further 23.2% were dressing/pressure/compression /tamponade. Together these accounted for more than half of all procedures undertaken by practice nurses. However, practice nurses provided a wide range of other activities in association with the GP encounters, and the most common are listed in Table 2.49.

Comparing this table with the claims data in Table 2.47, we can conclude that 71.7% of the injections were claimed as a practice nurse Medicare item number and 53.2% of the dressing/pressure/compression/tamponade work was claimed under Medicare. Some of the dressings may be follow-up encounters where the follow-up treatment is included in the initial Medicare claim (claimed in the past), and may therefore not be claimable for the practice nurse.

Clinical treatments (such as advice and counselling) accounted for only 5% of the practice nurse activity. General advice/education was most commonly recorded, accounting for 17.1% of the clinical treatments provided by the nurse, followed by counselling about the problem under management (16.7%), other administrative and documentation work (12.9%) and counselling/advice about nutrition/weight (11.0%).

**Table 2.49: Most frequent treatments provided by practice nurses**

| Treatment | Number | Per cent of group[(a)] | Rate per 100 encs involving practice nurse (*n*=4,013)[(a)] | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| **Clinical treatments** | **208** | **100.0** | **5.2** | **3.7** | **6.7** |
| Advice/education* | 36 | 17.1 | 0.9 | 0.4 | 1.3 |
| Counselling—problem* | 35 | 16.7 | 0.9 | 0.2 | 1.5 |
| Other admin/document* | 27 | 12.9 | 0.7 | 0.4 | 1.0 |
| Counselling/advice—nutrition/weight* | 23 | 11.0 | 0.6 | 0.2 | 1.0 |
| Observe/wait* | 21 | 10.1 | 0.6 | 0.0 | 1.2 |
| **Procedural treatments** | **4,103** | **100.0** | **102.2** | **100.1** | **104.3** |
| Injection* | 1,645 | 40.1 | 41.0 | 36.6 | 45.4 |
| Dressing/pressure/compression/tamponade* | 952 | 23.2 | 23.7 | 21.3 | 26.2 |
| Incision/drainage/flushing/aspiration/ removal body fluid* | 326 | 8.0 | 8.1 | 6.2 | 10.0 |
| Excision/removal issue/biopsy/destruction/ debridement/cauterisation* | 299 | 7.3 | 7.4 | 5.6 | 9.2 |
| Repair/fixation—suture/cast/prosthetic device (apply/remove)* | 256 | 6.2 | 6.4 | 5.0 | 7.8 |
| Electrical tracings* | 218 | 5.3 | 5.4 | 4.1 | 6.7 |
| Physical function test* | 158 | 3.8 | 3.9 | 2.6 | 5.3 |
| Urine test* | 57 | 1.4 | 1.4 | 0.8 | 2.0 |
| Physical medicine/rehabilitation* | 38 | 0.9 | 0.9 | 0.4 | 1.5 |
| Other therapeutic procedures/surgery NEC* | 37 | 0.9 | 0.9 | 0.5 | 1.3 |
| Other diagnostic procedures* | 34 | 0.8 | 0.9 | 0.3 | 1.4 |
| Glucose test | 28 | 0.7 | 0.7 | 0.3 | 1.1 |
| **Total other treatments** | **4,310** | **—** | **107.4** | **105.9** | **108.9** |

(a) Figures do not total 100 as more than one treatment can be performed by a practice nurse at each encounter and only those individual treatments accounting for >=0.5% of total treatments by practice nurse are included.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 5, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note:* Encs—encounters; LCL—lower confidence limit; UCL—upper confidence limit; NEC—not elsewhere classified.

## Problems managed with practice nurse involvement

Treatments provided by a practice nurse were most often in the management of immunisation (30.2% of all problems managed with involvement of a practice nurse), followed by chronic skin ulcer (6.7%) and laceration/cut (6.3%) (Table 2.50).

**Table 2.50: The most common problems managed with the involvement of practice nurse**

| Problem managed | Number | Per cent of problems involving practice nurse (*n*=4,110) | Rate per 100 encs involving practice nurse[(a)] (*n*=4,013) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Preventive immunisation/vaccination—all* | 1240 | 30.2 | 30.9 | 26.9 | 34.9 |
| Chronic skin ulcer (incl varicose ulcer) | 274 | 6.7 | 6.8 | 5.6 | 8.0 |
| Laceration/cut | 258 | 6.3 | 6.4 | 5.0 | 7.8 |
| Malignant neoplasm skin | 130 | 3.2 | 3.2 | 2.3 | 4.2 |
| General check-up* | 100 | 2.4 | 2.5 | 1.7 | 3.3 |
| Excessive ear wax | 89 | 2.2 | 2.2 | 1.6 | 2.9 |
| Skin infection, post traumatic | 72 | 1.8 | 1.8 | 1.3 | 2.3 |
| Diabetes* | 70 | 1.7 | 1.7 | 1.0 | 2.4 |
| Asthma | 61 | 1.5 | 1.5 | 1.0 | 2.0 |
| Repair/fixate—suture/cast/prosthetic device (apply/remove) | 50 | 1.2 | 1.2 | 0.7 | 1.8 |
| Skin symptom/complaint NEC | 47 | 1.2 | 1.2 | 0.7 | 1.7 |
| Atrial fibrillation/flutter | 47 | 1.1 | 1.2 | 0.6 | 1.7 |
| Abrasion/scratch/blister | 47 | 1.1 | 1.2 | 0.7 | 1.6 |
| Fracture* | 44 | 1.1 | 1.1 | 0.7 | 1.5 |
| Contraception, other than oral | 43 | 1.1 | 1.1 | 0.6 | 1.5 |
| Hypertension* | 43 | 1.0 | 1.1 | 0.6 | 1.5 |
| Injury skin NEC | 41 | 1.0 | 1.0 | 0.6 | 1.4 |
| **Total problems** | **4,110** | **100.0** | **102.4** | **101.7** | **103.2** |

(a) Rate of nurse provision of treatment for selected problem per 100 total encounters.

*Note:* Encs—encounters; LCL—lower confidence limit; UCL—upper confidence limit; NEC—not elsewhere classified; incl—including.

## Discussion

These results suggest that many GPs have utilised practice nurses for provision of immunisations and, to a lesser degree, for dressings. However, they also suggest that there has been very little utilisation of the Pap smear practice nurse item numbers. This may be due to multiple factors including:

- the fact that the practice nurse Pap smear Medicare item numbers can be claimed only by GPs in regional, rural and remote areas—i.e. by about 26% of all GPs in the BEACH sample frame (see Section 2.2, Table 2.2).
- possible patient preference for Pap smears to be done by the GP
- GP preference
- lack of training and experience of practice nurses in undertaking Pap smears
- the difficulty of separating out the Pap smear from the total clinical activity of a female check-up. Female genital checks often involve a bi-manual pelvic examination, breast check, and may also involve discussion of sexual issues and contraception which in turn may result in prescription of medication.

The practice nurse Medicare initiatives have clearly led to a shift of some work from the GP to the nurse. However, this has had an impact on the rate at which GPs provide their patients

with advice and counselling about health. Whether this advice and counselling is now being done by the practice nurse on other occasions, or as part of the procedural work the nurse does on behalf of the GP is not possible to assess from BEACH, as the nurse does not complete the BEACH form. The effect of the practice nurse on GP provision of advice and counselling is discussed in further detail in Section 4.2.

There were many activities undertaken by the practice nurse associated with the GP's BEACH encounters and many of these services were not claimable from Medicare. Some of these activities could be considered as possible additions to the Medicare practice nurse items. However, if this is to be considered, are there sufficient nurses available in the community to encourage expansion of their role in general practice without having a detrimental affect on the nursing labour force in other services such as hospitals?

# 2.12 Patient risk factors

General practice is commonly identified as a significant intervention point for health care and health promotion because GPs have considerable exposure to the health of the population.

Since April 1998, a section on the bottom of each encounter form has been used to investigate aspects of patient health or health care delivery not covered by general practice consultation-based information. These additional substudies are referred to as SAND (Supplementary Analysis of Nominated Data). The SAND methods, used in the substudies reported here, are described in Section 5.9).

## Body mass index

Overweight and obesity have been estimated to account for more than 4% of the total burden of disease in Australia.[32] The 1999–00 Australian diabetes, obesity and lifestyle study (AusDiab) estimated that 60% of Australians aged over 25 years were overweight or obese (BMI >25). Men were more likely to be overweight or obese than women (67% compared with 52%).[33] This year we have adopted the WHO recommendations[34] for BMI groups. This has affected the division between underweight and normal weight, which in previous reports was set at a BMI of 20, but is now set at 18.5. BMI data for previous years reported in Chapter 3 and Appendix 4 have been re-calculated and are reported for all years according to the WHO criteria.

### Body mass index of adults

The sample size was 33,101 patients aged 18 years and over at encounters with 1,005 GPs.

- More than half (56.8%) of patients were overweight or obese—22.2% obese and 34.6% overweight.
- Only 2.8% of patients were underweight.
- 40% of patients had a BMI that was in the normal range (Table 2.51).
- Males were more likely to be overweight or obese (64.2%, 95% CI: 63.1–65.3) than females (51.9%, 95% CI: 50.8–52.9).
- Overweight/obesity was most prevalent in male patients aged 45–64 years (Figure 2.6).

- In the 18–24 years age group, 7.2% of women and 3.5% of men were underweight, as were 6.1% of women and 2.4% of men aged 75 years or more (Figure 2.7). This is considerably lower than reported in previous years because of the use of the lower BMI cut-off for normal of 18.5 instead of 20.

These results are consistent with those of the 1999–00 AusDiab study[33] and the results reported for each BEACH year from 2000–01 onwards.[35] They are also broadly consistent with the Australian Bureau of Statistics 2001 figures from the National Health Survey of 58% of adults aged 18 or more being overweight or obese.[36]

**Table 2.51: Patient body mass index (aged 18 years and over)**

| | Male[(a)] | | | Female[(a)] | | | Total respondents | | |
|---|---|---|---|---|---|---|---|---|---|
| BMI class | Per cent | 95% LCL | 95% UCL | Per cent | 95% LCL | 95% UCL | Per cent | 95% LCL | 95% UCL |
| Obese | 21.6 | 20.7 | 22.5 | 22.6 | 21.7 | 23.4 | 22.2 | 21.5 | 22.9 |
| Overweight | 42.6 | 41.6 | 43.6 | 29.3 | 28.6 | 30.0 | 34.6 | 33.9 | 35.2 |
| Normal | 34.3 | 33.3 | 35.4 | 44.6 | 43.6 | 45.6 | 40.5 | 39.7 | 41.4 |
| Underweight | 1.5 | 1.3 | 1.7 | 3.5 | 3.2 | 3.8 | 2.8 | 2.5 | 3.0 |
| **Total (*n*, %)** | **12,882** | **100.0** | **—** | **19,976** | **100.0** | **—** | **33,101** | **100.0** | **—** |

(a) Patient sex was unknown for 243 respondents.
*Note:* BMI—body mass index; LCL—lower confidence limit; UCL—upper confidence limit.

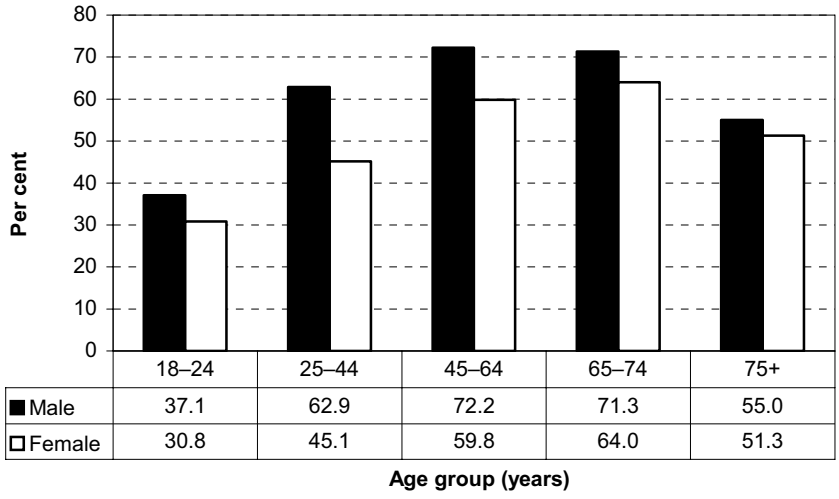



**Figure 2.6: Age–sex-specific rates of overweight and obesity in adults**

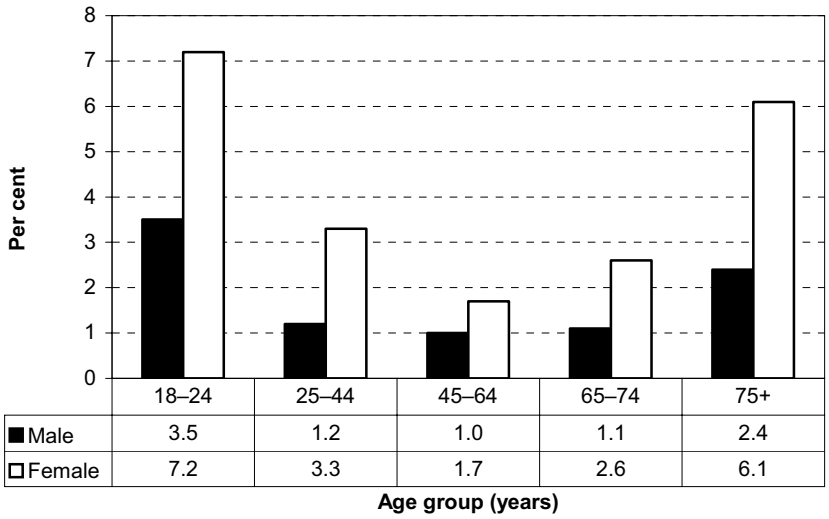



**Figure 2.7: Age–sex-specific rates of underweight in adults**

## Body mass index of children

BMI was calculated for 3,479 patients aged 2–17 years at encounters with 855 GPs.

- Three in ten children (30.4%, 95% CI: 28.6–32.3) were considered overweight or obese; 11.9% (95% CI: 10.6–13.2) of all children were considered obese and 18.6% (95% CI: 17.2–19.9) children were defined as overweight (results not tabulated).
- There was no difference in prevalence of overweight/obesity between male (30.5%, 95% CI: 28.1–33.0) and female children (30.4%, 95% CI: 28.1–32.7).
- The age-specific rates of being obese follow very similar patterns for both sexes (Figures 2.8 and 2.9).

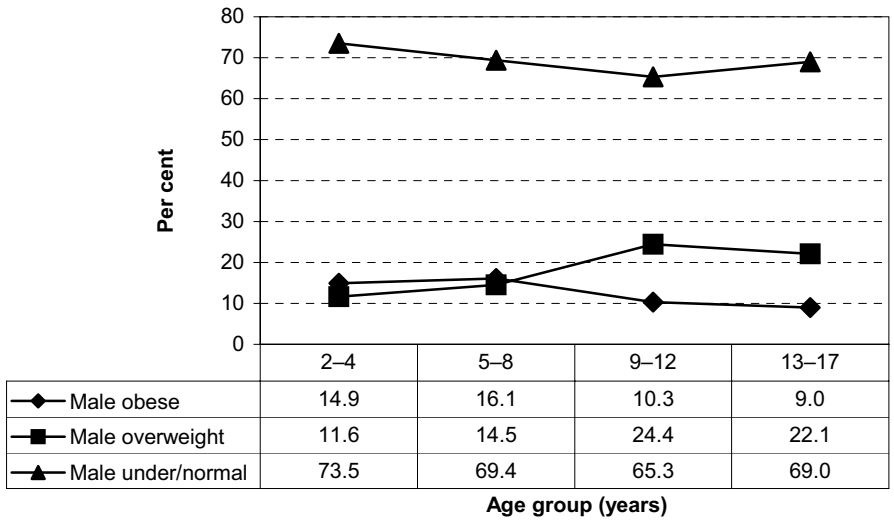
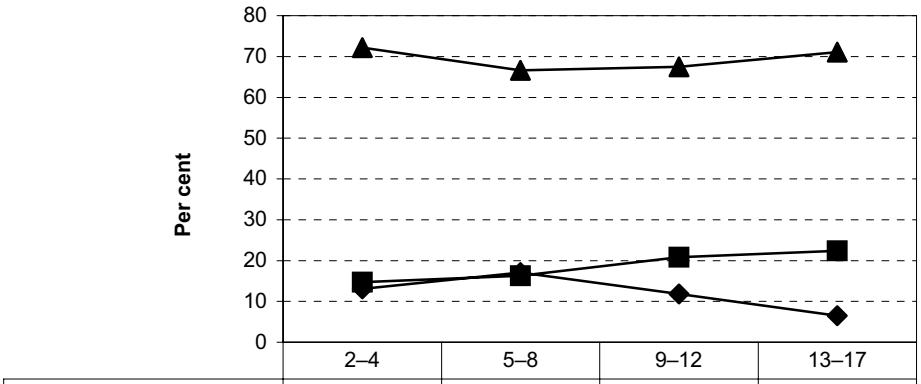



**Figure 2.8: Age-specific rates of obesity, overweight and normal/underweight in male children**




| | 2–4 | 5–8 | 9–12 | 13–17 |
|---|---|---|---|---|
| Female obese | 13.1 | 17.1 | 11.8 | 6.5 |
| Female overweight | 14.7 | 16.3 | 20.8 | 22.4 |
| Female under/normal | 72.2 | 66.6 | 67.5 | 71.1 |

Age group (years)

**Figure 2.9: Age-specific rates of obesity, overweight and normal/underweight in female children**

## Smoking

Tobacco smoking is the leading cause of drug-related death and hospital separations in Australia.[37] It has been identified as the risk factor associated with the greatest disease burden, accounting for 9.7% of the total burden of disease in Australia.[32] According to the 2001 National Drug Strategy Household Survey (NDSHS), 19.5% of Australians aged 14 years and over smoked daily, 21.1% of males and 18.0% of females.[38]

The smoking status of 33,558 adult patients was established at encounters with 1,005 GPs.

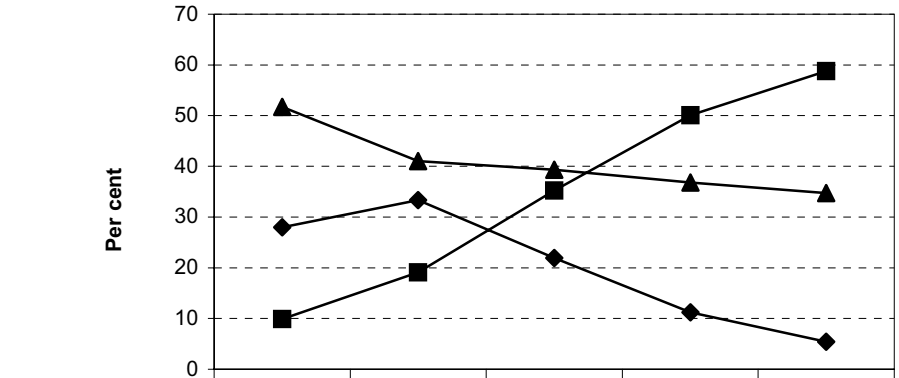
- 17% of adult patients were daily smokers.
- Significantly more male (20.7%) than female patients (14.7%) were daily smokers.
- Only 3.6% of adult patients were occasional smokers.
- More than a quarter of the adults (27.1%) were previous smokers (Table 2.52).
- Daily smoking was most prevalent among younger adult patients (aged 18–24 and 25–44) with one in four of these patients reporting daily smoking.
- Almost 60% of male and 25% of female patients aged 75 years and over were previous smokers but only 5% in this age group were daily smokers (Figures 2.10 and 2.11).

**Table 2.52: Patient smoking status (aged 18 years and over)**

| | Male[(a)] | | | Female[(a)] | | | Total respondents | | |
|---|---|---|---|---|---|---|---|---|---|
| Smoking status | Per cent | 95% LCL | 95% UCL | Per cent | 95% LCL | 95% UCL | Per cent | 95% LCL | 95% UCL |
| Daily | 20.7 | 19.7 | 21.8 | 14.7 | 14.0 | 15.4 | 17.1 | 16.3 | 17.8 |
| Occasional | 4.1 | 3.7 | 4.6 | 3.3 | 3.0 | 3.6 | 3.6 | 3.4 | 3.9 |
| Previous | 35.7 | 34.5 | 36.9 | 21.5 | 20.7 | 22.3 | 27.1 | 26.3 | 27.8 |
| Never | 39.5 | 38.2 | 40.7 | 60.5 | 59.5 | 61.6 | 52.3 | 51.3 | 53.2 |
| **Total (*n*, %)** | **13,016** | **100.0** | **—** | **20,288** | **100.0** | **—** | **33,558** | **100.0** | **—** |

(a) Patient sex was unknown for 254 respondents.

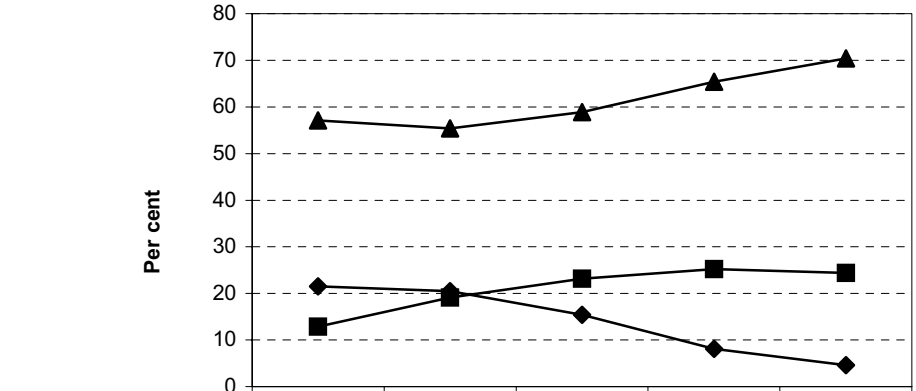
*Note:* LCL—lower confidence limit; UCL—upper confidence limit.




| | 18–24 | 25–44 | 45–64 | 65–74 | 75+ |
|---|---|---|---|---|---|
| Male daily | 28.0 | 33.3 | 21.9 | 11.2 | 5.4 |
| Male previous | 9.9 | 19.1 | 35.2 | 50.1 | 58.8 |
| Male never | 51.7 | 41.0 | 39.3 | 36.8 | 34.7 |

Age group (years)

**Figure 2.10: Smoking status—male age-specific rates**




| | 18–24 | 25–44 | 45–64 | 65–74 | 75+ |
|---|---|---|---|---|---|
| Female daily | 21.5 | 20.5 | 15.4 | 8.1 | 4.6 |
| Female previous | 12.9 | 19.1 | 23.2 | 25.2 | 24.4 |
| Female never | 57.1 | 55.4 | 58.9 | 65.4 | 70.4 |

Age group (years)

**Figure 2.11: Smoking status—female age-specific rates**

## Alcohol consumption

In people aged 65 years and over, low to moderate consumption of alcohol has been found to have a preventive effect against selected causes of morbidity and mortality (e.g. cardiovascular disease).[37] The beneficial impact of low alcohol consumption has been found to prevent more mortality than is caused by harmful alcohol consumption.[37] Alcohol consumption accounted for 4.9% of the total burden of disease in Australia; however, after taking into account the benefit derived from low to moderate alcohol consumption, this fell to 2.2%.[32]

The 2001 NDSHS found that 9.9% of people aged 14 years and over (10.2% of males and 9.4% of females) drank at levels considered to be risky or high risk for their health in the long term.[38] This risk level of alcohol consumption was based on the NHMRC 2001 guidelines.[39] The NDSHS also found that 34.4% of people aged 14 years and over (39.3% of males and 29.6% of females) drank alcohol at levels which put their health at risk in the short term during the preceding 12 months.[38]

The questions asked of the patients and the methods used to classify at-risk levels of alcohol consumption in the BEACH study are described in Section 5.9. Patient self-reported alcohol consumption was recorded at 32,753 adult patient (18 years and over) encounters with 1,005 GPs.

- One-quarter of patients reported drinking alcohol at at–risk levels.
- At-risk drinking was more prevalent in male (31.6%) than in female patients (22.2%) (Table 2.53).
- At-risk drinking was most prevalent in the 18–24 year age group, where almost half of the males and more than a third of females reported at-risk alcohol consumption.
- The proportion of patients who were at-risk drinkers decreased with age for both males and females (Figure 2.12).

These estimates are a little lower than those for short-term risk from the NDSHS.[38] This is likely to be due to the difference in the age ranges studied (14 and over in NDSHS and 18 and over in BEACH), and to differences in the age–sex distributions of the study populations. As older people attend a GP more often than young adults do, they have a greater chance of being selected in the subsample and this leads to a greater proportion of older people, the group least likely to report drinking alcohol at at-risk levels.

**Table 2.53: Patient alcohol consumption (aged 18 years and over)**

| | Male | | | Female | | | Total respondents | | |
|---|---|---|---|---|---|---|---|---|---|
| **Alcohol consumption** | **Per cent** | **95% LCL** | **95% UCL** | **Per cent** | **95% LCL** | **95% UCL** | **Per cent** | **95% LCL** | **95% UCL** |
| At-risk drinker | 31.6 | 30.3 | 32.8 | 22.2 | 21.3 | 23.2 | 25.9 | 25.0 | 26.8 |
| Responsible drinker | 47.9 | 46.7 | 49.1 | 42.8 | 41.8 | 43.9 | 44.8 | 44.0 | 45.7 |
| Non-drinker | 20.5 | 19.4 | 21.6 | 35.0 | 33.6 | 36.3 | 29.3 | 28.2 | 30.4 |
| **Total (*n*, %)** | **12,792** | **100.0** | **—** | **19,961** | **100.0** | **—** | **32,753** | **100.0** | **—** |

*Note:* LCL—lower confidence limit; UCL—upper confidence limit.

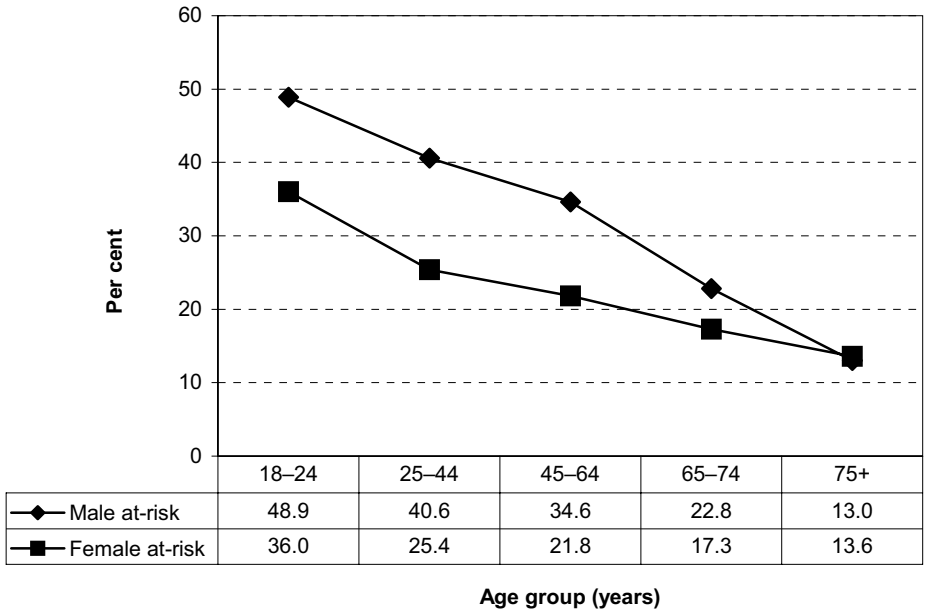



**Figure 2.12: Age–sex-specific rates of at-risk alcohol consumption**

## Risk factor profile of adult patients

From 2001–02 onwards, all patient risk factor questions (BMI, smoking and alcohol consumption) were asked of the same subsample of patients. This allows us to build a risk profile of this sample of adult patients. For the purposes of this analysis, being overweight or obese, a daily smoker or an at-risk drinker are considered risk factors. A risk factor profile was prepared for 32,076 adult patients (aged 18 or more) (Table 2.54).

- Almost half of adult patients had one risk factor. Being overweight or obese accounted for three-quarters of these patients.
- One in five patients had two risk factors, the most common combinations being:
  - overweight + at-risk alcohol consumption—7.0% of surveyed patients
  - obesity + at-risk alcohol consumption—3.9% of surveyed patients
  - daily smoking + at-risk alcohol consumption—3.4% of surveyed patients.
- A small minority (3.9%) of patients reported having all three risk factors.

Table 2.55 shows the number of risk factors by patient sex. Female patients reported significantly lower levels of risk factors than males:

- only one in five males compared with almost a third of females reported none of the measured risk factors
- one-quarter of males compared with 15% of females reported two risk factors.

### Table 2.54: Risk factor profile of patients (aged 18 years and over)

| Number of risk factors | Number | Per cent of patients (*n*=32,076) | 95% LCL | 95% UCL |
|---|---|---|---|---|
| **None** | **8,829** | **27.5** | **26.7** | **28.3** |
| **One** | **15,772** | **49.2** | **48.5** | **49.9** |
| Overweight only | 7,089 | 22.1 | 21.5 | 22.7 |
| Obese only | 4,727 | 14.7 | 14.2 | 15.3 |
| At-risk alcohol level only | 2,524 | 7.9 | 7.4 | 8.3 |
| Current daily smoker only | 1,432 | 4.5 | 4.2 | 4.8 |
| **Two** | **6,232** | **19.4** | **18.8** | **20.0** |
| Overweight and at-risk alcohol level | 2,229 | 7.0 | 6.6 | 7.3 |
| Obese and at-risk alcohol level | 1,243 | 3.9 | 3.6 | 4.1 |
| Daily smoker and at-risk alcohol level | 1,097 | 3.4 | 3.2 | 3.7 |
| Overweight and current daily smoker | 956 | 3.0 | 2.8 | 3.2 |
| Obese and current daily smoker | 707 | 2.2 | 2.0 | 2.4 |
| **Three** | **1,243** | **3.9** | **3.6** | **4.1** |
| Overweight and current daily smoker and at-risk alcohol level | 820 | 2.6 | 2.4 | 2.8 |
| Obese and current daily smoker and at-risk alcohol level | 423 | 1.3 | 1.2 | 1.5 |

*Note:* LCL—lower confidence limit; UCL—upper confidence limit.

### Table 2.55: Number of risk factors, by patient sex

| Number of risk factors | Number | Per cent of patients | 95% LCL | 95% UCL |
|---|---|---|---|---|
| **Male patients** | **12,572** | **100.0** | **—** | **—** |
| Zero | 2,647 | 21.1 | 20.1 | 22.0 |
| One | 5,945 | 47.3 | 46.3 | 48.3 |
| Two | 3,234 | 25.7 | 24.8 | 26.7 |
| Three | 746 | 5.9 | 5.5 | 6.4 |
| **Female patients** | **19,504** | **100.0** | **—** | **—** |
| Zero | 6,182 | 31.7 | 30.7 | 32.7 |
| One | 9,827 | 50.4 | 49.5 | 51.2 |
| Two | 2,998 | 15.4 | 14.7 | 16.0 |
| Three | 497 | 2.6 | 2.3 | 2.8 |
| **Total patients** | **32,076** | **—** | **—** | **—** |

*Note:* LCL—lower confidence limit; UCL—upper confidence limit.