# General practice activity in Australia 2007–08

## Australian GP Statistics and Classification Centre

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The Australian General Practice Statistics and Classification Centre (previously Unit) is a collaborating unit of the Australian Institute of Health and Welfare and the University of Sydney, situated within the Family Medicine Research Centre at Westmead Hospital. It fulfils the obligation of the Australian Institute of Health and Welfare to collect statistics regarding general practitioners, their patients and their patients' care.

**Companion publication:**

Britt H, Miller GC, Charles J, Henderson J, Bayram C, Harrison C, Valenti L, Fahridin S, Pan Y, O'Halloran J 2008. General practice activity in Australia 1998–99 to 2007–08: 10 year data tables. General practice series no. 23. Cat. no. GEP 23. Canberra: AIHW.

**Recent related publications:**

Britt H, Miller GC, Charles J, Bayram C, Pan Y, Henderson J, Valenti L, O'Halloran J, Harrison C, Fahridin S 2008. General practice activity in Australia 2006–07. General practice series no. 21. Cat. no. GEP 21. Canberra: AIHW.

Britt H, Miller GC, Henderson J, Bayram C 2007. Patient-based substudies from BEACH: abstracts and research tools 1999–2006. General practice series no. 20. Cat. no. GEP 20. Canberra: AIHW.

Britt H, Miller GC, Charles J, Pan Y, Valenti L, Henderson J, Bayram C, O'Halloran J, Knox S 2007. General practice activity in Australia 2005–06. General practice series no. 19. Cat. no. GEP 19. Canberra: AIHW.

Britt H, Miller GC, Knox S, Charles J, Pan Y, Henderson J, Bayram C, Valenti L, Ng A, O'Halloran J 2005. General practice activity in Australia 2004–05. General practice series no. 18. Cat. no. GEP 18. Canberra: AIHW.

Knox S, Britt H, Pan Y, Miller GC, Bayram C, Valenti L, Charles J, Henderson J, Ng A, O'Halloran J 2005. Locality matters: the influence of geography on general practice activity in Australia 1998–2004. General practice series no. 17. Cat. no. GEP 17. Canberra: AIHW.

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Britt H, Miller GC, Knox S, Charles J, Valenti L, Henderson J, Pan Y, Bayram C, Harrison C 2003. General practice activity in Australia 2002–03. General practice series no. 14. Cat. no. GEP 14. Canberra: AIHW.

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O'Halloran J, Britt H, Valenti L, Harrison C, Pan Y, Knox S 2003. Older patients attending general practice 2000–02. General practice series no. 12. Cat. no. GEP 12. Canberra: AIHW.

# BEACH

## *Bettering the Evaluation And Care of Health*

# General practice activity in Australia 2007–08

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# Foreword

This 2007–08 BEACH (Bettering the Evaluation And Care of Health) report presents empirical data of Australian general practice: the quantification of patients consulting their family doctor, the health problems encountered, and the diagnostic and therapeutic interventions that were initiated. The rich and thick descriptive information presented here is vital for health care policy and for primary care development. For those acquainted with the BEACH project, the presentation of these data could be seen as 'business as usual': this is the 10th annual report since the project started exploring general practice performance in 1998. In that 10-year period, the research team of the Australian General Practice Statistics and Classification Centre, in their happy collaboration of the University of Sydney and the Australian Institute of Health and Welfare, have developed impressive expertise to collect and corroborate all this information. For that reason, I would like to stress—in congratulating the research team with this splendid jubilee publication—how unique and how important their work is. It is important for Australian health care and for Australian primary care, but the BEACH expertise has an impact well beyond the Australian borders.

General practitioners work in direct contact with local communities and respond to the specific health needs of the patients in their community. The 2007–08 BEACH data illustrate this, for example in reporting that more than a third of the workload in general practice is currently directed at patients with chronic diseases—in particular hypertension, depressive disorder, diabetes, lipid disorders and osteoarthritis. This exemplifies also the generic nature of general practice, dealing with all patient groups for all health problems in all stages. But to appreciate the role of general practice and primary care, it is important to understand *why* patients came to contact their family doctor in the first place and *how* the episode of care started. The report stresses the importance of risk factors and lifestyles in the daily work of general practitioners and practice nurses.

Essential in the BEACH project is the processing of health information over the recording of a mere diagnosis and procedure, and this is the international impact of this report. General practice has always been a feature of health care in local communities, but for a long time, the domain of the most common health problems encountered in society have remained the least studied. It required a thorough methodology, based on a comprehensive classification—the International Classification of Primary Care (ICPC), developed by the World Organization of Family Doctors (Wonca)—to open general practice for research and gain insight in its function. The leadership of the BEACH team have been instrumental in developing ICPC, and, on the other hand, the BEACH data demonstrate the richness of ICPC as an integral component of health informatics. That is where the 10 years of data collection in the context of Australian general practice has an impact well beyond its contribution to Australian health care.

Nothing beats empirical data in raising the appetite for more data, and the current classifications like ICPC are only the beginning of an integrated, comprehensive health informatics system. Improving the compatibility of ICPC as the primary care system with other major systems (International Classification of Diseases, ICD, Systematized Nomenclature of Medicine – Clinical Terms, SNOMED CT) is at this moment on the agenda. Wonca, through its International Classification Committee, is involved in this, and the BEACH experience will continue to make an invaluable contribution here.

In my judgement, the BEACH report presents the most convincing case of why such comprehensive general practice data are essential for health care policy, though possibly a bit hidden in all the information. For that reason, I would like to spell it out in concluding this foreword: of all health problems presented in general practice, less than 1 in 10 is referred. In other words, general practitioners, practice nurses and other members of the primary care team take the full care of more than 90% of all health problems that present to a general practitioner. This is the primary care lead in health care, and further improving population health requires a focus here. This report presents an invaluable basis for this.

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President

World Organization of Family Doctors (Wonca)

# Acknowledgments

# Contents

# Abbreviations

| | |
|---|---|
| ABS | Australian Bureau of Statistics |
| AGPSCC | Australian General Practice Statistics and Classification Centre, University of Sydney, a collaborating unit of the Australian Institute of Health and Welfare |
| AHS | allied health service |
| AIHW | Australian Institute of Health and Welfare |
| ASGC | Australian Standard Geographical Classification |
| ATC | Anatomical Therapeutic Chemical (classification) |
| BEACH | Bettering the Evaluation And Care of Health |
| BMI | body mass index |
| CAPS | Coding Atlas for Pharmaceutical Substances |
| CI | confidence interval (in this report 95% CI is used) |
| CRF/CKD | chronic renal failure/chronic kidney disease |
| CT | computerised tomography |
| DoHA | Australian Government Department of Health and Ageing |
| DVA | Australian Government Department of Veterans' Affairs |
| encs | encounters |
| ESR | erythrocyte sedimentation rate |
| EUC | electrolytes, urea and creatinine |
| FMRC | Family Medicine Research Centre |
| GP | general practitioner |
| GPSCU | General Practice Statistics and Classification Unit (now the Australian General Practice Statistics and Classification Centre, AGPSCC) |
| HbA1c | haemoglobin, type A1c |
| HDL | high-density lipoprotein |
| HIV | human immunodeficiency virus |
| ICPC | International Classification of Primary Care |
| ICPC-2 | International Classification of Primary Care (Version 2) |
| ICPC-2 PLUS | a terminology classified according to ICPC-2 |
| INR | International Normalised Ratio |
| LCL | lower confidence limit |
| MBS | Medicare Benefits Schedule |
| M,C&S | microscopy, culture and sensitivity |
| NDSHS | National Drug Strategy Household Survey |

| | |
|---|---|
| NESB | non-English-speaking background |
| NSAID | non-steroidal anti-inflammatory drug |
| OTC | over-the-counter (that is, medications advised for over-the-counter purchase) |
| PBS | Pharmaceutical Benefits Scheme |
| QA | quality assurance (in this case the Quality Assurance Program of the Royal Australian College of General Practitioners) |
| RACGP | Royal Australian College of General Practitioners |
| RFE(s) | reason(s) for encounter (see Glossary) |
| RRMA | Rural, Remote and Metropolitan Areas |
| SAND | Supplementary Analysis of Nominated Data |
| SAS | Statistical Analysis System |
| TC | total cholesterol |
| UCL | upper confidence limit |
| WHO | World Health Organization |
| Wonca | World Organization of Family Doctors |

# Executive summary

This report summarises results from the 10th year of the BEACH (Bettering the Evaluation And Care of Health) program, from April 2007 to March 2008, from a sample of 95,300 patient encounters with 953 general practitioners (GPs).

BEACH is a continuous cross-sectional national study of general practice activity in Australia that began in April 1998. A summary report containing 10 years of BEACH data *General practice activity in Australia 1998–99 to 2007–08: 10 year data tables* is available from <www.aihw.gov.au/publications/index.cfm/subject/19> (AIHW catalogue number GEP 23).

**Method** (chapters 2 and 3)

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 claims data by the Australian Government Department of Health and Ageing. GPs are approached by letter and followed up by telephone recruitment.

Participating GPs complete details about 100 consecutive patient encounters on structured paper encounter forms, and provide information about themselves and their practice. Results are reported in terms of GP and patient characteristics, patient reasons for encounter, problems managed and management techniques used.

A section at the bottom of each encounter form investigates aspects of patient health or health care delivery not covered by the consultation-based data. All GPs are asked to provide start and finish times, and complete patient risk factor data at 40 of their 100 encounters, including self-reported height and weight (for calculation of body mass index), smoking status and alcohol consumption.

**The general practitioners** (Chapter 4)

Of the 953 participating GPs:

- 63% were male, and 34% were aged 55 years or older
- almost 60% were in practices of fewer than five full-time equivalent GPs
- 74% had graduated in Australia
- 72% practised in major cities
- 50% were Fellows of the Royal Australian College of General Practitioners
- 86% worked in an accredited practice
- 71% worked in a practice that employed practice nurse(s)
- 74% worked 6–10 clinical sessions, and only 11% worked more than 10 sessions per week
- 45% provided their own or cooperative after-hours care
- 97% worked in a computerised practice, with computers used mainly for prescribing and billing purposes.

**The encounters** (Chapter 5)

Data were available for 95,300 encounters (953 GPs x 100 encounters), which, after weighting, amounted to 95,898 encounters.

For 98.6% of encounters, the patient was seen by the GP (direct encounters). About 97% of these were claimable through the Medicare Benefits Schedule (MBS) or the Australian Government Department of Veterans' Affairs (DVA), the majority (82.1%) as standard surgery consultations and 9.9% as long surgery consultations. Short and prolonged surgery consultations, and home and residential aged care visits were relatively rare.

In a subsample of 29,956 MBS/DVA-claimable encounters containing start and finish times, mean consultation length was 15.1 minutes (95% CI: 14.8–15.3), the median length was 13.0 minutes.

**The patients** (Chapter 6)

The patient was female at the majority (57.1%) of encounters. Patients aged less than 25 years accounted for 21.2% of encounters; 25–44 years for 23.4%; 45–64 years for 28.1% and 65 years and over for 27.3%.

The patient was new to the practice at 8.6% of encounters. Almost 42% of encounters were with patients who held a Commonwealth concession card, and at 0.9% of encounters the patient identified as an Aboriginal person or Torres Strait Islander.

There were 146,696 reasons for encounter (RFEs) recorded (153 RFEs per 100 encounters). RFEs of a general nature were most common (40.1 per 100 encounters), followed by respiratory (20.6 per 100), and musculoskeletal (15.4) and skin (15.4) problems. The 30 most common RFEs represented more than half the total, and 18 of these were symptoms or complaints (for example, cough, back complaints and rash). However, of the top five RFEs four were requests for check-ups, prescriptions, test results or immunisation.

**Problems managed** (Chapter 7)

There were 145,078 problems managed (151 per 100 encounters), the number managed at encounter increasing steadily with patient age. More problems were managed at encounters with female (154.4 per 100 encounters), than with male patients (147.4).

Problems of the respiratory system (19.4 per 100 encounters) were most often managed, followed by those of a general and unspecified nature, cardiovascular problems and musculoskeletal problems.

The 30 most frequently managed problems accounted for more than half the total. The most common were: hypertension (9.9 per 100 encounters), check-ups (6.3), upper respiratory tract infection (6.2), immunisation (5.2) and depression (4.0).

Problems new to the patient (38.1% of the total), were led by upper respiratory tract infections (4.8 per 100 encounters), immunisation/vaccination (2.8) and acute bronchitis (1.7).

Chronic problems accounted for more than a third (34.6%) of all problems managed, the most common being non-gestational hypertension (18.8%), depressive disorder (7.5%), non-gestational diabetes (7.3%), lipid disorders (7.0%) and osteoarthritis (4.9%).

**Overview of management** (Chapter 8)

At the 95,898 encounters, GPs undertook 211,029 management activities including medications, other treatments, referrals and admissions, and tests and investigations.

**Medications** (Chapter 9)

Of the 98,439 medications recorded (103 per 100 encounters and 68 per 100 problems managed), 80.3% were prescribed, 9.9% GP supplied, and 9.8% advised for over-the-counter (OTC) purchase. Extrapolation to all GP Medicare-claimed encounters (2007–08), suggests 88 million prescriptions, 10.8 million GP-supplied medications and 10.8 million advised OTC purchases.

*Prescribed medications:* There were 79,051 prescriptions recorded (82 per 100 encounters and 55 per 100 problems managed). The 30 most often prescribed accounted for 44.3% of the total. Of the top five, two were antibiotics, two were plain or combination paracetamol, and the fifth was atorvastatin. Where GPs specified 'number of repeats' (for 60,733 prescriptions), 34.5% had no repeats, and 33.8% had five repeats.

*Medications supplied by GPs:* Vaccines accounted for about 70% of the 9,702 GP supplied medications, influenza virus vaccine and the Papillomavirus vaccine being most common.

*Medications advised for over-the-counter purchase:* Of the 9,686 medications recommended for OTC purchase, analgesics made up almost one-third, led by paracetamol and ibuprofen.

**Other treatments** (Chapter 10)

A total of 49,130 other treatments were recorded in the management of patient morbidity, at a rate of 51.2 per 100 encounters.

*Clinical treatments:* There were 33,121 clinical treatments recorded (34.5 per 100 encounters), in the management of one in five (20.6%) problems. The most common were general advice and education (7.2 per 100 encounters), counselling about the problem under management (4.3), nutrition and weight counselling (4.2), advice about treatment (3.5) and psychological counselling (3.2).

*Procedural treatments:* There were 16,009 procedures recorded (16.7 per 100 encounters) in the management of 10.3% of all problems. The most frequent were excisions/biopsies, (3.4 per 100 encounters), local injections (2.3), dressings (2.2) and physical medicine/ rehabilitation (1.3 per 100).

**Referrals and admissions** (Chapter 11)

There were 12,008 referrals to other health services, (12.5 per 100 encounters) for 8.3% of all problems managed, most frequently to specialists (8.0 referrals per 100 encounters) and allied health services (3.4 per 100). Very few referrals were made to hospitals, emergency departments or other medical services.

The most common specialist referrals were to surgeons (11%), orthopaedic surgeons (9%), dermatologists (8%) and ophthalmologists (8%).

About 34% of referrals to allied health services were to physiotherapists, 19% to psychologists, 9% to podiatrists or chiropodists and 7% to dietitians or nutritionists.

**Tests and investigations** (Chapter 12)

Pathology was ordered at 17.4% of encounters (for 13.1% of problems managed) and imaging was ordered at 8.3% of encounters (for 5.7% of problems managed).

*Pathology:* The GPs recorded 41,375 orders for pathology tests/batteries of tests, at a rate of 43.2 per 100 encounters. Chemistry tests accounted for more than half of all pathology test orders, the most common being lipids (4.3 orders per 100 encounters), liver function (3.1), EUC (3.0), and glucose/glucose tolerance (2.5). The problems contributing most to pathology test orders were diabetes, hypertension, general check-ups and lipid disorders.

*Imaging:* There were 9,143 imaging test orders recorded, at a rate of 9.5 per 100 encounters. Diagnostic radiology accounted for half of all imaging test orders while ultrasound accounted for a further 35.2%. The problems contributing most to total imaging ordered were back complaint, osteoarthritis and fracture.

**Practice nurse activity** (Chapter 13)

Practice nurses were involved in 5,712 GP–patient encounters (6.0% of all encounters), assisting in the management of 4.1% of problems. Only one-third (34.7%) of these encounters had a Medicare practice nurse item number recorded.

Practice nurses provided 6,283 other treatments, representing 11.9% of all other treatments recorded. The majority (84.7%) of these were procedural (28.9% of all procedures recorded), the most frequent being injections (mainly for immunisation/vaccinations) (40.4%) and dressing/pressure/compression (22.3%).

Clinical treatments accounted for only 7.0% of practice nurse activity, and nurses provided less than 2% of all clinical treatments. Most common were administrative work (25.7% of nurse clinical activity), general advice and education (18.6%), treatment advice (7.6%) and counselling about the problem under management (7.2%).

The most common other investigations performed by the nurse were electrical tracings (such as electrocardiogram) (56.8% of other investigations) and physical function tests (38.5%).

**Patient risk factor substudies** (Chapter 14)

*Overweight and obesity in adults:* Sample size was 31,062 patients (aged 18 years and over) with 952 GPs. More than half (59.3%) the sample were overweight (35.4%); or obese (23.9%). Prevalence of overweight/obesity was higher among males (66.1%) than females (54.8), and most prevalent in those aged 45–74 years. Extrapolation to all patients who attended a GP at least once suggests 58.8% of the patient population are overweight (35.3%) or obese (23.5%).

*Overweight and obesity in children:* Sample size was 3,046 patients aged 2–17 years, with 801 GPs. Three in ten children (28.3%) were overweight (17.1%) or obese (11.2%). Prevalence did not differ among male and female children sampled.

*Smoking status:* Sample size was 31,652 adults (aged 18 years and over) with 952 GPs, 16.5% of whom were current daily smokers, 2.9% occasional smokers, and 27.9% previous smokers. Smoking was more prevalent among men (19.8%) than women (14.4%), and among younger adults. Extrapolation of these estimates to all patients who attended a GP at least once suggests 19.3% are daily smokers, 3.5% occasional, 25.7% previous, and 51.5% have never smoked.

*Alcohol consumption: S*ample size was 30,796 adults (aged 18 years and over) with 951 GPs. At-risk alcohol consumption levels were reported by 26.2%, being more prevalent among males (31.7%) than females (22.6%), and most prevalent in the 18–24 year age group. Extrapolation of these estimates to all patients who attended a GP at least once suggests that 29.3% of the patient population are at-risk drinkers.

# 1  Overview

This publication is the 10th annual report and the 22nd book in the series from the BEACH (Bettering the Evaluation And Care of Health) program, a continuous national study of general practice activity in Australia. It provides the annual results for the period April 2007 to March 2008 inclusive, using details of 95,300 encounters between general practitioners (GPs) and patients (about a 0.1% sample of all general practice encounters) from a random sample of 953 practising GPs across the country. In parallel with the release of this report, a summary of results from all 10 years of the BEACH program is published on the web in a report called *General practice activity in Australia 1998–99 to 2007–08: 10 year data tables*, at <www.aihw.gov.au/publications/index.cfm/subject/19> (AIHW catalogue number GEP 23). A third book using the 10 years of BEACH data collected to date will investigate in more detail changes in general practice activity in specific areas of interest, including the National Health Priority Areas. It will be published in mid-2009.

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 almost 1 million encounters from 9,874 participants representing about 7,400 individual GPs, or almost half of the GP sample frame from which the BEACH samples are drawn.

GPs provided by far the majority of the 111 million general practice services paid by Medicare in Australia in 2007–08, at an average rate of about five visits per head of population per year.[1] BEACH gives us some understanding of the content of these encounters and of the services and treatments that GPs provide.

## 1.1  Background

GPs are the first port of call in the Australian health care system. In 2007–08, they claimed about 107 million items of service (not including practice nurse item number claims) through Medicare and provided an estimated additional 5.4 million services that were paid for by other funders (such as workers compensation, state Government) or not charged for at all.[2]

About 88% of the Australian population visited a GP at least once in 2005–06.[3] Previous research using BEACH data suggested that in 2001–02, people in Australia spent on average 83 minutes with a GP per head of population. This compared with about 56 minutes per head in New Zealand and about 30 minutes per head in the United States during the same period.[4]

In December 2007, the population of Australia was estimated to be 21.2 million people.[5] In 2005–06, national expenditure on health was estimated to be $86.9 billion, 9% of gross domestic product, with governments funding two-thirds the total health expenditure at an average of $4,226 per person.[6,7]

- In 2005, in Australia, 49,393 medical practitioners were working as clinicians, of whom 44% were primary care providers. Of these, 80% were recognised general practitioners and 20% were other primary care medical practitioners.[8]

- There were 98 full-time equivalent practising primary care practitioners per 100,000 people in Australia in 2005.[8]

- By far the majority of visits to GPs are funded through the Commonwealth Medicare Benefits Schedule (MBS). In the 2007–08 financial year, there were about 107 million general practice services (excluding practice nurse items) paid through Medicare at an average of about five GP services per person.[1] This equates to about 293,000 services per day, or more than 2 million per week.

- In 2007, the primary cost to Medicare for GP items was over $4 billion.[1] Up-to-date estimates of secondary costs generated by GPs could not be located.

# 1.2   The BEACH program

In summary, the BEACH 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 0.1% sample of all general practice encounters) from a random sample of approximately 1,000 recognised practising GPs from across the country. The BEACH methods are described in Chapter 2 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 and Ambulatory Care Division of the Australian Government Department of Health and Ageing (DoHA). 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 three main aims of the BEACH program are:
- to provide a reliable and valid data collection process for general practice that is responsive to the ever-changing 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 11th year. The database for the first 10 years includes data for approximately 990,000 GP–patient encounters from almost 9,900 participating GPs. Each year the AGPSCC publishes an annual report of BEACH results through the AIHW. This publication reports results from the previous BEACH data year (that is, April 2007 to March 2008) 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. Recent examples are a comparative study of general practice activity in each of the states and territories of Australia[9], a comparative study of activity in rural and metropolitan areas of Australia[10], and a report of more than 100 BEACH substudies (including abstracts of results and the research tools).[11] All annual reports 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 strengths of the BEACH program

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 strengths of the BEACH program when compared with general practice activity data from other sources. These strengths are summarised below.

- BEACH is the only national study of general practice activity in the world that is continuous, relying on a random ever-changing 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.[12]

- Our access to a regular random sample of recognised GPs in active practice, through the Australian Government Department of Health and Ageing (DoHA), ensures that the GP sample 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 compared with the original sample frame.

- The ever-changing 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 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 (for example, 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. DoHA therefore provides an individual count of activity level (that is, 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 (for example, 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 (for example, 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.

# 1.3 Issues when using BEACH data with other national data

Users of the BEACH data might wish to consolidate information from multiple national data sources. Integration of data from multiple sources can provide a more comprehensive picture of the health and health care of the Australian community. It is therefore important that readers are aware of how the BEACH data differ from those drawn from others. This section summarises 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, those that then fall under the threshold will no longer be counted in the PBS for non-Commonwealth concession cardholders[13]

- have no record of the problem being managed.

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

- there is no information on the number of prescriptions not filled by the patient (and this also applies to the PBS).

These differences have a major impact on the numbers of prescriptions counted but also affect 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 cardholders or had reached the annual safety net threshold.[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 DVA.

- The MBS data include those GP services that have been billed to Medicare. BEACH includes all consultations, 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 2007–08, BEACH participants were limited to recording three Medicare item numbers for each encounter. In contrast, MBS data include all Medicare item numbers claimed. 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 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 underestimate 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, these Medicare data are not comparable with BEACH data.

- 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 items 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.

- This means that the MBS pathology data reflect those tests billed to the MBS after interpretation of the order by the pathologist and after selection of the three most expensive items.

- Pathology MBS items contain pathology tests that have been grouped on the basis of cost (for example, 'any two of the following … tests'). Therefore an MBS item often does not give a clear picture of the precise tests performed.

In BEACH, the pathology data:

- include details of pathology tests ordered by the participating GPs, however the GP is limited to the recording of five tests or battery of tests at each encounter, and as the number of tests/batteries ordered on any single occasion is increasing[2], an increasing number of additional tests ordered will be lost.

- 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 therefore differ, reflecting on the one hand the GP order and on the other the MBS-billed services from the pathologist.

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). We are currently investigating recent trends in pathology ordering by GPs under a Quality Use of Pathology project funded by the Diagnostics and Technology Branch of DoHA.

## 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], at the Family Medicine Research Centre website.

## The National Health Survey

The National Health Survey, conducted by the Australian Bureau of Statistics, provides estimates of population prevalence of specific diseases, and a measure of the problems taken to the GP by people in the 2 weeks before the survey.

- 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 National Health Survey have the advantage of accessing people who do not go to a GP as well as those who do. 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 national management rates.

The general practice patient population sits between the more clinical hospital-based population and the general population[20,21], with around 88% of Australians visiting a GP at least once in any year.[3] 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.

There has been a SAND (Supplementary Analysis of Nominated Data) substudy (see Section 2.4) of disease prevalence among patients seen in general practice. Those interested in disease prevalence should refer to the recently published papers: *Estimating prevalence of common chronic morbidities in Australia*[3], and *Prevalence and patterns of multimorbidity in Australia.*[22]

# 1.4   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

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 in journals and professional magazines. Appendix 3 lists all published material from BEACH, available from <www.aihw.gov.au/publications/index.cfm/subject/19>.

Since April 1998, a section at 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 2.4.

Abstracts for all SAND substudies from April 1999 to July 2006 inclusive were published in *Patient-based substudies from BEACH: abstracts and research tools 1999–2006*.[11] Abstracts of results and the research tools used in SAND substudies conducted between August 2006 and March 2007 were published in *General practice activity in Australia 2006–07*[2] and those conducted from April 2007 to January 2008 are included in Chapter 15 of this report.

Abstracts of results for all SAND substudies are also available on the FMRC's website <www.fmrc.org.au/publications/SAND_abstracts.htm>.

## 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 also have direct access to straightforward analyses on any selected problem, medication, pathology or imaging test through an interactive web server. All data made available to participating organisations are further 'de-identified'. Patient data are not identifiable, but are further stripped of date of birth (replaced with age in years and months) and postcode of residence (replaced with state and area type). GP characteristics data are only provided in the form of grouped output (for example, GPs aged less than 35 years) to any external organisation.

## 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: ischaemic heart disease in patients aged 45 years and over), a group report (subject: female patients aged 15–24 years) and a pharmacological-based standard report (subject: allopurinol) for a single year's data are available at <www.fmrc.org.au/purchase.htm>.

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

# 2   Methods

In summary:

- each year BEACH involves a random sample of approximately 1,000 GPs
- each GP records details about 100 doctor–patient encounters of all types
- the GP sample is a rolling (ever-changing) sample, with approximately 20 GPs participating in any one week, 50 weeks a year
- each GP can be selected only once per quality assurance (QA) triennium (that is once every three years)
- the encounter information is recorded by the GPs on structured paper encounter forms (Appendix 1)
- each GP participant also completes a questionnaire about themselves and their practice (Appendix 2).

## 2.1   Sampling methods

The source population includes all vocationally registered GPs and all general practice registrars who claimed a minimum of 375 general practice A1 Medicare items in the most recently available 3-month Medicare data period (which equates to 1,500 A1 Medicare claims a year). This ensures inclusion of the majority of part-time GPs while excluding those who are not in private practice but claim for a few consultations a year.

On a quarterly basis the Primary and Ambulatory Care Division of DoHA updates the sample frame from the Medicare records, leaving out of the sample frame any GPs already randomly sampled in the current triennium, and draws a new sample from those currently in the sample frame. This ensures the timely addition of new entries to the profession, and timely exclusion of those GPs who have stopped practising.

## 2.2   Recruitment methods

The randomly selected GPs are approached by letter posted to the address provided by DoHA.

- Over the following 10 days the telephone numbers generated from the Medicare data are checked using the electronic white and yellow pages. This is necessary because many of the telephone numbers provided from the Medicare data are incorrect.
- The GPs are then telephoned in the order they were approached and, referring to the approach letter, asked whether they will participate.
- This initial telephone contact with the practice often indicates that the selected GP has moved elsewhere, but is still in practice. Where forward address and/or telephone number can be obtained, these GPs are followed up at their new address.
- GPs who agree to participate are set an agreed recording date several weeks ahead.
- A research pack is sent to each participant about 10 days before the planned start date.

- Each GP receives a telephone reminder in the first days of the agreed recording period—this also provides the GP with an opportunity to ask questions about the recording process.

- GPs can use a 'freecall' (1800) number to ring the research team with any questions during their recording period.

- Non-returns are followed up by regular telephone calls for up to 3 months after the set recording time.

- Participating GPs earn Clinical Audit points towards their QA requirements through the Royal Australian College of General Practitioners (RACGP). As part of this QA process, each receives an analysis of his or her results compared with those of nine other de-identified GPs who recorded at approximately the same time. Comparisons with the national average and with targets relating to the National Health Priority Areas are also provided. In addition, GPs receive some educational material related to the identification and management of patients who smoke or consume alcohol at hazardous levels. Additional points can be earned if the participant chooses to do a follow-up audit of smoking and alcohol consumption among a sample of patients about 6 months later.

## 2.3  Data elements

BEACH includes three interrelated data collections: encounter data, GP characteristics and patient health status. An example of the form used to collect the encounter data and the data on patient health status is included in Appendix 1. The GP characteristics questionnaire is provided in Appendix 2. The data collected include the following:

- **Encounter data:** date of consultation, type of consultation (direct/indirect), up to three MBS/DVA item numbers (where applicable) and other payment source (where applicable) (tick boxes).

- **Patient data:** date of birth, sex and postcode of residence. Tick boxes are provided for Commonwealth concession cardholder, holder of a Repatriation health card (from DVA), non-English-speaking background (patient self-report—a language other than English is the primary language at home), Aboriginal person (self-identification) and Torres Strait Islander person (self-identification). Space is provided for up to three patient reasons for encounter (RFEs).

- **The problems managed** at encounter (at least one and up to four). Tick boxes are provided to denote the status of each problem as new or continuing for the patient (if applicable).

- **Management of** each problem, including:
  - medications prescribed, supplied by the GP and advised for over-the-counter purchase including brand name, form (where required), strength, regimen, status (if new or continuing medication for this problem for this patient) and number of repeats
  - other treatments provided for each problem including counselling, advice and education, and procedures undertaken; and if other treatment was provided by practice nurse (tick box)
  - new referrals to medical specialists, allied health professionals and hospital

- – investigations including pathology tests, imaging and other investigations ordered at the encounter.
- **GP characteristics:** age and sex, years in general practice, number of GP sessions worked per week, number of full-time equivalent GPs working in the practice, postcode of major practice address, country of graduation, postgraduate general practice training and Fellow of the RACGP status, after-hours care arrangements, use of computers in the practice, whether the practice is accredited, whether it is a teaching practice, work undertaken in other clinical settings and hours worked in direct patient care.

# 2.4 Supplementary Analysis of Nominated Data

A section at the bottom of each recording form investigates aspects of patient health or health care delivery in general practice not covered by the consultation-based data. These additional substudies are referred to as SAND, Supplementary Analysis of Nominated Data.

- The year-long data period is divided into 10 blocks, each of 5 weeks with three substudies per block. The research team aims to include data from about 100 GPs in each block.

- Each GP's pack of 100 forms is made up of 40 forms that ask for the start and finish times of the encounter, and include questions about patient risk factors: patient height and weight (used to calculate body mass index, BMI), alcohol intake and smoking status (patient self-report). The methods and results of topics in the SAND substudies for alcohol consumption, smoking status and BMI are reported in Chapter 14. The start and finish times collected on these encounters is used to calculate the length of consultation. The length of consultation for Medicare-claimable encounters is reported in Section 5.3.

- The remaining 60 forms in each pack are divided into two blocks of 30. Different questions are asked of the patient in each block and these vary throughout the year.

- The order of SAND sections is rotated in the GP recording pack, so that 40 patient risk factor forms may appear first, second or third in the pad. Rotation of ordering ensures there was no order effect on the quality of the information collected.

Abstracts for all SAND substudies from April 1999 to July 2006 inclusive were published in *Patient-based substudies from BEACH: abstracts and research tools 1999–2006.*[11] Abstracts of results and the research tools used in SAND substudies conducted between August 2006 and March 2007 were published in *General practice activity in Australia 2006–07*[2] and those conducted from April 2007 to January 2008 are included in Chapter 15 of this report.

Abstracts of results for all SAND substudies are also available on the FMRC's website <www.fmrc.org.au/publications/SAND_abstracts.htm>.

# 2.5 The BEACH relational database

The BEACH relational database is described diagrammatically in Figure 2.1. Note that:

- all variables can be directly related to GP and patient characteristics, and to the encounter

- RFEs have only an indirect relationship with problems managed, as a patient may describe one RFE (such as 'repeat prescriptions') that is related to multiple problems

managed, or several RFEs (such as 'runny nose' and 'cough') that relate to a single problem (such as upper respiratory tract infection) managed at the encounter.

- all types of management are directly related to the problem being treated.

**GP characteristics**

- age and sex
- years in general practice
- country of graduation
- postgraduate GP qualifications
- hours of direct patient care

**Practice characteristics**

- practice size (FTE GPs)
- practice nurse available
- after-hours arrangements
- bulk-billing policy
- computer availability
- teaching practice

**The encounter**

- date
- direct (face to face)
  - Medicare item number(s) claimable
  - workers compensation
  - other paid
  - no charge
- indirect (e.g. telephone)

**The patient**

- age and sex
- practice status (new/old)
- concession card status
- postcode of residence
- NESB/Indigenous status
- reasons for encounter

**Patient substudies (SAND)**

- risk factors
  - body mass
  - smoking status
  - alcohol consumption
- other topics

**Problems managed**

- diagnosis/problem label
- problem status (new/old)
- work-related problem status

**Management of each problem**

**Medications (up to four per problem)**

- prescribed
- over-the-counter advised
- provided by GP
  - drug class
  - drug group
  - generic
  - brand name
  - strength
  - regimen
  - number of repeats
  - drug status (new/continued)

**Other treatments (up to two per problem)**

- procedural treatments
- clinical treatments (e.g. advice, counselling)
- practice nurse involvement

**Other management**

- referrals (up to two)
  - to specialists
  - to allied health professionals
  - hospital admissions
- pathology tests ordered (up to five)
- imaging ordered (up to three)

**Figure 2.1: The BEACH relational database**

*Note:* FTE—full time equivalent; NESB—non-English-speaking background; SAND—Supplementary Analysis of Nominated Data.

# 2.6 Statistical methods

The analysis of the 2007–08 BEACH data was conducted with Statistical Analysis System (SAS) version 9.1.3[23], and the encounter is the primary unit of inference. Proportions are used only when describing the distribution of an event that can arise only once at a consultation (for example, age, sex), or to describe the distribution of events within a class of events (for

example, problem *A* as a percentage of total problems). Rates per 100 encounters are used when an event can occur more than once at the consultation (for example, RFEs, problems managed or medications).

Rates per 100 problems are also used when a management event can occur more than once per problem managed. In general, the results present the number of observations *(n)*, the rate per 100 encounters and the 95% confidence interval.

BEACH is a single stage cluster sample study design, each 100 encounters forming a cluster around each GP participant. In cluster samples, variance needs to be adjusted to account for the correlation between observations within clusters. We use procedures in SAS version 9.1.3. to calculate the intracluster correlation and adjust the confidence intervals accordingly.[23]

## 2.7  Classification of data

The following data elements are classified according to the International Classification of Primary Care—Version 2 (ICPC-2), a product of the World Organization of Family Doctors (Wonca)[24]:

- patient reasons for encounter (RFEs)
- problems managed
- clinical treatments (for example, counselling, advice)
- procedural treatments
- referrals
- investigations ordered (including pathology, imaging and other investigations).

The ICPC-2 is used in more than 45 countries as the standard for data classification in primary care. It is accepted by the World Health Organization (WHO) in the WHO Family of International Classifications[25], and is the declared national standard in Australia for reporting of health data from general practice and patient self-reported health information.[26]

The ICPC-2 has a biaxial structure, with 17 chapters on one axis (each with an alphabetic code) and seven components on the other (numeric codes) (Figure 2.2). Chapters are based on body systems, with additional chapters for psychological and social problems. Component 1 includes symptoms and complaints. Component 7 covers diagnoses. These are independent in each chapter and both can be used for patient RFEs or problems managed.

Components 2 to 6 cover the process of care, and are common throughout all chapters. The processes of care, including referrals, other (non-pharmacological) treatments and orders for pathology and imaging, are classified in these process components of ICPC-2. Component 2 (diagnostic, screening and prevention) is also often applied in describing the problem managed (for example, check-up, immunisation).

The ICPC-2 is an excellent epidemiological tool. The diagnostic and symptomatic rubrics have been selected for inclusion on the basis of their relative frequency in primary care settings, or because of their relative importance in describing the health of the community. It has approximately 1,370 rubrics and these are sufficient for meaningful analyses. However, reliability of data entry, using ICPC-2 alone, requires a thorough knowledge of the classification for correct classification of a concept to be ensured.

In 1995, recognising a need for a coding and classification system for general practice electronic health records, the FMRC (then the Family Medicine Research Unit) developed an extended vocabulary of terms classified according to the ICPC, now called ICPC-2 PLUS.[27] This is an interface terminology, developed by the FMRC from all the terms used by GPs in studies such as the Australian Morbidity and Treatment Survey 1990–91[28], the Morbidity and Therapeutic Index 1992–1998 (a clinical audit tool that was available to GPs), and BEACH 1998–2008 that together have included close to 1.5 million encounter records. These terms are classified according to ICPC-2 to ensure international standards for reporting. Readers interested in seeing how coding works can download the ICPC-2 PLUS Demonstrator at <www.fmrc.org.au/icpc2plus/demonstrator.htm>.

When the free-text data are received from the GPs, trained secondary coders (who are undergraduate students studying health information management or medical science) code the data in more specific terms using ICPC-2 PLUS. This ensures high coder reliability and automatic classification of the concept, and provides the ability to 'ungroup' such ICPC-2 rubrics as 'other diseases of the circulatory system' and select a specific disease from the terms within it.

| Components | Chapters | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | D | F | H | K | L | N | P | R | S | T | U | W | X | Y | Z |
| 1. Symptoms, complaints | | | | | | | | | | | | | | | | | |
| 2. Diagnostic, screening, prevention | | | | | | | | | | | | | | | | | |
| 3. Treatment, procedures, medication | | | | | | | | | | | | | | | | | |
| 4. Test results | | | | | | | | | | | | | | | | | |
| 5. Administrative | | | | | | | | | | | | | | | | | |
| 6. Other | | | | | | | | | | | | | | | | | |
| 7. Diagnoses, disease | | | | | | | | | | | | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| A | General | L | Musculoskeletal | U | Urinary |
| B | Blood, blood-forming | N | Neurological | W | Pregnancy, family planning |
| D | Digestive | P | Psychological | X | Female genital |
| F | Eye | R | Respiratory | Y | Male genital |
| H | Ear | S | Skin | Z | Social |
| K | Circulatory | T | Metabolic, endocrine, nutritional | | |

**Figure 2.2: The structure of the International Classification of Primary Care—Version 2 (ICPC-2)**

## Presentation of data classified in ICPC-2

Statistical reporting is almost always at the level of the ICPC-2 classification (for example, acute otitis media/myringitis—ICPC-2 code H71). However, there are some exceptions where data are grouped either above the ICPC-2 level or across the ICPC-2 level. These grouped morbidity, pathology and imaging codes are defined in Appendix 4, and chronic morbidity groups are provided in Appendix 5. Appendices 4 and 5 are available from <www.aihw.gov.au/publications/index.cfm/subject/19>.

### Reporting morbidity with groups of ICPC-2 codes

When recording problems managed, the GP may not always be very specific. For example, in recording the management of hypertension, they may simply record the problem as 'hypertension'. In ICPC-2, 'hypertension, unspecified' is classified as 'uncomplicated hypertension' (code K86). There is another code for 'complicated hypertension' (K87). In some cases the GP may simply have failed to specify that the patient had hypertension with complications. The research team therefore feels that for national data reporting, it is more reliable to group the codes K86 and K87 and label this 'Hypertension*'—the asterisk indicating that multiple ICPC-2 codes (as in this example) or ICPC-2 PLUS codes (see below) are included. A list of codes included in these groups are provided in Appendix 4.

### Reporting morbidity with groups of ICPC-2 PLUS codes

In other cases a concept can be classified within (but be only part of) multiple ICPC-2 codes. For example, osteoarthritis is classified in ICPC-2 in multiple broader codes according to site, for example, L92—shoulder syndrome (includes bursitis, frozen shoulder, osteoarthritis of shoulder, rotator cuff syndrome). When reporting osteoarthritis in this publication, all the more specific osteoarthritis ICPC-2 PLUS terms are grouped within all the appropriate ICPC-2 codes. This group is labelled 'Osteoarthritis*'—the asterisk again indicating multiple codes, but in this case they are PLUS codes rather than ICPC-2 codes. A list of codes included in these groups are provided in Appendix 4.

### Reporting chronic morbidity

Chronic conditions are medical conditions characterised by a combination of the following characteristics: duration that has lasted or is expected to last 6 months or more, a pattern of recurrence or deterioration, a poor prognosis, and consequences or sequelae that affect an individual's quality of life.

To identify chronic conditions, a chronic condition list[29] classified according to ICPC-2 was applied to the BEACH data set. In general reporting, both chronic and non-chronic conditions (for example, diabetes and gestational diabetes) may have been grouped together when reporting (for example, diabetes—all*). When reporting chronic morbidity, only problems regarded as chronic have been included in the analysis. 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 chronic groups are provided in Appendix 5.

### Reporting pathology and imaging test orders

All the pathology and imaging tests are coded very specifically in ICPC-2 PLUS, but the ICPC-2 classifies pathology and imaging tests very broadly (for example, a test of cardiac enzymes is classified in K34—Blood test associated with the cardiovascular system; a CT scan of the lumbar spine is classified as L41—Diagnostic radiology/imaging of the musculoskeletal system). In Australia, the MBS classifies pathology and imaging tests in groups that are relatively well recognised. The team therefore re-grouped all pathology and imaging ICPC-2 PLUS codes into MBS standard groups. This allows comparison of data between data sources. These groups are marked with an asterisk, and inclusions are provided in Appendix 4.

## Classification of pharmaceuticals

Pharmaceuticals that are prescribed, provided by the GP or advised for over-the-counter purchase are coded and classified according to an in-house classification, the Coding Atlas for Pharmaceutical Substances (CAPS).

This is a hierarchical structure that facilitates analysis of data at a variety of levels, such as medication class, medication group, generic composition and brand name.

Strength and regimen are independent fields that, when combined with the CAPS code, give an opportunity to derive the prescribed daily dose for any prescribed medication or group of medications.

CAPS is mapped to the Anatomical Therapeutic Chemical (ATC)[30] classification, which is the Australian standard for classifying medications at the generic level.

The ATC has a hierarchical structure with five levels. For example:

- Level 1: C—Cardiovascular system
- Level 2: C10—Serum lipid reducing agents
- Level 3: C10A—Cholesterol and triglyceride reducers
- Level 4: C10AA—HMG CoA reductase inhibitors
- Level 5: C10AA01—Simvastatin (the generic drug).

## Use of the pharmaceutical classifications in reporting

For pharmaceutical data, there is the choice of reporting in terms of the CAPS coding scheme or the ATC. They each have advantages in different circumstances.

In the CAPS system, a new drug enters at the product and generic level, and is immediately allocated a generic code. Therefore, the CAPS classification uses a bottom-up approach.

In the ATC, a new generic may initially enter the classification at any level (1 to 5), not necessarily always at the generic level. Reclassification to lower ATC levels may occur later. Therefore, the ATC uses a top-down approach.

When analysing medications across time, a generic medication that is initially classified to a higher ATC level will not be identifiable in that data period and may result in under-enumeration of that drug during earlier data collection periods.

- When reporting the 2007–08 annual results for pharmaceutical data, the CAPS database is used in tables of the 'most frequent medications' (tables 9.2 to 9.4 inclusive).
- When reporting the annual results for pharmaceuticals in terms of the ATC hierarchy (Table 9.1), ATC Levels 1, 3, and 5 are used. The reader should be aware that the results reported at the generic level (Level 5) may differ slightly from those reported in the 'most frequent medication' tables for the reasons described above.

# 2.8  Quality assurance

All morbidity and therapeutic data elements were secondarily coded by staff entering key words or word fragments, and selecting the required term or label from a pick list. This was then automatically coded and classified by the computer. A quality assurance program to ensure reliability of data entry includes ongoing development of computer-aided error

checks ('locks') at the data entry stage, and a physical check of samples of data entered versus those on the original recording form. Further logical data checks are conducted through SAS on a regular basis.

## 2.9 Validity and reliability

A discussion of the reliability and validity of the BEACH program has been published elsewhere.[31] In this section we touch on some aspects of reliability and validity of active data collection from general practice that should be considered by the reader.

In the development of a database such as BEACH, data gathering moves through specific stages: GP sample selection, cluster sampling around each GP, GP data recording, secondary coding and data entry. At each stage the data can be invalidated by the application of inappropriate methods. The methods adopted to ensure maximum reliability of coding and data entry have been described above. The statistical techniques adopted to ensure valid analysis and reporting of recorded data are described in Section 2.6. Previous work has demonstrated the extent to which a random sample of GPs recording information about a cluster of patients represents all GPs and all patients attending GPs.[32] Other studies have reported the degree to which GP-reported patient RFEs and problems managed accurately reflect those recalled by the patient[33] and the reliability of secondary coding of RFEs[34] and problems managed.[28] The validity of ICPC as a tool with which to classify the data has also been investigated in earlier work.[35]

However, the question of the extent to which the GP-recorded data are a reliable and valid reflection of the content of the encounter must also be considered. In many primary care consultations, a clear pathophysiological diagnosis is not reached. Bentsen[36] and Barsky[37] suggest that a firm and clear diagnosis is not apparent in about half of GPs' consultations, and others suggest the proportion may be even greater.[38] Further, studies of general ambulatory medical practice have shown that a large number of patients presenting to a primary care practitioner are without a serious physical disorder.[39,40] As a result, it is often necessary for a practitioner to record a problem in terms of symptoms, signs, patient concerns, or the service that is requested, such as immunisation. For this reason, this report refers to patient 'problems' rather than 'diagnoses'.

A number of studies have demonstrated wide variance in the way a GP perceives the patient's RFE and the manner in which the GP describes the problem under management. In a direct observational study of consultations via a one-way mirror, Bentsen demonstrated differences in the way practitioners labelled problems, and suggested that clinical experience may be an important influence on the identification of problems within the consultation.[36] Two other factors that might affect GPs' descriptions of patient RFEs have been identified: while individuals may select the same stimuli, some label each stimulus separately whereas others cluster them under one label; individuals differ in the number of stimuli they select (selective perception).[41]

The extent to which therapeutic decisions may influence the diagnostic label selected has also been discussed. Howie[42] and Anderson[39] argue that, while it is assumed that the diagnostic process used in general practice is one of symptom → diagnosis → management, the therapeutic method may well be selected on the basis of the symptom, and the diagnostic label chosen last. They suggest that the selection of the diagnostic label is therefore influenced by the management decision already made.

Anderson has also pointed out that the therapeutic decision may be influenced by fashion, and, in turn, this affects the selection of the problem label. He gives the example of a rise in the occurrence of neurotic depression in parallel with a decrease in the use of menopause as a diagnosis in the United Kingdom, and suggests this may be the result of a change in the preferred treatment from oestrogen therapy to antidepressants.[39] This should be remembered when considering the changes in general practice described in this report.

Alderson contends that to many practitioners 'diagnostic accuracy is only important to the extent that it will assist them in helping the patient'. He further suggests that if major symptoms are readily treatable, some practitioners may feel no need to define the problem in diagnostic terms.[43] Crombie stated that in the second and third national morbidity surveys in the United Kingdom there was 'enormous variability in the rates at which doctors perceive and record illnesses'. He concluded that the probable cause arose from the different ways in which GPs gave priority in their perceptions and recording of certain morbidities while discounting or ignoring others. He was unable to account statistically for this variation by the effect of geography, age, sex or class differences in the practice populations.[44] Differences in the way male and female GPs label problems also appear to be independent of such influences.[45]

These problems are inherent in the nature of general practice. Knottnerus argues that the GP is confronted with a fundamentally different pattern of problems from the specialist, the GP often having to draw up general diagnostic hypotheses related to probability, severity and consequences.[46] Anderson suggests that morbidity statistics from family practice should therefore be seen as 'a reflection of the physician's diagnostic opinions about the problems that patients bring to them rather than an unarguable statement of the problems managed'.[39] In any case, doctors base their actions on problems as they perceive them.

While these findings regarding limitations in the reliability and validity of practitioner-recorded morbidity should be kept in mind, they apply equally to data drawn from medical records, whether paper or electronic, as they do to active data collection methods.[47,48] There is as yet no more reliable method of gaining detailed data about morbidity and its management in general practice. Further, irrespective of the differences between individual GPs in their labelling of the problems, morbidity data collected by GPs in active data collection methods have been shown to provide a reliable overview of the morbidity managed in general practice.[49]

# 2.10  Other BEACH applications

The BEACH method can be applied in various health settings. In the past the AGPSCC has used the method to conduct a variety of studies in collaboration with other organisations. Examples of past studies are described below.

In 2004, a study was conducted in collaboration with Monash University and the Victorian Metropolitan Alliance. The BEACH methods were used to measure the experience gained by GP registrars during each stage of their training. The results will help to better define the areas in which registrars should receive training, and identify areas in which they are not gaining experience.

Another registrar study was conducted in 2003 as a consultancy for North Coast GP Training Ltd and the Institute of General Practice Education. This study looked at the clinical activities of registrars compared with those of their supervisors, to assess their education program in terms of actual practice.

A study in the Victoria Community Health Centres was done in 2004 in collaboration with the Victorian Department of Human Services. The project aimed to provide information about the clinical role of Community Health Service GPs and the characteristics of the patients they see, and how these may differ from the 'average' GP in Australia. The department will use the results to help them plan future health services.

From 2002–04, the BEACH methods were used in the Alternative Pathway Program to assess the educational needs of each GP enrolled in the program. The Alternative Pathway Program was conducted by the National Consortium for Education in Primary Medical Care. The results for each GP were used in identifying specific educational needs and in planning an educational program for the individual practitioner.

In 2002–03, the AGPSCC conducted a longitudinal, matched, controlled trial of active computerised data collection compared with paper-based data collection in the western, north-western and south-western areas of Sydney. Software was developed that reflected the data elements collected in BEACH; the software did not interact with any clinical system being used by GPs. This study demonstrated that active GP computerised data collection in structured, stand-alone software does not provide a reliable and valid measure of GP activity and could not be adopted at this stage as an acceptable alternative to the paper-based data collection methods currently being used.[50]

As BEACH collects data nationally it is possible to analyse data at a level specific to local areas. For example, reports have been published comparing general practice in the different states and territories of Australia and investigating the differences between metropolitan and rural general practice. The research team has also developed Statistical Evaluation Areas (referred to as SEAs) that allow the provision of localised data for divisions of general practice.

# 3   The sample

This chapter describes the sample and sampling methods used in the BEACH program. The methods are only summarised in this chapter. For those wanting more detailed explanation, the BEACH methods are described in Chapter 2.

A summary of the total BEACH sample are reported for each year from 1998–99 to 2007–08 in the 10 year summary report *General practice activity in Australia 1998–99 to 2007–08: 10 year data tables* available from <www.aihw.gov.au/publications/index.cfm/subject/19> (AIHW catalogue number GEP 23).

## 3.1   Response rate

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 and Ambulatory Care Division of DoHA (see Chapter 2).

Contact was attempted with 3,884 GPs—12.6% could not be contacted. The majority of these had moved, retired or died, and were untraceable (Table 3.1). It is notable that of GPs approached who were aged less than 35 years, 26.1% were no longer at that practice and could not be traced. These would largely be registrars moving through practices during training. In contrast, 11.4% of GPs aged 35 years and over were not traceable (results not tabled).

The final participating sample consisted of 953 practitioners, representing 28.1% of those who were contacted and available, and 24.5% of those with whom contact was attempted (Table 3.1).

**Table 3.1: Recruitment and participation rates**

| Type of contact | Number | Per cent of approached (*n* = 3,884) | Per cent of contacts established (*n* = 3,394) |
|---|---|---|---|
| Letter sent and phone contact attempted | 3,884 | 100.0 | — |
| No contact | 490 | 12.6 | — |
| No phone number | 35 | 0.9 | — |
| Moved/retired/deceased | 228 | 5.9 | — |
| Unavailable (overseas, maternity leave, etc) | 36 | 0.9 | — |
| No contact after five calls | 191 | 4.9 | — |
| Telephone contact established | 3,394 | 87.4 | 100.0 |
| Declined to participate | 2,075 | 53.4 | 61.1 |
| Agreed but withdrew | 366 | 9.4 | 10.8 |
| Agreed and completed | 953 | 24.5 | 28.1 |

## 3.2 Representativeness of the GP sample

Whenever possible, the study group of GPs should be compared with the population from which the GPs were drawn to identify and, if necessary, adjust for any sample bias that may affect 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 3.2). The GP characteristics data for BEACH participants were drawn from the GP profile questionnaire. DoHA provided the data for all GPs in the sample frame, drawn from Medicare claims data.

Table 3.2 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, age, distribution across states, or across Rural, Remote and Metropolitan Area classes. However, participants who graduated in a country other than Australia were slightly under-represented when compared with the total sample.

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 were used to determine the 'activity level' of each GP. The final sample included a greater proportion of GPs with an activity level of 375–750 services in the previous quarter, and a smaller proportion of GPs in the > 1,500 services category, compared with non-participants. There was no difference between the proportions of participants and non-participants in the 751–1,500 services group. There was a significant difference ($p = 0.041$) in the mean number of A1 items claimed by participants (1,194 claims for the quarter) compared with the GPs who declined to participate (1,244 for the quarter) (Table 3.3). Comparisons of the median scores for each group showed a difference of fewer than five consultations per week. It is possible that the time required to participate in BEACH may be a greater issue for busier GPs. BEACH also may offer an avenue for fulfilling RACGP Clinical Audit requirements to part-time GPs who may not be as able to take up other avenues. It cannot be assumed, however, that a GP seeing 15 patients per day 3 days per week is any less 'busy' than a GP seeing 15 patients per day 5 days per week.

**Table 3.2: Comparison of BEACH participants and all active recognised GPs in Australia (the sample frame)**

| Variable | BEACH[a][b] | | Australia[a][c] | |
|---|---|---|---|---|
| | Number | Per cent of GPs (*n* = 953) | Number | Per cent of GPs (*n* = 18,291) |
| Sex ($\chi^2$ = 0.36, *p* = 0.55) | | | | |
| Males | 602 | 63.2 | 11,730 | 64.1 |
| Females | 351 | 36.8 | 6,561 | 35.9 |
| Age ($\chi^2$ = 3.61, *p* = 0.31) | | | | |
| < 35 years | 74 | 7.8 | 1,285 | 7.0 |
| 35–44 years | 210 | 22.2 | 3,980 | 21.8 |
| 45–54 years | 344 | 36.4 | 6,366 | 34.8 |
| > 54 years | 317 | 33.5 | 6,660 | 36.4 |

*(continued)*

**Table 3.2 (continued): Comparison of BEACH participants and all active recognised GPs in Australia (the sample frame)**

| Variable | BEACH[a][b] | | Australia[a][c] | |
|---|---|---|---|---|
| | Number | Per cent of GPs($n = 953$) | Number | Per cent of GPs ($n = 18,291$) |
| Place of graduation ($\chi^2 = 5.72$, $p = 0.017$) | | | | |
| Australia | 698 | 73.5 | 12,772 | 69.8 |
| Overseas | 252 | 26.5 | 5,519 | 30.2 |
| State ($\chi^2 = 13.81$, $p = 0.055$) | | | | |
| New South Wales | 314 | 33.0 | 6,174 | 33.8 |
| Victoria | 246 | 25.8 | 4,568 | 25.0 |
| Queensland | 169 | 17.8 | 3,444 | 18.8 |
| South Australia | 93 | 9.8 | 1,538 | 8.4 |
| Western Australia | 74 | 7.8 | 1,663 | 9.1 |
| Tasmania | 29 | 3.1 | 494 | 2.7 |
| Australian Capital Territory | 13 | 1.4 | 289 | 1.6 |
| Northern Territory | 14 | 1.5 | 121 | 0.7 |
| RRMA ($\chi^2 = 12.0$, $p = 0.062$) | | | | |
| Capital | 645 | 67.8 | 12,127 | 66.3 |
| Other metropolitan | 67 | 7.0 | 1,411 | 7.7 |
| Large rural | 66 | 6.9 | 1,131 | 6.2 |
| Small rural | 45 | 4.7 | 1,250 | 6.8 |
| Other rural | 108 | 11.3 | 2,081 | 11.4 |
| Remote centre | 7 | 0.7 | 140 | 0.8 |
| Other remote | 14 | 1.5 | 151 | 0.8 |

(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.

**Table 3.3: Activity level of participating and non-participating GPs**

| Variable | Participants[a] ($n = 953$) | | Non-participants[a] ($n = 2,441$) | |
|---|---|---|---|---|
| | Number of claims | Per cent of GPs | Number of claims | Per cent of GPs |
| Activity ($\chi^2 = 6.09$, $p = 0.048$) | | | | |
| 374–750 services in previous quarter | 267 | 28.0 | 631 | 25.9 |
| 750–1,500 services in previous quarter | 443 | 46.5 | 1,085 | 44.5 |
| > 1,500 services in previous quarter | 243 | 25.5 | 725 | 29.7 |
| Mean activity level ($t = 2.05$, $p = 0.041$) | 1,193.7 | — | 1,243.5 | — |
| Median activity level | 1,050 | — | 1,107 | — |
| Standard deviation | 629.77 | — | 639.18 | — |

(a)     Missing data removed.

## 3.3 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 the activity level of the recording GP. 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 previous years, BEACH has had an under-representation of young GPs. In order to achieve comparable estimates and precision, GP age–sex weights were applied to the data sets for these years in post-stratification weighting. In the current year (2007–08) this under-representation did not occur, but post-stratification weighting was again applied for consistency of method.

**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 3.4 shows the precision ratio calculated before and after weighting the data.

## 3.4 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 MBS/DVA-claimable encounters was compared with that of patients at all encounters claimed as MBS/DVA A1 items of service in the 2007–08 study period (data provided by DoHA).

As shown in Table 3.4, 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 20% from the population distribution. The range of raw precision ratios (0.91–1.14) 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, and all were within the 0.93–1.12 range.

**Table 3.4: Age–sex distribution of patients at BEACH and MBS A1 services**

| | BEACH | | | | Australia[c] | Precision ratios | |
| | Raw[a] | | Weighted[b] | | | | |
| Sex/age | Number | Per cent (n = 75,300) | Number | Per cent (n = 76,111) | Per cent | Raw[a] | Weighted[c] |
|---|---|---|---|---|---|---|---|
| Male | | | | | | | |
| < 1 year | 896 | 1.2 | 847 | 1.1 | 1.2 | 1.00 | 1.09 |
| 1–4 years | 1,951 | 2.6 | 1,911 | 2.5 | 2.8 | 1.08 | 1.12 |
| 5–14 years | 2,179 | 2.9 | 2,322 | 3.1 | 3.3 | 1.14 | 1.06 |
| 15–24 years | 2,328 | 3.1 | 2,546 | 3.3 | 3.3 | 1.06 | 1.00 |
| 25–44 years | 5,955 | 7.9 | 6,459 | 8.5 | 8.5 | 1.08 | 1.00 |
| 45–64 years | 8,521 | 11.3 | 9,362 | 12.3 | 11.8 | 1.04 | 0.96 |
| 65–74 years | 4,087 | 5.4 | 4,467 | 5.9 | 5.8 | 1.07 | 0.98 |
| 75+ years | 3,825 | 5.1 | 4,056 | 5.3 | 5.3 | 1.04 | 1.00 |

*(continued)*

**Table 3.4 (continued): Age–sex distribution of patients at BEACH and MBS A1 services**

| | BEACH | | | | Australia[c] | Precision ratios | |
| | Raw[a] | | Weighted[b] | | | | |
| Sex/age | Number | Per cent (*n* = 75,300) | Number | Per cent (*n* = 76,111) | Per cent | Raw[a] | Weighted[c] |
|---|---|---|---|---|---|---|---|
| Female | | | | | | | |
| < 1 year | 798 | 1.1 | 760 | 1.0 | 1.0 | 0.91 | 1.00 |
| 1–4 years | 1,716 | 2.3 | 1,713 | 2.3 | 2.4 | 1.04 | 1.04 |
| 5–14 years | 2,083 | 2.8 | 2,182 | 2.9 | 3.2 | 1.14 | 1.10 |
| 15–24 years | 4,920 | 6.5 | 4,779 | 6.3 | 6.2 | 0.95 | 0.98 |
| 25–44 years | 11,955 | 15.9 | 11,212 | 14.7 | 14.6 | 0.92 | 0.99 |
| 45–64 years | 12,604 | 16.7 | 12,129 | 15.9 | 15.6 | 0.93 | 0.98 |
| 65–74 years | 5,456 | 7.2 | 5,471 | 7.2 | 6.7 | 0.93 | 0.93 |
| 75+ years | 6,026 | 8.0 | 5,893 | 7.7 | 8.4 | 1.05 | 1.09 |

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

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

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

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

# 3.5   The weighted data set

The final unweighted data set from the 10th year of collection contained encounters, reasons for encounters, problems and management/treatments. The apparent number of encounters, reasons for encounter and number of medications all increased after weighting, and the number of problems managed, other treatments, referrals, imaging and pathology all decreased after weighting. Raw and weighted totals for each data element are shown in Table 3.5.

**Table 3.5: The BEACH data set**

| Variable | Raw | Weighted |
|---|---|---|
| General practitioners | 953 | 953.1 |
| Encounters | 95,300 | 95,897.7 |
| Reasons for encounter | 146,405 | 146,695.5 |
| Problems managed | 147,724 | 145,078.0 |
| Medications | 96,488 | 98,439.3 |
| Other treatments | 51,332 | 49,129.8 |
| Referrals | 13,747 | 12,941.8 |
| Imaging | 9,469 | 9,143.0 |
| Pathology | 45,597 | 41,375.4 |

# 4    The participating GPs

This chapter reports data collected between April 2007 and March 2008 about the participating GPs and their practices from the 10th year of the BEACH program. Data on GP and practice characteristics are reported for each year from 1998–99 to 2007–08 in the 10 year summary report *General practice activity in Australia 1998–99 to 2007–08: 10 year data tables* available from <www.aihw.gov.au/publications/index.cfm/subject/19> (AIHW catalogue number GEP 23).

## 4.1   Characteristics of the GP participants

All participants returned a GP profile questionnaire, although some were incomplete. The results are provided in Table 4.1. Of the 953 participants:

- 63% were male, and 34% were aged 55 years or older
- more than half had been in general practice for more than 20 years
- almost 60% were in practices of fewer than five full-time equivalent GPs
- 74% had graduated in Australia
- 72% practised in major cities (classified using the Australian Standard Geographical Classification)
- 27% conducted some consultations in a language other than English
- 50% were Fellows of the RACGP
- 86% worked in an accredited practice
- 71% worked in a practice that employed practice nurse(s)
- 74% worked 6–10 clinical sessions per week, 15% worked fewer than six sessions per week, and only 11% worked more than 10 sessions per week.
- 39% spent more than 40 hours each week on direct patient care services
- two in five had provided care in a residential aged care facility in the previous month
- 45% provided their own or cooperative after-hours care, and two in five employed a deputising service for after-hours patient care (multiple responses allowed)
- over one-quarter (27%) bulk-billed Medicare for all patients; 47% bulk-billed for all consultations with pensioner/Commonwealth concession cardholders, and one-third (36%) bulk-billed for all consultations with children (multiple responses allowed)
- more than half (55%) worked in a teaching practice for undergraduates or registrars, or both.

Those interested in the clinical activity of overseas trained doctors will find more information in Bayram et al. *Clinical activity of overseas-trained doctors practising in general practice in Australia.*[51]

Readers interested in the effects of GP age on clinical practice will find more information in Charles et al. *The independent effect of age of general practitioner on clinical practice.*[52]

**Table 4.1: Characteristics of participating GPs and their practices**

| GP characteristic | Number[a] | Per cent of GPs[a] (n = 953) |
|---|---|---|
| Sex    Male | 602 | 63.2 |
| Female | 351 | 36.8 |
| Age (missing = 8) | | |
| < 35 years | 74 | 7.8 |
| 35–44 years | 210 | 22.2 |
| 45–54 years | 344 | 36.4 |
| 55+ years | 317 | 33.5 |
| Years in general practice (missing = 7) | | |
| < 2 years | 6 | 0.6 |
| 2–5 years | 94 | 9.9 |
| 6–10 years | 122 | 12.9 |
| 11–19 years | 195 | 20.6 |
| 20+ years | 529 | 55.9 |
| Size of practice—Full-time equivalent GPs (missing = 23) | | |
| < 2 | 164 | 17.6 |
| 2–4 | 383 | 41.2 |
| 5–9 | 297 | 31.9 |
| 10+ | 86 | 9.2 |
| Practice location by RRMA (missing = 1) | | |
| Capital | 645 | 67.8 |
| Other metropolitan | 67 | 7.0 |
| Large rural | 66 | 6.9 |
| Small rural | 45 | 4.7 |
| Other rural | 108 | 11.3 |
| Remote central | 7 | 0.7 |
| Other remote, offshore | 14 | 1.5 |
| Practice location by ASGC Remoteness structure (missing = 1) | | |
| Major cities | 687 | 72.2 |
| Inner regional | 166 | 17.4 |
| Outer regional | 82 | 8.6 |
| Remote | 12 | 1.3 |
| Very remote | 5 | 0.5 |
| Place of graduation (missing = 3) | | |
| Australia | 698 | 73.5 |
| United Kingdom | 65 | 6.8 |
| Asia | 93 | 9.8 |
| Europe | 25 | 2.6 |
| Africa | 41 | 4.3 |
| New Zealand | 13 | 1.4 |

*(continued)*

**Table 4.1 (continued): Characteristics of participating GPs and their practices**

| GP characteristic | Number[a] | Per cent of GPs[a] (*n* = 953) |
|---|---|---|
| Consult in languages other than English (missing = 4) | | |
|     < 25% of consultations | 194 | 20.4 |
|     25–50% of consultations | 29 | 3.0 |
|     > 50% of consultations | 34 | 3.6 |
| Currently in general practice training program (missing = 4) | 27 | 2.8 |
| Fellow of RACGP (missing = 5) | 476 | 50.2 |
| Accredited practice (missing = 5) | 818 | 86.3 |
| Practice nurse at major practice address (missing = 3) | 677 | 71.3 |
| Sessions per week (missing = 9) | | |
|     < 6 per week | 145 | 15.4 |
|     6–10 per week | 696 | 73.9 |
|     11+ per week | 103 | 10.9 |
| Direct patient care hours (worked) per week (missing = 25) | | |
|     <= 10 hours | 3 | 0.3 |
|     11–20 hours | 81 | 8.7 |
|     21–40 hours | 486 | 52.4 |
|     41–60 hours | 298 | 32.1 |
|     60+ hours | 60 | 6.5 |
| Patient care provided in previous month[b] (missing = 14) | | |
|     As a locum | 38 | 4.0 |
|     In a deputising service | 24 | 2.5 |
|     In a residential aged care facility | 392 | 41.6 |
|     As a salaried/sessional hospital medical officer | 29 | 3.1 |
|     None of the above | 456 | 48.4 |
| After-hours arrangements[b] (missing = 6) | | |
|     Practice does its own | 314 | 33.2 |
|     Cooperative with other practices | 107 | 11.3 |
|     Deputing service | 404 | 42.7 |
|     Referral to other service (e.g. emergency hospital department) | 78 | 8.2 |
|     Other arrangement | 26 | 2.7 |
| Bulk-billing[b] (missing = 4) | | |
|     All patients | 258 | 27.2 |
|     All pension/Commonwealth concession cardholders | 442 | 46.6 |
|     Some pension/Commonwealth concession cardholders | 197 | 20.8 |
|     All children | 339 | 35.7 |
|     Some children | 240 | 25.3 |
|     Selected other patients | 560 | 59.0 |

*(continued)*

**Table 4.1 (continued): Characteristics of participating GPs and their practices**

| GP characteristic | Number[a] | Per cent of GPs[a] (*n* = 953) |
|---|---|---|
| Major practice a teaching practice (missing = 5) | | |
| Not a teaching practice | 425 | 44.8 |
| Yes—for undergraduates only | 216 | 22.8 |
| Yes—for GP registrars only | 93 | 9.8 |
| Yes—for both undergraduates and registrars | 213 | 22.5 |

(a)    Missing data removed.

(b)    Multiple responses allowed.

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

# 4.2  Computer use at GP practices

Table 4.2 shows the proportion of participating GPs who worked in a practice in which computers were used for each of five listed activities. Note that these results refer to computer availability or use at the practice level and may not reflect the use of computers by individual GPs.

Information about reported individual GP's use of computers at the practice can be found in Henderson et al. *Extent and utilisation of computerisation in Australian general practice.*[53] Those interested in the effect of computerisation on quality of care in general practice will find more detailed information in Henderson *The effect of computerisation on the quality of care in Australian general practice.*[54]

Table 4.2 shows that:

- only 3.3% of GPs worked in a non-computerised practice
- computers were used mainly for prescribing and billing
- four-fifths had computers available for other administrative purposes
- more than four-fifths had computers available for medical records
- nearly four-fifths were in practices that had Internet and/or email available.

**Table 4.2: Computer applications available/used at major practice address**

| Computer use | Number | Per cent of GPs (*n* = 953)[a] | Per cent of GPs with computers (*n* = 922)[a] |
|---|---|---|---|
| Not at all | 31 | 3.3 | — |
| Prescribing | 845 | 89.3 | 92.3 |
| Billing | 818 | 86.5 | 89.4 |
| Medical records | 783 | 82.8 | 85.6 |
| Other administrative | 765 | 80.9 | 83.6 |
| Internet/email | 746 | 78.9 | 81.5 |
| Missing | 7 | — | — |

(a)    Missing data removed.

Table 4.3 lists the top 10 combinations of computer use by participants' practices.

- 63% of GPs indicated that their practice used computers for all five listed purposes—billing, prescribing, medical records, other administrative purposes and Internet/email.
- Within the top 10 combinations, 70% of GPs reported computer availability/use for both medical records and Internet/email purposes.
- Prescribing was the only application included in all of the top 10 combinations of availability/use.
- Billing was the second most frequently available function, with medical records third, and Internet/email use ranking fourth.

**Table 4.3: Top 10 combinations of computer applications at major practice address**

| Combination | Number | Per cent of GPs ($n = 953$)[a] | Per cent of GPs with computers ($n = 922$)[a] |
|---|---|---|---|
| All five uses | 600 | 63.4 | 65.6 |
| Billing + prescribing + medical records + other administrative | 57 | 6.0 | 6.2 |
| Billing + prescribing + other admin + Internet/email | 35 | 3.7 | 3.8 |
| Billing + prescribing + medical records + Internet/email | 31 | 3.3 | 3.4 |
| Billing + prescribing + medical records | 25 | 2.6 | 2.7 |
| Billing + prescribing | 16 | 1.7 | 1.7 |
| Prescribing + medical records + other admin + Internet/email | 15 | 1.6 | 1.6 |
| Prescribing + medical records + Internet/email | 14 | 1.5 | 1.5 |
| Billing + prescribing + Internet/email | 14 | 1.5 | 1.5 |
| Billing + prescribing + other administrative | 7 | 0.7 | 0.8 |

(a)    Missing data removed.

# 5   The encounters

This chapter describes the content and type of encounters recorded in the 10th year of the BEACH program. Data about the encounters are also reported for each year from 1998–99 to 2007–08 in the 10 year report *General practice activity in Australia 1998–99 to 2007–08: 10 year data tables* available from <www.aihw.gov.au/publications/index.cfm/subject/19> (AIHW catalogue number GEP 23).

## 5.1   Content of the encounters

In 2007–08, details of 95,898 encounters (weighted data) were available from 953 GPs. The content of these encounters is summarised in Table 5.1. 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 153 RFEs and GPs managed about 151 problems per 100 encounters.
- New problems accounted for nearly 40% of all problems, being managed at a rate of 58 per 100 encounters.
- Chronic problems accounted for 35% of all problems managed, managed at a rate of 52 chronic problems per 100 encounters.
- Work-related problems were managed at a rate of 2.8 per 100 encounters.
- Medications were the most common treatment choice (68 per 100 problems managed), and most of these were medications prescribed (rather than supplied or advised), at a rate of 54.5 per 100 problems managed.
- Clinical treatments (such as advice and counselling) were provided at a rate of 22.8 per 100 problems.
- There were eight referrals for care elsewhere for every 100 problems managed, most often to medical specialists (5.3 referrals per 100 problems) and less frequently to allied health professionals (2.3 referrals per 100 problems).
- GPs placed 28.5 orders for pathology tests and 6.3 imaging tests in the management of every 100 problems (Table 5.1).

**Table 5.1: Summary of morbidity and management**

| Variable | Number | Rate per 100 encounters (*n* = 95,898) | 95% LCL | 95% UCL | Rate per 100 problems (*n* = 145,078) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|---|
| General practitioners | 953 | — | — | — | — | — | — |
| Encounters | 95,898 | — | — | — | — | — | — |
| Reasons for encounter | 146,696 | 153.0 | 151.1 | 154.8 | — | — | — |
| Problems managed | 145,078 | 151.3 | 149.2 | 153.4 | — | — | — |
| New problems | 55,300 | 57.7 | 56.3 | 59.1 | 38.1 | 37.1 | 39.1 |
| Work-related | 2,719 | 2.8 | 2.6 | 3.1 | 1.9 | 1.7 | 2.0 |
| Chronic problems | 50,132 | 52.2 | 50.4 | 54.1 | 34.6 | 33.6 | 35.5 |
| Medications | 98,439 | 102.7 | 100.3 | 105.0 | 67.9 | 66.5 | 69.2 |
| Prescribed | 79,051 | 82.4 | 80.3 | 84.6 | 54.5 | 53.2 | 55.8 |
| GP-supplied | 9,702 | 10.1 | 9.5 | 10.7 | 6.7 | 6.3 | 7.1 |
| Advised OTC | 9,686 | 10.1 | 9.3 | 10.9 | 6.7 | 6.2 | 7.2 |
| Other treatments | 49,130 | 51.2 | 48.9 | 53.6 | 33.9 | 32.4 | 35.3 |
| Clinical* | 33,121 | 34.5 | 32.5 | 36.5 | 22.8 | 21.6 | 24.1 |
| Procedural* | 16,009 | 16.7 | 15.9 | 17.5 | 11.0 | 10.5 | 11.6 |
| Referrals | 12,008 | 12.5 | 12.0 | 13.0 | 8.3 | 8.0 | 8.6 |
| Specialist* | 7,647 | 8.0 | 7.6 | 8.3 | 5.3 | 5.1 | 5.5 |
| Allied health services* | 3,305 | 3.4 | 3.2 | 3.7 | 2.3 | 2.1 | 2.4 |
| Hospital* | 381 | 0.4 | 0.3 | 0.5 | 0.3 | 0.2 | 0.3 |
| Emergency department* | 210 | 0.2 | 0.2 | 0.3 | 0.1 | 0.1 | 0.2 |
| Other medical services* | 83 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 |
| Other referrals* | 382 | 0.4 | 0.3 | 0.5 | 0.3 | 0.2 | 0.3 |
| Pathology | 41,375 | 43.2 | 41.3 | 45.0 | 28.5 | 27.4 | 29.6 |
| Imaging | 9,143 | 9.5 | 9.2 | 9.9 | 6.3 | 6.1 | 6.5 |
| Other investigations | 934 | 1.0 | 0.9 | 1.1 | 0.6 | 0.6 | 0.7 |

\*      Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

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

# 5.2  Encounter type

During the first 7 years of the BEACH program, where one (or more) MBS/DVA item number(s) 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).

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

In Table 5.3 and Table 5.4 for comparability with previous years only one item number per Medicare/DVA-claimable encounter has been counted. Selection of one item number was undertaken on a priority basis: consultation item numbers override incentive item numbers,

which override procedural item numbers, which override other Medicare item numbers. Table 5.5 provides a breakdown of all item numbers recorded by the GPs. Chapter 13 gives a more specific description for each of the practice nurse Medicare item numbers recorded.

Table 5.2 provides an overview of the MBS/DVA item numbers recorded in BEACH in 2007–08. Overall there were 83,418 encounters where at least one MBS/DVA item number was recorded. Only one item number was recorded at three-quarters of BEACH encounters said to be claimable from the MBS/DVA.

**Table 5.2: Overview of MBS items recorded**

| Variable | Number | Per cent of encounters |
|---|---|---|
| Encounters at which one MBS item was recorded | 63,131 | 75.7 |
| Encounters at which two MBS items were recorded | 18,912 | 22.7 |
| Encounters at which three MBS items were recorded | 1,376 | 1.6 |
| **Total encounters at which at least one item was recorded** | **83,418** | **100.0** |

*Note:* Eleven encounters at which only a bulk-billing item number was recorded are not included in this table.

Table 5.3 reports the breakdown of encounter type (by payment source), counting a single Medicare item number per encounter (where applicable).

- Indirect encounters (where the patient was not seen by the GP) accounted for 1.4% of all encounters.

- Direct encounters (patient was seen by the GP) accounted for 98.6% of all encounters.

- Direct encounters where the GP indicated that no charge was made occurred infrequently, at a rate of 0.4 per 100 encounters.

- About 97% of all direct encounters were claimable either through Medicare or the DVA.

- Encounters payable through workers compensation accounted for 2.3% of encounters.

- Encounters payable through other sources (including hospital paid encounters) accounted for 0.7% of encounters.

- There were 27 encounters where the only item recorded related to practice nurse activity, but the GP had indicated that she or he had seen the patient him/herself. There were 14 encounters at which a practice nurse item was recorded and the GP had indicated that they had not seen the patient. These were counted as indirect encounters.

**Table 5.3: Type of encounter**

| Type of encounter | Number | Per cent of all encounters[a] (*n* = 95,858) | 95% LCL | 95% UCL | Per cent of direct encounters (*n* = 86,359) |
|---|---|---|---|---|---|
| General practitioners | 953 | — | — | — | — |
| Indirect encounters[b] | 1,225 | 1.4 | 1.2 | 1.6 | — |
|    Practice nurse only items (indirect encs) | 14 | 0.0 | 0.0 | 0.0 | — |
| Direct encounters | 86,359 | 98.6 | 98.4 | 98.8 | 100.0 |
|    No charge | 386 | 0.4 | 0.4 | 0.5 | 0.4 |
|    MBS/DVA items of service (all)[b][c] | 83,418 | 95.2 | 94.9 | 95.6 | 96.6 |
|      MBS/DVA items of service (GPs only) | 83,376 | 95.2 | 94.8 | 95.5 | 96.5 |
|      Practice nurse only items (direct encs) | 27 | 0.0 | 0.0 | 0.1 | 0.0 |
|    Workers compensation | 2,000 | 2.3 | 2.1 | 2.5 | 2.3 |
|    Other paid (hospital, state, etc.) | 577 | 0.7 | 05 | 0.8 | 0.7 |
| Practice nurse only items (unspecified) | 2 | 0.0 | 0.0 | 0.0 | — |
| *Subtotal* | *87,586* | — | — | — | — |
| *Missing*[d] | 8,311 | — | — | — | — |
| **Total encounters** | **95,898** | — | — | — | — |

(a)    Missing data removed from analysis.

(b)    Six encounters involving chronic disease management or case conference items were recorded as indirect encounters.

(c)    Includes 14 indirect encounters at which a practice nurse item only was recorded and 2 unspecified encounters at which a practice nurse item was recorded.

(d)    If the 'Patient not seen' box was ticked, and MBS items other than chronic disease management items or case conference items were recorded, those items were included as missing data.

*Note:* LCL—lower confidence limit; UCL—upper confidence limit; MBS—Medicare Benefits Schedule; encs—encounters; DVA—Australian Government Department of Veterans' Affairs.

Table 5.4 provides a summary of the MBS items recorded in BEACH, counting one item number only, using the same method described for Table 5.3. This provides comparable data to those reported in previous years.

- Standard surgery consultations accounted for the majority (82.1%) of MBS/DVA-claimable consultations, at a rate of 78.2 per 100 encounters.

- Almost 1 in 10 MBS/DVA encounters were long surgery consultations.

- Short and prolonged surgery consultations, home visits and residential aged care consultations were relatively rare. Very few encounters occurring in hospitals were recorded.

- Chronic disease management items, health assessments and GP mental health care items were all recorded rarely. There were six case conferences recorded during the 2007–08 BEACH year.

Those interested in GP activity at residential aged care facilities will find more information in O'Halloran et al. *General practitioner consultations at residential aged-care facilities*.[55]

**Table 5.4: Summary of MBS/DVA items recorded (counting one item number per encounter only)**

| MBS/DVA item | Number | Rate per 100 encounters[a] (*n* = 95,858) | 95% LCL | 95% UCL | Per cent of Medicare-paid GP items (*n* = 83,376) |
|---|---|---|---|---|---|
| Short surgery consultations | 990 | 1.1 | 0.9 | 1.3 | 1.2 |
| Standard surgery consultations | 68,455 | 78.2 | 77.0 | 79.3 | 82.1 |
| Long surgery consultations | 8,231 | 9.4 | 8.8 | 10.0 | 9.9 |
| Prolonged surgery consultations | 559 | 0.6 | 0.5 | 0.8 | 0.7 |
| Home visits | 822 | 0.9 | 0.5 | 1.3 | 1.0 |
| Hospital | 130 | 0.1 | 0.1 | 0.2 | 0.2 |
| Residential aged care facility | 1,007 | 1.2 | 0.9 | 1.4 | 1.2 |
| Health assessments | 294 | 0.3 | 0.3 | 0.4 | 0.4 |
| Chronic disease management items | 451 | 0.5 | 0.4 | 0.6 | 0.5 |
| Case conferences | 6 | 0.0 | 0.0 | 0.0 | 0.0 |
| GP mental health care | 682 | 0.8 | 0.7 | 0.9 | 0.8 |
| Incentive payments | 129 | 0.1 | 0.1 | 0.2 | 0.2 |
| Other items | 1,620 | 1.8 | 1.4 | 2.3 | 1.9 |
| **Total MBS/DVA items of service (GPs only)** | **83,376** | **95.2** | **94.8** | **95.5** | **100.0** |

(a)     Missing data removed from analysis.

*Note:* LCL—lower confidence limit; UCL—upper confidence limit; MBS—Medicare Benefits Schedule; DVA—Australian Government Department of Veterans' Affairs.

Table 5.5 provides the distribution of all Medicare item numbers recorded across Medicare item number groups. Overall, there were 105,081 MBS item numbers recorded in BEACH in 2007–08. An average of 1.1 items was recorded at encounters where at least one MBS item was recorded.

Surgery consultations (including short, standard, long and prolonged) were the most commonly recorded type of item number, at 94% of the encounters where at least one item was recorded. They accounted for 74.5% of all MBS items recorded in BEACH.

The second most commonly recorded were items for bulk-billed incentive payments, which accounted for 16.0% of all items recorded. Items for hospital, residential aged care and home visits were together recorded at one in every 50 encounters (2%). Practice nurse items were recorded at 2.0% of all encounters (Table 5.5). For a more detailed breakdown of practice nurse item numbers, and related data on practice nurse activity, refer to Chapter 13.

**Table 5.5: Medicare item number distribution across item number groups**

| Items/encounters | All MBS items[a] | | At least one item recorded[b] | | | |
|---|---|---|---|---|---|---|
| | Number | Per cent | Number | Per cent | 95% LCL | 95% UCL |
| Surgery consultations | 78,235 | 74.5 | 78,235 | 93.8 | 92.9 | 94.6 |
| Hospital, residential aged care and home visits | 1,959 | 1.9 | 1,959 | 2.3 | 1.8 | 2.9 |
| Health assessments | 356 | 0.3 | 356 | 0.4 | 0.4 | 0.5 |
| Chronic disease management items (including case conferences) | 878 | 0.8 | 648 | 0.8 | 0.6 | 0.9 |
| Incentive payments | 141 | 0.1 | 141 | 0.2 | 0.1 | 0.2 |
| Acupuncture | 228 | 0.2 | 228 | 0.3 | 0.1 | 0.4 |
| Bulk-billed incentive payment[c] | 16,819 | 16.0 | 16,813 | 20.2 | 18.1 | 22.2 |
| Practice nurse services | 2,073 | 2.0 | 2,047 | 2.5 | 2.1 | 2.8 |
| Diagnostic procedures and investigations | 545 | 0.5 | 540 | 0.6 | 0.5 | 0.8 |
| Therapeutic procedures | 417 | 0.4 | 415 | 0.5 | 0.4 | 0.6 |
| Surgical operations | 1,335 | 1.3 | 1,291 | 1.5 | 1.3 | 1.8 |
| Diagnostic imaging services | 10 | 0.0 | 10 | 0.0 | 0.0 | 0.0 |
| Pathology services | 256 | 0.2 | 253 | 0.3 | 0.2 | 0.4 |
| Other items | 1,076 | 1.0 | 1,072 | 1.3 | 0.8 | 1.8 |
| GP mental health care items | 753 | 0.7 | 753 | 0.9 | 0.8 | 1.0 |
| **Total items/encounters** | **105,081** | **100.0** | **83,376** | — | — | — |

(a)    Up to three 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.

(c)    Includes 10 encounters with only a bulk-billing service item recorded at the encounter.

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

# 5.3  Consultation length

In a subsample of 29,956 BEACH encounters containing start and finish times for all MBS/DVA-claimable encounters, the mean length of consultation in 2007–08 was 15.1 minutes (95% CI: 14.8–15.3). The median length was 13.0 minutes (results not tabled).

For A1 MBS/DVA-claimable encounters, the mean length of consultation in 2007–08 was 14.8 minutes (95% CI: 14.6–15.1), and the median length was 13.0 minutes (results not tabled). Methods describing the substudy from which consultation length data are collected are described in Section 2.4. The determinants of consultation length have been investigated by Britt et al. in *Determinants of consultation length in Australian general practice*.[56]
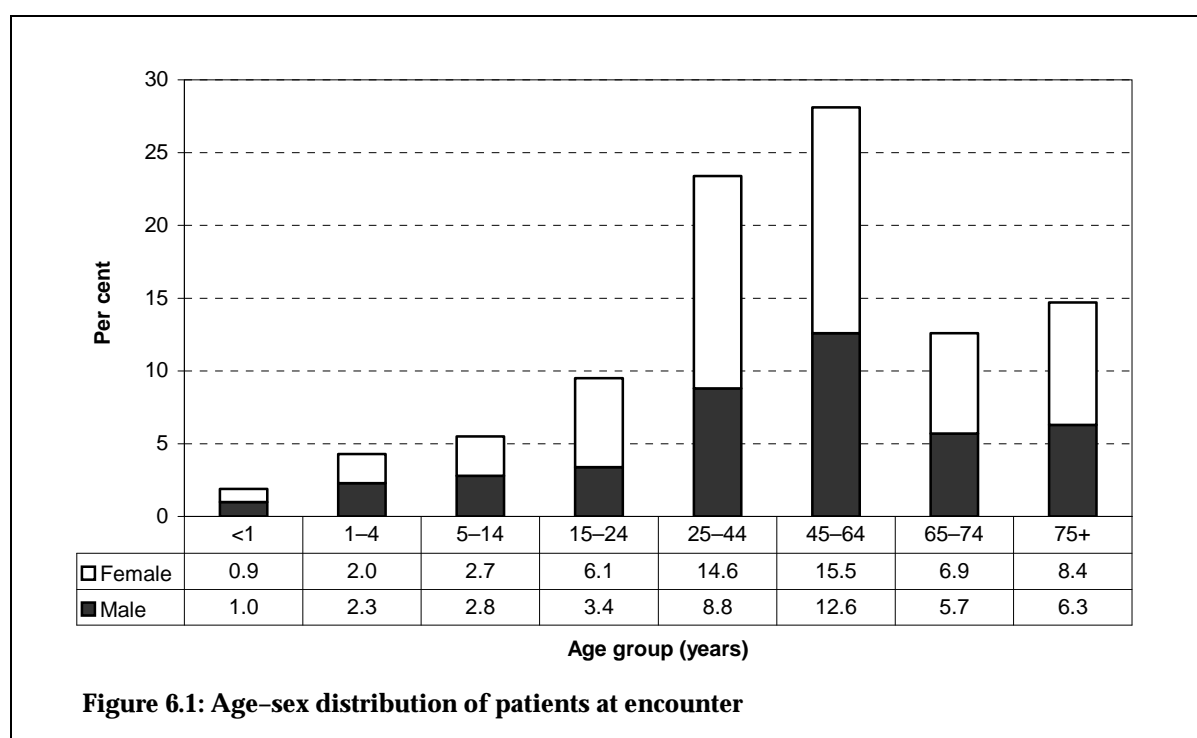
# 6 The patients

This chapter reports data collected between April 2007 and March 2008 about the characteristics of patients and their reasons for encounter from the 10th year of the BEACH program. Data on patient characteristics and reasons for encounter are reported for each year from 1998–99 to 2007–08 in the 10 year summary report *General practice activity in Australia 1998–99 to 2007–08: 10 year data tables* available from <www.aihw.gov.au/publications/index.cfm/subject/19> (AIHW catalogue number GEP 23).

## 6.1 Age–sex distribution of patients at encounter

The age–sex distribution of patients at the 95,898 encounters is shown in Figure 6.1. Females accounted for the greater proportion of encounters (57.1%). This was reflected across all age groups except for children aged less than 15 years (Figure 6.1; Table 6.1).

Patients aged less than 25 years accounted for 21.2% of encounters; those aged 25–44 years accounted for 23.4% of encounters, patients aged 45–64 years accounted for 28.1% and those aged 65 years and over accounted for 27.3% of encounters (Table 6.1).



| Age group (years) | <1 | 1–4 | 5–14 | 15–24 | 25–44 | 45–64 | 65–74 | 75+ |
|---|---|---|---|---|---|---|---|---|
| □ Female | 0.9 | 2.0 | 2.7 | 6.1 | 14.6 | 15.5 | 6.9 | 8.4 |
| ■ Male | 1.0 | 2.3 | 2.8 | 3.4 | 8.8 | 12.6 | 5.7 | 6.3 |

**Figure 6.1: Age–sex distribution of patients at encounter**

*Note:* Missing data removed. The distributions will not agree perfectly with those in Table 6.1 because of missing data in either age or sex fields.

## 6.2 Other patient characteristics

Table 6.1 provides a view of other characteristics of the patients. In summary:

- the patient was new to the practice at 8.6% of encounters.
- almost 42% of encounters were with patients who held a Commonwealth concession card and 2.8% were with persons who held a Repatriation health card.

- at 9.9% of 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.

**Table 6.1: Characteristics of the patients at encounters**

| Patient characteristics | Number | Per cent of encounters (n = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|
| Sex (missing)[a] | 876 | | | |
| Males | 40,761 | 42.9 | 42.1 | 43.7 |
| Females | 54,261 | 57.1 | 56.3 | 57.9 |
| Age group (missing)[a] | 784 | | | |
| < 1 year | 1,864 | 2 | 1.8 | 2.1 |
| 1–4 years | 4,114 | 4.3 | 4.1 | 4.6 |
| 5–14 years | 5,214 | 5.5 | 5.2 | 5.8 |
| 15–24 years | 9,004 | 9.5 | 9.0 | 9.9 |
| 25–44 years | 22,289 | 23.4 | 22.7 | 24.1 |
| 45–64 years | 26,695 | 28.1 | 27.5 | 28.6 |
| 65–74 years | 11,961 | 12.6 | 12.1 | 13.1 |
| 75+ years | 13,972 | 14.7 | 13.9 | 15.5 |
| Other characteristics[b] | | | | |
| New patient to practice | 8,136 | 8.6 | 7.8 | 9.4 |
| Commonwealth concession card | 40,065 | 41.8 | 40.3 | 43.3 |
| Repatriation health card | 2,658 | 2.8 | 2.5 | 3.0 |
| Non-English-speaking background | 9,457 | 9.9 | 8.2 | 11.5 |
| Aboriginal person | 751 | 0.8 | 0.6 | 1.0 |
| Torres Strait Islander | 99 | 0.1 | 0.0 | 0.2 |
| Aboriginal person and Torres Strait Islander | 26 | 0.0 | 0.0 | 0.0 |

(a)     Missing data removed.

(b)     Missing data for each of the listed 'other' patient characteristics were counted as a no response.

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

# 6.3   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 use patterns, which may benefit from intervention on a population level.[57]

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 (for example, 'itchy eyes', 'chest pain'), in diagnostic terms (for example, '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 can have a one-to-one, one-to-many, many-to-one and many-to-many relationship to problems managed. That is, the patient may describe a single RFE that relates to a single problem managed at the encounter, one RFE that relates to multiple problems, multiple symptoms that relate to a single problem managed at the encounter, or multiple RFEs that relate to multiple problems managed at the encounter.

## Number of reasons for encounter

There were 146,696 RFEs recorded. At 58.9% of encounters only one RFE was recorded and at 29.1% two RFEs were recorded (Table 6.2). Patients presented on average with 153.0 RFEs per 100 encounters, or 1.5 RFEs per encounter (Table 6.3).

**Table 6.2: Number of patient reasons for encounter**

| Number of RFEs at encounter | Number of encounters (*n* = 95,898) | Per cent of encounters | 95% LCL | 95% UCL |
|---|---|---|---|---|
| One RFE | 56,525 | 58.9 | 57.7 | 60.2 |
| Two RFEs | 27,949 | 29.1 | 28.5 | 29.8 |
| Three RFEs | 11,425 | 11.9 | 11.2 | 12.6 |
| **Total** | **95,898** | **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 6.3. Each chapter and individual RFE is expressed as a percentage of all RFEs and as a rate per 100 encounters with 95% confidence limits.

RFEs of a general and unspecified nature were presented at a rate of 40.1 per 100 encounters, with requests for prescriptions and test results most frequently recorded. RFEs related to the respiratory system arose at a rate of 20.6 per 100 encounters, while those related to the musculoskeletal system and the skin were each recorded at a rate of 15.4 per 100 encounters (Table 6.3).

**Table 6.3: 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 = 146,696) | Rate per 100 encounters[b] (n = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| **General & unspecified** | **38,441** | **26.2** | **40.1** | **39.0** | **41.2** |
| Prescription NOS | 8,191 | 5.6 | 8.5 | 8.0 | 9.1 |
| Results tests/procedures NOS | 6,147 | 4.2 | 6.4 | 6.0 | 6.8 |
| Check-up—general* | 3,803 | 2.6 | 4.0 | 3.7 | 4.2 |
| Immunisation/vaccination—general | 2,919 | 2.0 | 3.0 | 2.8 | 3.2 |
| Fever | 2,057 | 1.4 | 2.1 | 1.8 | 2.5 |
| Administrative procedure NOS | 1,885 | 1.3 | 2.0 | 1.8 | 2.1 |
| Weakness/tiredness | 1,302 | 0.9 | 1.4 | 1.2 | 1.5 |
| Blood test NOS | 1,132 | 0.8 | 1.2 | 1.0 | 1.3 |
| Chest pain NOS | 1,015 | 0.7 | 1.1 | 1.0 | 1.1 |
| Observation/health education/advice/diet NOS | 952 | 0.6 | 1.0 | 0.9 | 1.1 |
| Other referrals NEC | 876 | 0.6 | 0.9 | 0.8 | 1.0 |
| Trauma/injury NOS | 783 | 0.5 | 0.8 | 0.7 | 0.9 |
| Other reason for encounter NEC | 730 | 0.5 | 0.8 | 0.6 | 0.9 |
| Clarify/discuss patient RFE/demand NOS | 670 | 0.5 | 0.7 | 0.6 | 0.8 |
| **Respiratory** | **19,764** | **13.5** | **20.6** | **19.7** | **21.5** |
| Cough | 5,992 | 4.1 | 6.2 | 5.8 | 6.7 |
| Throat complaint | 3,143 | 2.1 | 3.3 | 3.0 | 3.6 |
| Upper respiratory tract infection | 2,154 | 1.5 | 2.2 | 2.0 | 2.5 |
| Immunisation/vaccination—respiratory | 1,436 | 1.0 | 1.5 | 1.2 | 1.8 |
| Nasal congestion/sneezing | 1,337 | 0.9 | 1.4 | 1.2 | 1.6 |
| Asthma | 723 | 0.5 | 0.8 | 0.7 | 0.8 |
| Shortness of breath, dyspnoea | 703 | 0.5 | 0.7 | 0.7 | 0.8 |
| **Musculoskeletal** | **14,793** | **10.1** | **15.4** | **14.9** | **15.9** |
| Back complaint* | 3,041 | 2.1 | 3.2 | 3.0 | 3.4 |
| Knee complaint | 1,271 | 0.9 | 1.3 | 1.2 | 1.4 |
| Foot/toe complaint | 1,045 | 0.7 | 1.1 | 1.0 | 1.2 |
| Shoulder complaint | 971 | 0.7 | 1.0 | 0.9 | 1.1 |
| Neck complaint | 885 | 0.6 | 0.9 | 0.8 | 1.0 |
| Leg/thigh complaint | 877 | 0.6 | 0.9 | 0.8 | 1.0 |
| Injury musculoskeletal NOS | 709 | 0.5 | 0.7 | 0.6 | 0.8 |
| **Skin** | **14,787** | **10.1** | **15.4** | **14.8** | **16.1** |
| Rash* | 2,383 | 1.6 | 2.5 | 2.3 | 2.6 |
| Skin complaint | 1,367 | 0.9 | 1.4 | 1.3 | 1.5 |
| Check-up—skin* | 1,339 | 0.9 | 1.4 | 1.1 | 1.7 |
| Swelling* | 1,019 | 0.7 | 1.1 | 1.0 | 1.2 |

*(continued)*

**Table 6.3 (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* = 146,696) | Rate per 100 encounters[b] (*n* = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| **Cardiovascular** | **10,756** | **7.3** | **11.2** | **10.6** | **11.8** |
|    Check-up—cardiovascular* | 5,133 | 3.5 | 5.4 | 5.0 | 5.7 |
|    Hypertension/high blood pressure* | 1,971 | 1.3 | 2.1 | 1.8 | 2.3 |
|    Prescription—cardiovascular | 916 | 0.6 | 1.0 | 0.8 | 1.2 |
| **Digestive** | **9,922** | **6.8** | **10.3** | **10.0** | **10.7** |
|    Abdominal pain* | 1,682 | 1.1 | 1.8 | 1.6 | 1.9 |
|    Diarrhoea | 1,388 | 0.9 | 1.4 | 1.3 | 1.6 |
|    Vomiting | 1,027 | 0.7 | 1.1 | 1.0 | 1.2 |
| **Psychological** | **7,526** | **5.1** | **7.8** | **7.5** | **8.2** |
|    Depression* | 1,954 | 1.3 | 2.0 | 1.9 | 2.2 |
|    Anxiety* | 1044 | 0.7 | 1.1 | 1.0 | 1.2 |
|    Sleep disturbance | 951 | 0.6 | 1.0 | 0.9 | 1.1 |
| **Endocrine & metabolic** | **6,223** | **4.2** | **6.5** | **6.1** | **6.8** |
|    Diabetes (non-gestational)* | 1,204 | 0.8 | 1.3 | 1.1 | 1.4 |
|    Prescription—endocrine/metabolic | 952 | 0.6 | 1.0 | 0.9 | 1.1 |
| **Female genital system** | **4,981** | **3.4** | **5.2** | **4.8** | **5.6** |
|    Female genital check-up/pap smear* | 1,842 | 1.3 | 1.9 | 1.7 | 2.1 |
| **Neurological** | **4,593** | **3.1** | **4.8** | **4.6** | **5.0** |
|    Headache | 1,559 | 1.1 | 1.6 | 1.5 | 1.8 |
|    Vertigo/dizziness | 1,070 | 0.7 | 1.1 | 1.0 | 1.2 |
| **Ear** | **3,452** | **2.4** | **3.6** | **3.4** | **3.8** |
|    Ear pain | 1,305 | 0.9 | 1.4 | 1.3 | 1.5 |
| **Pregnancy & family planning** | **3,115** | **2.1** | **3.2** | **3.0** | **3.5** |
|    Pre/postnatal check-up* | 664 | 0.5 | 0.7 | 0.6 | 0.8 |
|    Oral contraception* | 663 | 0.5 | 0.7 | 0.6 | 0.8 |
| **Urology** | 2,414 | 1.6 | 2.5 | 2.4 | 2.7 |
| **Eye** | 2,405 | 1.6 | 2.5 | 2.4 | 2.6 |
| **Blood** | 1,310 | 0.9 | 1.4 | 1.2 | 1.5 |
| **Male genital system** | 1,178 | 0.8 | 1.2 | 1.1 | 1.3 |
| **Social** | 1,035 | 0.7 | 1.1 | 1.0 | 1.2 |
| **Total RFEs** | **146,696** | **100.0** | **153.0** | **151.1** | **154.8** |

(a)    Only 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 4, <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.

## Distribution of RFEs by ICPC-2 component

The distribution of patient RFEs by ICPC-2 component is presented in Table 6.4 expressed as a percentage of all RFEs and as a rate per 100 encounters with 95% confidence limits. Nearly half (44.3%) of patient RFEs were expressed in terms of symptoms or complaints (for example, 'tired', 'fever'). RFEs were described in diagnostic terms for 18.2% of RFEs (for example, 'about my diabetes', 'for my depression'). The remaining 37.5% of RFEs were described in terms of processes of care, such as requests for a health check, to renew scripts, to get a referral, to find out test results or to get a medical certificate.

**Table 6.4: Distribution of RFEs by ICPC-2 component**

| ICPC-2 component | Number | Per cent of total RFEs ($n$ = 146,696) | Rate per 100 encounters[a] ($n$ = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Symptoms & complaints | 64,933 | 44.3 | 67.7 | 65.8 | 69.6 |
| Diagnosis, diseases | 26,659 | 18.2 | 27.8 | 26.3 | 29.3 |
| Diagnostic & preventive procedures | 24,542 | 16.7 | 25.6 | 24.7 | 26.5 |
| Medications, treatments & therapeutics | 14,434 | 9.8 | 15.1 | 14.3 | 15.8 |
| Referrals & other RFEs | 7,321 | 5.0 | 7.6 | 7.2 | 8.1 |
| Results | 6,555 | 4.5 | 6.8 | 6.4 | 7.2 |
| Administrative | 2,252 | 1.5 | 2.4 | 2.2 | 2.5 |
| **Total RFEs** | **146,696** | **100.0** | **153.0** | **151.1** | **154.8** |

(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 6.5, 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.

Of the top 30 most common RFEs, 18 were descriptive of symptoms such as cough, throat and back complaints and rash. However, four of the top five RFEs reflected requests for a process of care (that is, requests for check-ups, prescriptions, test results and immunisations) and together accounted for a quarter of all RFEs (25.8%) (Table 6.5).

**Table 6.5: Most frequent patient reasons for encounter**

| Patient reason for encounter | Number | Per cent of total RFEs (n = 146,696) | Rate per 100 encounters[a] (n = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Check-up—all* | 13,880 | 9.5 | 14.5 | 13.8 | 15.1 |
| Prescription—all* | 12,004 | 8.2 | 12.5 | 11.9 | 13.2 |
| Test results* | 7,321 | 5.0 | 7.6 | 7.2 | 8.1 |
| Cough | 5,992 | 4.1 | 6.2 | 5.8 | 6.7 |
| Immunisation/vaccination—all* | 4,585 | 3.1 | 4.8 | 4.4 | 5.1 |
| Throat complaint | 3,143 | 2.1 | 3.3 | 3.0 | 3.6 |
| Back complaint* | 3,041 | 2.1 | 3.2 | 3.0 | 3.4 |
| Rash* | 2,383 | 1.6 | 2.5 | 2.3 | 2.6 |
| Upper respiratory tract infection | 2,154 | 1.5 | 2.2 | 2.0 | 2.5 |
| Fever | 2,057 | 1.4 | 2.1 | 1.8 | 2.5 |
| Hypertension/high blood pressure* | 1,971 | 1.3 | 2.1 | 1.8 | 2.3 |
| Depression* | 1,954 | 1.3 | 2.0 | 1.9 | 2.2 |
| Administrative procedure NOS | 1,885 | 1.3 | 2.0 | 1.8 | 2.1 |
| Abdominal pain* | 1,682 | 1.1 | 1.8 | 1.6 | 1.9 |
| Headache | 1,559 | 1.1 | 1.6 | 1.5 | 1.8 |
| Diarrhoea | 1,388 | 0.9 | 1.4 | 1.3 | 1.6 |
| Skin complaint | 1,367 | 0.9 | 1.4 | 1.3 | 1.5 |
| Nasal congestion/sneezing | 1,337 | 0.9 | 1.4 | 1.2 | 1.6 |
| Ear pain | 1,305 | 0.9 | 1.4 | 1.3 | 1.5 |
| Weakness/tiredness | 1,302 | 0.9 | 1.4 | 1.2 | 1.5 |
| Knee complaint | 1,271 | 0.9 | 1.3 | 1.2 | 1.4 |
| Diabetes—all* | 1,214 | 0.8 | 1.3 | 1.1 | 1.4 |
| Blood test NOS | 1,132 | 0.8 | 1.2 | 1.0 | 1.3 |
| Vertigo/dizziness | 1,070 | 0.7 | 1.1 | 1.0 | 1.2 |
| Foot/toe complaint | 1,045 | 0.7 | 1.1 | 1.0 | 1.2 |
| Anxiety* | 1,044 | 0.7 | 1.1 | 1.0 | 1.2 |
| Vomiting | 1,027 | 0.7 | 1.1 | 1.0 | 1.2 |
| Swelling* | 1,019 | 0.7 | 1.1 | 1.0 | 1.2 |
| Chest pain NOS | 1,015 | 0.7 | 1.1 | 1.0 | 1.1 |
| Shoulder complaint | 971 | 0.7 | 1.0 | 0.9 | 1.1 |
| *Subtotal* | *83,121* | *56.7* | — | — | — |
| **Total RFEs** | **146,696** | **100.0** | **153.0** | **151.1** | **154.8** |

(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 4, <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.

# 7    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 at 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 that involved management by a practice nurse. Problems that specifically included management by a practice nurse are reported additionally in Chapter 13.

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 (for example, cardiovascular problems), it must be remembered that more than one of that type of problem (such as 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 (for example, asthma, 2.2 per 100 encounters) can be regarded as equivalent to 'asthma is managed at 2.2% of encounters', such a statement cannot be made for grouped concepts (ICPC-2 chapters and those marked with asterisks in the tables).

Data on problems managed in Australian general practice from the BEACH study are reported for each year from 1998–99 to 2007–08 in the 10 year summary report *General practice activity in Australia 1998–99 to 2007–08: 10 year data tables* available from <www.aihw.gov.au/publications/index.cfm/subject/19> (AIHW catalogue number GEP 23).

## 7.1    Number of problems managed at encounter

There were 145,078 problems managed, at a rate of 151.3 per 100 encounters. Table 7.1 shows the number of problems managed at each encounter. Only one problem was managed at more than 60% of encounters, two problems were managed at one-quarter of encounters and almost 1 in 10 encounters (8.8%) involved the management of three problems. The management of four problems at an encounter was less common (2.7% of encounters).
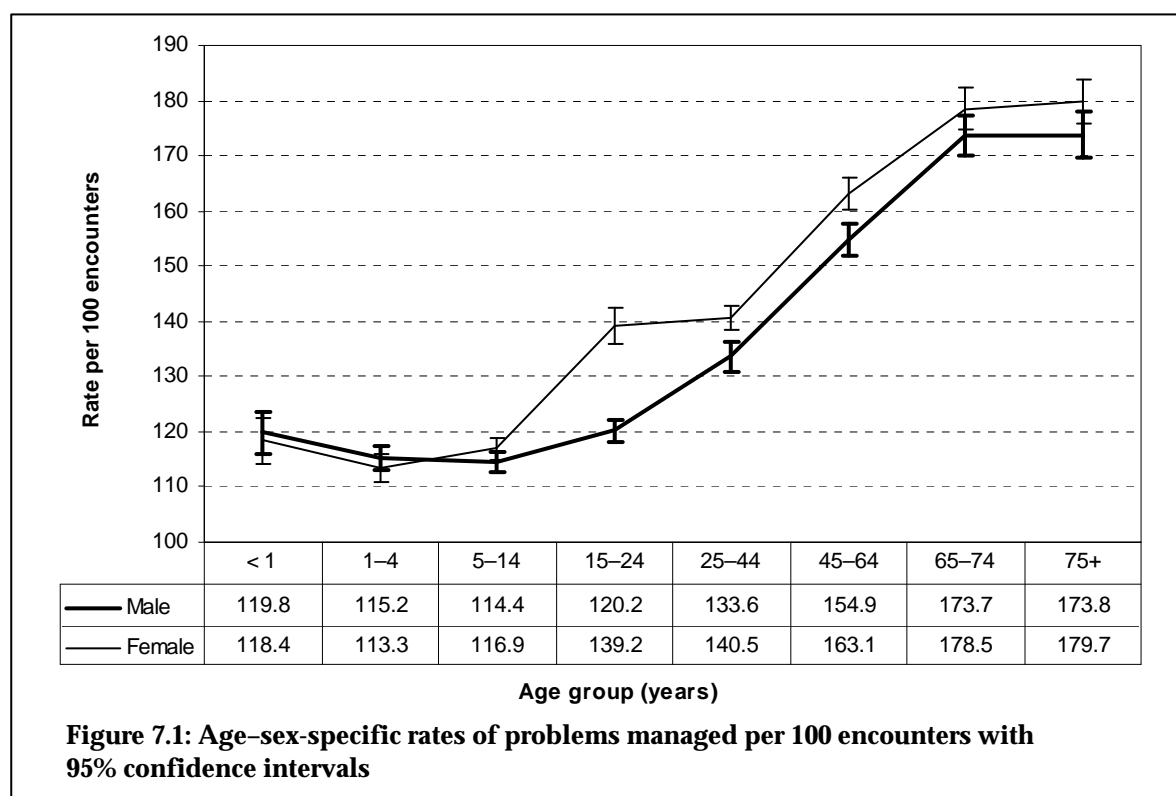
**Table 7.1: Number of problems managed at an encounter**

| Number of problems managed at encounter | Number of encounters | Per cent | 95% LCL | 95% UCL |
|---|---|---|---|---|
| One problem | 60,418 | 63.0 | 61.7 | 64.3 |
| Two problems | 24,400 | 25.4 | 24.7 | 26.2 |
| Three problems | 8,458 | 8.8 | 8.3 | 9.3 |
| Four problems | 2,622 | 2.7 | 2.4 | 3.0 |
| **Total** | **95,898** | **100.0** | — | — |

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

The number of problems managed at encounter increased steadily with the age of the patient. Significantly more problems were managed overall at encounters with female patients (154.4 per 100 encounters, 95% CI: 152.1–156.6) than at those with male patients (147.4 per 100 encounters, 95% CI: 145.2–149.6) (results not tabled).

Figure 7.1 shows the age–sex-specific rates of problems managed, and demonstrates that this difference was particularly evident in the 15–24 year age group.



| | < 1 | 1–4 | 5–14 | 15–24 | 25–44 | 45–64 | 65–74 | 75+ |
|---|---|---|---|---|---|---|---|---|
| Male | 119.8 | 115.2 | 114.4 | 120.2 | 133.6 | 154.9 | 173.7 | 173.8 |
| Female | 118.4 | 113.3 | 116.9 | 139.2 | 140.5 | 163.1 | 178.5 | 179.7 |

**Age group (years)**

**Figure 7.1: Age–sex-specific rates of problems managed per 100 encounters with 95% confidence intervals**

# 7.2 Problems managed by ICPC-2 chapter

The frequency and the distribution of problems managed, by ICPC-2 chapter, are presented in Table 7.2. Rates per 100 encounters and the proportion of total problems are provided at the ICPC-2 chapter level and for frequent individual problems within each chapter. Only those individual problems accounting for at least 0.5% of all problems managed are listed in the table, in decreasing order of frequency.

The most common problems managed were:

- those classified to the respiratory system (19.4 per 100 encounters)—in particular upper respiratory tract infection, acute bronchitis and asthma
- problems of a general and unspecified nature (such as immunisations, check-ups and prescriptions)
- cardiovascular problems (such as hypertension and cardiac check-ups)
- musculoskeletal problems (such as arthritis and back complaints)
- skin problems (such as contact dermatitis and solar keratosis/sunburn) (Table 7.2).

**Table 7.2: Distribution of problems managed, by ICPC-2 chapter and most frequent individual problems within chapter**

| Problem managed | Number | Per cent total problems[a] (*n* = 145,078) | Rate per 100 encounters[b] (*n* = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| **Respiratory** | **18,641** | **12.9** | **19.4** | **18.8** | **20.1** |
| Upper respiratory tract infection | 5,943 | 4.1 | 6.2 | 5.7 | 6.7 |
| Acute bronchitis/bronchiolitis | 2,303 | 1.6 | 2.4 | 2.2 | 2.6 |
| Asthma | 2,089 | 1.4 | 2.2 | 2.0 | 2.3 |
| Immunisation/vaccination—respiratory | 1,712 | 1.2 | 1.8 | 1.5 | 2.1 |
| Sinusitis | 1,254 | 0.9 | 1.3 | 1.2 | 1.4 |
| Tonsillitis* | 928 | 0.6 | 1.0 | 0.9 | 1.1 |
| Chronic obstructive pulmonary disease | 744 | 0.5 | 0.8 | 0.7 | 0.9 |
| **General & unspecified** | **17,107** | **11.8** | **17.8** | **17.1** | **18.5** |
| Immunisation/vaccination—general | 2,989 | 2.1 | 3.1 | 2.9 | 3.3 |
| General check-up* | 2,407 | 1.7 | 2.5 | 2.3 | 2.7 |
| Prescription NOS | 1,252 | 0.9 | 1.3 | 1.1 | 1.5 |
| Results tests/procedures NOS | 1,233 | 0.8 | 1.3 | 1.1 | 1.5 |
| Viral disease, other/NOS | 1,168 | 0.8 | 1.2 | 1.1 | 1.4 |
| Abnormal results/investigations NOS | 779 | 0.5 | 0.8 | 0.7 | 0.9 |
| Administrative procedures NOS | 699 | 0.5 | 0.7 | 0.6 | 0.8 |
| **Cardiovascular** | **16,860** | **11.6** | **17.6** | **16.8** | **18.3** |
| Hypertension* | 9,496 | 6.5 | 9.9 | 9.4 | 10.5 |
| Cardiac check-up* | 1,141 | 0.8 | 1.2 | 1.0 | 1.4 |
| Ischaemic heart disease* | 1,046 | 0.7 | 1.1 | 1.0 | 1.2 |
| Atrial fibrillation/flutter | 984 | 0.7 | 1.0 | 0.9 | 1.1 |

*(continued)*

**Table 7.2 (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 = 145,078) | Rate per 100 encounters[b] (n = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| **Musculoskeletal** | **16,572** | **11.4** | **17.3** | **16.7** | **17.8** |
| Arthritis—all* | 3,460 | 4.2 | 6.3 | 6.0 | 6.7 |
| Osteoarthritis* | 2,484 | 1.7 | 2.6 | 2.4 | 2.8 |
| Back complaint* | 2,624 | 1.8 | 2.7 | 2.6 | 2.9 |
| Sprain/strain* | 1,509 | 1.0 | 1.6 | 1.4 | 1.7 |
| Fracture* | 959 | 0.7 | 1.0 | 0.9 | 1.1 |
| Osteoporosis | 928 | 0.6 | 1.0 | 0.9 | 1.1 |
| Injury musculoskeletal NOS | 841 | 0.6 | 0.9 | 0.8 | 1.0 |
| Bursitis/tendonitis/synovitis NOS | 789 | 0.5 | 0.8 | 0.7 | 0.9 |
| **Skin** | **16,474** | **11.4** | **17.2** | **16.5** | **17.9** |
| Contact dermatitis | 1,719 | 1.2 | 1.8 | 1.7 | 1.9 |
| Solar keratosis/sunburn | 1,297 | 0.9 | 1.4 | 1.1 | 1.6 |
| Malignant neoplasm skin | 1,145 | 0.8 | 1.2 | 1.0 | 1.4 |
| Laceration/cut | 847 | 0.6 | 0.9 | 0.8 | 1.0 |
| Skin disease, other | 768 | 0.5 | 0.8 | 0.7 | 0.9 |
| **Endocrine & metabolic** | **12,401** | **8.6** | **12.9** | **12.3** | **13.5** |
| Diabetes, non-gestational* | 3,698 | 2.5 | 3.9 | 3.6 | 4.1 |
| Lipid disorders | 3,541 | 2.4 | 3.7 | 3.4 | 4.0 |
| Vitamin/nutritional deficiency | 875 | 0.6 | 0.9 | 0.8 | 1.0 |
| Obesity (BMI > 30) | 682 | 0.5 | 0.7 | 0.6 | 0.8 |
| Hypothyroidism/myxoedema | 670 | 0.5 | 0.7 | 0.6 | 0.8 |
| **Psychological** | **11,009** | **7.6** | **11.5** | **10.9** | **12.0** |
| Depression* | 3,822 | 2.6 | 4.0 | 3.8 | 4.2 |
| Anxiety* | 1,691 | 1.2 | 1.8 | 1.6 | 1.9 |
| Sleep disturbance | 1,547 | 1.1 | 1.6 | 1.5 | 1.7 |
| **Digestive** | **10,282** | **7.1** | **10.7** | **10.4** | **11.1** |
| Oesophageal disease | 2,219 | 1.5 | 2.3 | 2.2 | 2.5 |
| Gastroenteritis* | 1,583 | 1.1 | 1.7 | 1.5 | 1.8 |
| **Female genital system** | **5,562** | **3.8** | **5.8** | **5.4** | **6.2** |
| Female genital check-up/pap smear* | 1,722 | 1.2 | 1.8 | 1.6 | 2.0 |
| Menopausal complaint | 797 | 0.5 | 0.8 | 0.7 | 0.9 |
| **Pregnancy & family planning** | **3,752** | **2.6** | **3.9** | **3.6** | **4.2** |
| Pregnancy* | 1,279 | 0.9 | 1.3 | 1.2 | 1.5 |
| Oral contraception* | 1,236 | 0.9 | 1.3 | 1.2 | 1.4 |
| **Ear** | **3,593** | **2.5** | **3.8** | **3.6** | **3.9** |
| Acute otitis media/myringitis | 1,013 | 0.7 | 1.1 | 1.0 | 1.2 |
| Excessive ear wax | 719 | 0.5 | 0.7 | 0.7 | 0.8 |

*(continued)*

**Table 7.2 (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* = 145,078) | Rate per 100 encounters[b] (*n* = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| **Neurological** | **3,434** | **2.4** | **3.6** | **3.4** | **3.7** |
| **Urology** | **3,002** | **2.1** | **3.1** | **3.0** | **3.3** |
| Urinary tract infection* | 1,525 | 1.1 | 1.6 | 1.5 | 1.7 |
| **Eye** | **2,464** | **1.7** | **2.6** | **2.4** | **2.7** |
| Infectious conjunctivitis | 683 | 0.5 | 0.7 | 0.6 | 0.8 |
| **Male genital system** | **1,698** | **1.2** | **1.8** | **1.7** | **1.9** |
| **Blood** | **1,559** | **1.1** | **1.6** | **1.5** | **1.8** |
| **Social** | **668** | **0.5** | **0.7** | **0.6** | **0.8** |
| **Total problems** | **145,078** | **100.0** | **151.3** | **149.2** | **153.4** |

(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 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

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

# 7.3   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 7.3 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 (64.8%), with the majority of other problems described as symptoms or complaints (21.4%), 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 or an administrative procedure, or as a prescription.

**Table 7.3: Distribution of problems managed, by ICPC-2 component**

| ICPC-2 component | Number | Per cent of total problems (*n* = 145,078) | Rate per 100 encounters[a] (*n* = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Diagnosis, diseases | 94,044 | 64.8 | 98.1 | 96.2 | 99.9 |
| Symptoms & complaints | 30,982 | 21.4 | 32.3 | 31.5 | 33.1 |
| Diagnostic & preventive procedures | 13,594 | 9.4 | 14.2 | 13.5 | 14.8 |
| Medications, treatments & therapeutics | 2,820 | 1.9 | 2.9 | 2.7 | 3.2 |
| Results | 1,679 | 1.2 | 1.8 | 1.6 | 1.9 |
| Referrals & other RFEs | 1,135 | 0.8 | 1.2 | 1.1 | 1.3 |
| Administrative | 823 | 0.6 | 0.9 | 0.8 | 1.0 |
| **Total problems** | **145,078** | **100.0** | **151.3** | **149.2** | **153.4** |

(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.

# 7.4   Most frequently managed problems

Overall, there were 151.3 problems managed per 100 encounters. Table 7.4 shows the most frequently managed individual problems in general practice, in decreasing order of frequency. These 30 problems accounted for more than 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 regardless of body system. For example, immunisation/vaccination includes vaccinations for influenza, childhood diseases, and hepatitis.

The far right-hand column in Table 7.4 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 6.7% of all contacts with diabetes were new problems to the patient. In contrast, more than three-quarters of upper respiratory tract infection problems were new to the patient.

The most common problems managed were hypertension (9.9 per 100 encounters), check-ups (6.3 per 100), upper respiratory tract infections (6.2 per 100), immunisation/vaccination (5.2) and depression (4.0) (Table 7.4).

## Table 7.4: Most frequently managed problems

| Problem managed | Number | Per cent of total problems ($n = 145,078$) | Rate per 100 encounters[a] ($n = 95,898$) | 95% LCL | 95% UCL | Per cent of new problems[b] |
|---|---|---|---|---|---|---|
| Hypertension* | 9,496 | 6.5 | 9.9 | 9.4 | 10.5 | 6.1 |
| Check-up—all* | 6,080 | 4.2 | 6.3 | 6.0 | 6.7 | 39.0 |
| Upper respiratory tract infection | 5,943 | 4.1 | 6.2 | 5.7 | 6.7 | 77.0 |
| Immunisation/vaccination—all* | 5,015 | 3.5 | 5.2 | 4.8 | 5.6 | 53.1 |
| Depression* | 3,822 | 2.6 | 4.0 | 3.8 | 4.2 | 16.0 |
| Diabetes—all* | 3,717 | 2.6 | 3.9 | 3.6 | 4.1 | 6.7 |
| Lipid disorders* | 3,541 | 2.4 | 3.7 | 3.4 | 4.0 | 13.4 |
| Arthritis—all* | 3,460 | 2.4 | 3.6 | 3.4 | 3.8 | 19.1 |
| Back complaint* | 2,624 | 1.8 | 2.7 | 2.6 | 2.9 | 24.8 |
| Acute bronchitis/bronchiolitis | 2,303 | 1.6 | 2.4 | 2.2 | 2.6 | 72.4 |
| Oesophageal disease | 2,219 | 1.5 | 2.3 | 2.2 | 2.5 | 17.6 |
| Asthma | 2,089 | 1.4 | 2.2 | 2.0 | 2.3 | 16.7 |
| Prescription—all* | 1,880 | 1.3 | 2.0 | 1.7 | 2.2 | 5.1 |
| Contact dermatitis | 1,719 | 1.2 | 1.8 | 1.7 | 1.9 | 45.3 |
| Anxiety* | 1,691 | 1.2 | 1.8 | 1.6 | 1.9 | 20.4 |
| Test results* | 1,679 | 1.2 | 1.8 | 1.6 | 1.9 | 29.7 |
| Gastroenteritis* | 1,583 | 1.1 | 1.7 | 1.5 | 1.8 | 80.8 |
| Sleep disturbance | 1,547 | 1.1 | 1.6 | 1.5 | 1.7 | 16.0 |
| Urinary tract infection* | 1,525 | 1.1 | 1.6 | 1.5 | 1.7 | 64.2 |
| Sprain/strain* | 1,509 | 1.0 | 1.6 | 1.4 | 1.7 | 59.6 |
| Solar keratosis/sunburn | 1,297 | 0.9 | 1.4 | 1.1 | 1.6 | 47.1 |
| Pregnancy* | 1,279 | 0.9 | 1.3 | 1.2 | 1.5 | 35.9 |
| Viral disease, other/NOS | 1,254 | 0.9 | 1.3 | 1.2 | 1.4 | 67.2 |
| Malignant neoplasm skin | 1,236 | 0.9 | 1.3 | 1.2 | 1.4 | 17.5 |
| Ischaemic heart disease* | 1,145 | 0.8 | 1.2 | 1.0 | 1.4 | 52.3 |
| Sinusitis acute/chronic | 1,141 | 0.8 | 1.2 | 1.0 | 1.4 | 12.4 |
| Acute otitis media/myringitis | 1,046 | 0.7 | 1.1 | 1.0 | 1.2 | 8.9 |
| Atrial fibrillation/flutter | 1,013 | 0.7 | 1.1 | 1.0 | 1.2 | 72.1 |
| Abnormal test results* | 984 | 0.7 | 1.0 | 0.9 | 1.1 | 6.4 |
| *Subtotal* | *73,837* | *50.9* | — | — | — | — |
| **Total problems** | **145,078** | **100.0** | **151.3** | **149.2** | **153.4** | **38.1** |

(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 presentations 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 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

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

# 7.5 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 7.5 lists the most common new problems managed in general practice in 2007–08, in decreasing order of frequency. Overall, 55,300 problems (38.1% of all problems) were specified as being new, being managed at a rate of 57.7 per 100 encounters.

The far right-hand column of this table shows the proportion of total contacts with this problem that was reported as being a new problem for the patient. This provides an idea of the incidence of each problem. For example, the 610 new cases of depression represented only 16.0% of all GP contacts with diagnosed depression, suggesting that more than four out of five contacts for depression were for ongoing management. In contrast, four out of five gastroenteritis cases were first consultations to a medical practitioner for this episode of gastroenteritis. The balance (19%) would have been follow-up consultations for this episode of this problem. This indicates that most patients only require one visit to a GP for the management of an episode of gastroenteritis.

The most common new problems managed at general practice encounters were upper respiratory tract infections (4.8 per 100 encounters), immunisations/vaccinations (2.8), acute bronchitis (1.7), gastroenteritis (1.3) and general check-ups (1.2) (Table 7.5).

**Table 7.5: Most frequently managed new problems**

| New problem managed | Number | Per cent of total new problems (n = 55,300) | Rate per 100 encounters[a] (n = 95,898) | 95% LCL | 95% UCL | Per cent of this problem[b] |
|---|---|---|---|---|---|---|
| Upper respiratory tract infection | 4,578 | 8.3 | 4.8 | 4.4 | 5.2 | 77.0 |
| Immunisation/vaccination—all* | 2,661 | 4.8 | 2.8 | 2.5 | 3.0 | 53.1 |
| Acute bronchitis/bronchiolitis | 1,668 | 3.0 | 1.7 | 1.6 | 1.9 | 72.4 |
| Gastroenteritis* | 1,278 | 2.3 | 1.3 | 1.2 | 1.5 | 80.8 |
| General check-up* | 1,168 | 2.1 | 1.2 | 1.1 | 1.3 | 48.5 |
| Urinary tract infection* | 979 | 1.8 | 1.0 | 0.9 | 1.1 | 64.2 |
| Sprain/strain* | 899 | 1.6 | 0.9 | 0.8 | 1.0 | 59.6 |
| Viral disease, other/NOS | 895 | 1.6 | 0.9 | 0.8 | 1.1 | 76.6 |
| Sinusitis acute/chronic | 843 | 1.5 | 0.9 | 0.8 | 1.0 | 67.2 |
| Contact dermatitis | 779 | 1.4 | 0.8 | 0.7 | 0.9 | 45.3 |
| Acute otitis media/myringitis | 731 | 1.3 | 0.8 | 0.7 | 0.8 | 72.1 |
| Female genital check-up* | 712 | 1.3 | 0.7 | 0.6 | 0.8 | 41.4 |
| Tonsillitis* | 677 | 1.2 | 0.7 | 0.6 | 0.8 | 73.0 |
| Back complaint* | 651 | 1.2 | 0.7 | 0.6 | 0.7 | 24.8 |
| Solar keratosis/sunburn | 611 | 1.1 | 0.6 | 0.5 | 0.7 | 47.1 |
| Depression* | 610 | 1.1 | 0.6 | 0.6 | 0.7 | 16.0 |
| Malignant neoplasm skin | 599 | 1.1 | 0.6 | 0.5 | 0.7 | 52.3 |
| Hypertension* | 578 | 1.0 | 0.6 | 0.5 | 0.7 | 6.1 |
| Conjunctivitis, infectious | 527 | 1.0 | 0.5 | 0.5 | 0.6 | 77.1 |

*(continued)*

**Table 7.5 (continued): Most frequently managed new problems**

| New problem managed | Number | Per cent of total new problems (n = 55,300) | Rate per 100 encounters[a] (n = 95,898) | 95% LCL | 95% UCL | Per cent of this problem[b] |
|---|---|---|---|---|---|---|
| Test results* | 499 | 0.9 | 0.5 | 0.4 | 0.6 | 29.7 |
| Bursitis/tendonitis/synovitis NOS | 496 | 0.9 | 0.5 | 0.5 | 0.6 | 62.8 |
| Osteoarthritis* | 486 | 0.9 | 0.5 | 0.4 | 0.6 | 19.6 |
| Lipid disorders* | 476 | 0.9 | 0.5 | 0.4 | 0.6 | 13.4 |
| Pregnancy* | 459 | 0.8 | 0.5 | 0.4 | 0.5 | 35.9 |
| Abnormal test results* | 450 | 0.8 | 0.5 | 0.4 | 0.5 | 46.1 |
| Fracture* | 433 | 0.8 | 0.5 | 0.4 | 0.5 | 45.2 |
| Excessive ear wax | 428 | 0.8 | 0.4 | 0.4 | 0.5 | 59.5 |
| Skin disease, other | 413 | 0.7 | 0.4 | 0.4 | 0.5 | 53.7 |
| Skin injury, other | 407 | 0.7 | 0.4 | 0.4 | 0.5 | 69.3 |
| Oesophagus disease | 391 | 0.7 | 0.4 | 0.4 | 0.5 | 17.6 |
| *Subtotal* | *26,382* | *47.7* | — | — | — | — |
| **Total new problems** | **55,300** | **100.0** | **57.7** | **56.3** | **59.1** | — |

(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 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

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

# 7.6    Most frequently managed chronic problems

To identify chronic conditions, a chronic condition list classified according to ICPC-2 was applied to the BEACH data set.[29] More than a third (34.6%) of the problems managed in general practice were chronic in nature. At least one chronic problem was managed at 39.6% of encounters (95% CI: 38.6–40.7), and chronic problems were managed at an average rate of 52.3 per 100 encounters.

In other parts of this chapter, both chronic and non-chronic conditions (for example, diabetes and gestational diabetes) may have been grouped together when reporting (for example, diabetes—all*, Table 7.4). 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 7.4. 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 5, <www.aihw.gov.au/publications/index.cfm/subject/19>.

Table 7.6 shows the most frequently managed chronic problems in Australian general practice in decreasing order of frequency. The top seven chronic problems made up more than half of all chronic problems managed; these were non-gestational hypertension (18.8% of chronic conditions), depressive disorder (7.5%), non-gestational diabetes (7.3%), lipid disorders (7.0%), osteoarthritis (4.9%), oesophageal disease (4.4%) and asthma (4.1%).

**Table 7.6: Most frequently managed chronic problems**

| Chronic problem managed | Number | Per cent of total chronic problems (n = 50,132) | Rate per 100 encounters[a] (n = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Hypertension (non-gestational)** | 9,486 | 18.8 | 9.9 | 9.3 | 10.4 |
| Depressive disorder | 3,796 | 7.5 | 4.0 | 3.7 | 4.2 |
| Diabetes (non-gestational)** | 3,698 | 7.3 | 3.9 | 3.6 | 4.1 |
| Lipid disorders* | 3,541 | 7.0 | 3.7 | 3.4 | 4.0 |
| Osteoarthritis* | 2,484 | 4.9 | 2.6 | 2.4 | 2.8 |
| Oesophageal disease | 2,219 | 4.4 | 2.3 | 2.2 | 2.5 |
| Asthma | 2,089 | 4.1 | 2.2 | 2.0 | 2.3 |
| Malignant neoplasm skin | 1,145 | 2.3 | 1.2 | 1.0 | 1.4 |
| Ischaemic heart disease* | 1,046 | 2.1 | 1.1 | 1.0 | 1.2 |
| Atrial fibrillation/flutter | 984 | 2.0 | 1.0 | 0.9 | 1.1 |
| Osteoporosis | 928 | 1.8 | 1.0 | 0.9 | 1.1 |
| Back syndrome with radiating pain | 875 | 1.7 | 0.9 | 0.8 | 1.0 |
| Chronic obstructive pulmonary disease | 744 | 1.5 | 0.8 | 0.7 | 0.9 |
| Obesity (BMI > 30) | 682 | 1.4 | 0.7 | 0.6 | 0.8 |
| Hypothyroidism/myxoedema | 670 | 1.3 | 0.7 | 0.6 | 0.8 |
| Migraine | 624 | 1.2 | 0.7 | 0.6 | 0.7 |
| Heart failure | 607 | 1.2 | 0.6 | 0.6 | 0.7 |
| Gout | 573 | 1.1 | 0.6 | 0.5 | 0.7 |
| Arthritis (excluding osteoarthritis and rheumatoid arthritis)** | 523 | 1.0 | 0.5 | 0.5 | 0.6 |
| Schizophrenia | 472 | 0.9 | 0.5 | 0.4 | 0.6 |
| Shoulder syndrome | 435 | 0.9 | 0.5 | 0.4 | 0.5 |
| Rheumatoid arthritis | 435 | 0.9 | 0.5 | 0.4 | 0.5 |
| Anaemia (chronic)** | 426 | 0.8 | 0.4 | 0.4 | 0.5 |
| Dementia | 417 | 0.8 | 0.4 | 0.3 | 0.5 |
| Acne (chronic)** | 406 | 0.8 | 0.4 | 0.4 | 0.5 |
| Anxiety disorder | 395 | 0.8 | 0.4 | 0.3 | 0.5 |
| Overweight | 318 | 0.6 | 0.3 | 0.3 | 0.4 |
| Back syndrome without radiating pain | 317 | 0.6 | 0.3 | 0.3 | 0.4 |
| Vertiginous syndrome | 313 | 0.6 | 0.3 | 0.3 | 0.4 |
| Endocrine/metabolic/nutritional disease other | 291 | 0.6 | 0.3 | 0.3 | 0.4 |
| *Subtotal* | *40,939* | *80.7* | — | — | — |
| **Total chronic problems** | **50,132** | **100.0** | **52.3** | **50.4** | **54.1** |

(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 4, <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 5 <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.

# 7.7 Work-related problems managed

The work-related status of a problem under management is determined by the GP, and is defined as any problem that is likely (in the GP's view) to have resulted from work-related activity, workplace exposures or a pre-existing condition that has been significantly exacerbated by work activity or workplace exposure. Work-related problems were managed at a rate of 2.8 per 100 general practice encounters in 2007–08 (Table 7.7).

The most common group of work-related problems were musculoskeletal problems, accounting for almost two-thirds (59.2%) of work-related problems and managed at a rate of 1.7 per 100 general practice encounters. One in ten musculoskeletal problems managed in general practice were work-related. The most common musculoskeletal work-related problems were back complaints (14.6% of work-related problems), sprains and strains (11.3%), musculoskeletal injury (9.0%) and fractures (3.3%).

Work-related psychological problems accounted for 8.3% of total work-related problems and were managed at a rate of 0.2 per 100 encounters. These psychological problems accounted for only 2.1% of total psychological problems managed in general practice. The most commonly managed work-related psychological problems were depression (3.2% of work-related problems) and acute stress reaction (2.1%).

Preventive checks related to the patient's work accounted for 5.7% of work-related problems and were performed at a rate of 0.2 per 100 encounters. The majority of these preventive checks were check-ups classified in the general and unspecified chapter of ICPC-2, including pre-employment and employment check-ups.

Other work-related problems not covered in the above groups accounted for 26.7% of work-related problems and included skin injuries not elsewhere classified (3.6% of work-related problems), lacerations (2.9%) and administrative procedures (2.5%).

Although back complaint was the most commonly managed individual work-related problem (accounting for 14.6% of work-related problems), it accounted for only 15.1% of the management of all back complaints. In contrast, musculoskeletal injury (not otherwise specified) accounted for 9.0% of work-related problems but represented 29.3% of all musculoskeletal injuries (not otherwise specified) managed (Table 7.7).

**Table 7.7: Work-related problems, by type and most frequently managed individual problems**

| Work-related problem managed | Number | Percentage of total work-related problems (n = 2,719) | Rate per 100 encounters (n = 95,898) | 95% LCL | 95% UCL | Percentage of this problem[a] |
|---|---|---|---|---|---|---|
| **Musculoskeletal problems** | **1,611** | **59.2** | **1.7** | **1.5** | **1.8** | **9.7** |
| Back complaint* | 396 | 14.6 | 0.4 | 0.4 | 0.5 | 15.1 |
| Sprain/strain* | 307 | 11.3 | 0.3 | 0.3 | 0.4 | 20.3 |
| Injury musculoskeletal NOS | 246 | 9.0 | 0.3 | 0.2 | 0.3 | 29.3 |
| Fracture* | 90 | 3.3 | 0.1 | 0.1 | 0.1 | 9.4 |
| Shoulder syndrome | 80 | 3.0 | 0.1 | 0.1 | 0.1 | 18.4 |
| Bursitis/tendonitis/synovitis NOS | 66 | 2.4 | 0.1 | 0 | 0.1 | 8.4 |
| Acute internal knee damage | 55 | 2.0 | 0.1 | 0 | 0.1 | 20.1 |
| Tennis elbow | 53 | 2.0 | 0.1 | 0 | 0.1 | 22.9 |
| Neck symptom/complaint | 40 | 1.5 | 0.0 | 0 | 0.1 | 12.2 |
| **Psychological problems** | **226** | **8.3** | **0.2** | **0.2** | **0.3** | **2.1** |
| Depression* | 88 | 3.2 | 0.1 | 0.1 | 0.1 | 2.3 |
| Acute stress reaction | 57 | 2.1 | 0.1 | 0 | 0.1 | 10.1 |
| **Preventive checks** | **156** | **5.7** | **0.2** | **0.1** | **0.2** | **1.6** |
| General check-up* | 129 | 4.8 | 0.1 | 0.1 | 0.2 | 5.4 |
| **Other work-related problems** | **726** | **26.7** | **0.8** | **0.7** | **0.8** | **0.7** |
| Injury skin, other | 98 | 3.6 | 0.1 | 0.1 | 0.1 | 16.7 |
| Laceration/cut | 79 | 2.9 | 0.1 | 0.1 | 0.1 | 9.3 |
| Administrative procedures NOS | 67 | 2.5 | 0.1 | 0.0 | 0.1 | 9.6 |
| **Total work-related problems** | **2,719** | **100.0** | **2.8** | **2.6** | **3.1** | **—** |

(a)    The proportion of total contacts with this problem that were accounted for by work-related problems.

*    Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note:* LCL—lower confidence limit; UCL—upper confidence limit; NOS—not otherwise specified. Only the most frequent individual work-related problems accounting for > 1.5% of total work-related problems are reported.

# 8 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 is recorded in detail. Other modes of treatment, including clinical treatments (for example, counselling) and procedures recorded briefly in the GP's own words, are also related to a single problem. Provision is made on the form for referrals and hospital admissions, and for pathology and imaging test orders, to be related to a single or multiple problems (see Appendix 1).

A summary of management at general practice encounters from 1998–99 to 2007–08 are reported for each year in the 10 year report *General practice activity in Australia 1998–99 to 2007–08: 10 year data tables,* see <www.aihw.gov.au/publications/index.cfm/subject/19>.

At the 95,898 recorded encounters, GPs undertook 211,029 management activities in total. 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 8.1).

For an 'average' 100 GP–patient encounters, GPs provided 82 prescriptions, provided 35 clinical treatments, undertook 17 procedures, made 8 referrals to specialists and 4 to allied health services, and placed 43 pathology test orders and 10 imaging test orders.

**Table 8.1: Summary of management**

| Management type | Number | Rate per 100 encounters (*n* = 95,898) | 95% LCL | 95% UCL | Rate per 100 problems (*n* = 145,078) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|---|
| Medications | 98,439 | 102.7 | 100.3 | 105.0 | 67.9 | 66.5 | 69.2 |
| Prescribed | 79,051 | 82.4 | 80.3 | 84.6 | 54.5 | 53.2 | 55.8 |
| GP-supplied | 9,702 | 10.1 | 9.5 | 10.7 | 6.7 | 6.3 | 7.1 |
| Advised OTC | 9,686 | 10.1 | 9.3 | 10.9 | 6.7 | 6.2 | 7.2 |
| Other treatments | 49,130 | 51.2 | 48.9 | 53.6 | 33.9 | 32.4 | 35.3 |
| Clinical | 33,121 | 34.5 | 32.5 | 36.5 | 22.8 | 21.6 | 24.1 |
| Procedural | 16,009 | 16.7 | 15.9 | 17.5 | 11.0 | 10.5 | 11.6 |
| Referrals | 12,008 | 12.5 | 12.0 | 13.0 | 8.3 | 8.0 | 8.6 |
| Specialist | 7,647 | 8.0 | 7.6 | 8.3 | 5.3 | 5.1 | 5.5 |
| Allied health | 3,305 | 3.5 | 3.2 | 3.7 | 2.3 | 2.1 | 2.4 |
| Hospital | 381 | 0.4 | 0.3 | 0.5 | 0.3 | 0.2 | 0.3 |
| Emergency department | 210 | 0.2 | 0.2 | 0.3 | 0.1 | 0.1 | 0.2 |
| Other medical services | 83 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 |
| Other referral | 382 | 0.4 | 0.3 | 0.5 | 0.3 | 0.2 | 0.3 |
| Pathology | 41,375 | 43.2 | 41.3 | 45.0 | 28.5 | 27.4 | 29.6 |
| Imaging | 9,143 | 9.5 | 9.2 | 9.9 | 6.3 | 6.1 | 6.5 |
| Other investigations ordered[(a)] | 934 | 1.0 | 0.9 | 1.1 | 0.6 | 0.6 | 0.7 |
| **Total management activities** | **211,029** | **220.1** | — | — | **145.5** | — | — |

(a)    Other investigations reported here only include those ordered by the GP. Other investigations in Chapter 12 include those ordered by the GP and those done at the surgery.

*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 8.2). At least one management action was recorded at 91.9% of encounters and for 86.3% of problems managed.

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

- At least one medication (most commonly prescribed) was prescribed, supplied or advised for more than half the problems managed.

- At least one other treatment (most commonly clinical) was provided for nearly one-third 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 8.2).

**Table 8.2: Encounters and problems for which management was recorded**

| Management type | Number of encounters | Per cent of total encounters[a] ($n = 95,898$) | Number of problems | Per cent of total problems[a] ($n = 145,078$) |
|---|---|---|---|---|
| **At least one management type** | **88,098** | **91.9** | **125,160** | **86.3** |
| **At least one medication or other treatment** | **78,792** | **82.2** | **106,252** | **73.2** |
| **At least one medication** | **61,715** | **63.4** | **78,454** | **54.1** |
| At least one prescription | 51,369 | 53.6 | 64,484 | 44.4 |
| At least one GP-supplied | 7,583 | 7.9 | 7,758 | 5.3 |
| At least one OTC advised | 8,568 | 8.9 | 8,821 | 6.1 |
| **At least one other treatment** | **38,222** | **39.9** | **43,877** | **30.2** |
| At least one clinical treatment | 26,374 | 27.5 | 29,937 | 20.6 |
| At least one procedural treatment | 14,420 | 15.0 | 14,974 | 10.3 |
| **At least one referral** | **11,302** | **11.8** | **12,024** | **8.3** |
| At least one referral to a specialist | 7,360 | 7.7 | 7,735 | 5.3 |
| At least one referral to allied health | 3,193 | 3.1 | 3,338 | 2.3 |
| At least one referral to hospital | 381 | 0.4 | 394 | 0.3 |
| At least one referral to emergency department | 210 | 0.2 | 221 | 0.2 |
| At least one referral to other medical services | 83 | 0.1 | 88 | 0.1 |
| At least one referral NOS | 380 | 0.4 | 398 | 0.3 |
| **At least one investigation** | **22,846** | **23.8** | **26,247** | **18.1** |
| At least one pathology order | 16,639 | 17.4 | 19,033 | 13.1 |
| At least one imaging order | 7,958 | 8.3 | 8,205 | 5.7 |
| At least one other investigation[b] | 887 | 0.9 | 908 | 0.6 |

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

(b)    Other investigations reported here only include those ordered by the GP. Other investigations in Chapter 12 include those ordered by the GP and those done at the surgery.

*Note:* 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 19% of problems managed
- rarely with more than two components (results not tabled).

Table 8.3 lists the most common management combinations. Medication alone was the most common management, followed by the combination of a medication and a clinical treatment. When a problem was referred to another health professional it was most likely that no other treatments were given for the problem at the encounter. This situation also applied to pathology testing.

**Table 8.3: Most common management combinations**

| 1+ medication | 1+ clinical treatment | 1+ procedural treatment | 1+ referral | 1+ imaging order | 1+ pathology order | Per cent of total problems ($n = 145,078$) | Per cent of total encounters ($n = 95,898$) |
|---|---|---|---|---|---|---|---|
| No recorded management | | | | | | 13.7 | 8.1 |
| 1+ management recorded | | | | | | 86.3 | 91.9 |
| ✓ | | | | | | 37.2 | 31.6 |
| | ✓ | | | | | 9.8 | 7.2 |
| ✓ | ✓ | | | | | 6.4 | 10.4 |
| | | | | | ✓ | 5.1 | 2.9 |
| | | ✓ | | | | 4.5 | 3.9 |
| | | | ✓ | | | 4.2 | 3.2 |
| ✓ | | | | | ✓ | 2.8 | 4.4 |
| ✓ | | ✓ | | | | 2.7 | 4.4 |
| | | | | ✓ | | 2.3 | 1.8 |
| ✓ | | | ✓ | | | 1.3 | 2.8 |
| | | ✓ | | | ✓ | 1.3 | 1.3 |
| | ✓ | | | | ✓ | 1.2 | 1.4 |
| ✓ | | | | ✓ | | 1.1 | 1.9 |
| | ✓ | | ✓ | | | 0.9 | 1.1 |
| ✓ | ✓ | | | | ✓ | 0.6 | 1.7 |
| | | | | ✓ | ✓ | 0.5 | 0.6 |
| ✓ | ✓ | | ✓ | | | 0.3 | 1.1 |
| ✓ | | ✓ | | | ✓ | 0.3 | 1.0 |
| | ✓ | ✓ | | | | 0.3 | 0.7 |
| | | | ✓ | | ✓ | 0.3 | 0.4 |
| | ✓ | | | ✓ | | 0.3 | 0.4 |

*Note:* 1+—at least one specified management type.

# 9   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
  - designate this as a new or continued medication for this 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 FMRC) from which they were mapped to the international
  Anatomical Therapeutic Chemical (ATC) classification.[30]
- Results are reported in this chapter at drug group, subgroup and generic level using
  ATC levels 1, 3 and 5. Individual medications are also reported at the CAPS generic
  level, the equivalent of ATC Level 5 *(see Section 2.7).*

Data on medications are reported for each year from 1998–99 to 2007–08 in the 10 year
summary report *General practice activity in Australia 1998–99 to 2007–08: 10 year data tables*
available from <www.aihw.gov.au/publications/index.cfm/subject/19> (AIHW catalogue
number GEP 23).

Readers interested in adverse drug events will find more detailed information from the
BEACH program in Miller et al. *Adverse drug events in general practice patients in Australia.*[58]

## 9.1   Source of medications

A total of 98,439 medications were recorded, at rates of 103 per 100 encounters and
68 per 100 problems managed (Table 8.1).

- Four out of five medications (80.3% of all medications) were prescribed.
- One in ten (9.9%) medications were supplied to the patient by the GP.
- One in ten medications (9.8%) were recommended by the GP for OTC purchase.

If these are extrapolated to the 107 million general practice Medicare-claimed encounters in
Australia in 2007–08, GPs in Australia:

- prescribed medications on more than 88 million occasions
- supplied 10.8 million medications directly to the patient
- recommended medications for OTC purchase on 10.8 million occasions.

## 9.2   Prescribed medications

There were 79,051 prescriptions recorded, at rates of 82 per 100 encounters and
55 per 100 problems managed. GPs recorded 86.1% of prescribed medications by brand
(proprietary) name and 13.9% by their generic (non-proprietary) name (results not tabled).

On a per problem basis:

- no prescription was given for half (55.6%) of all problems managed
- one prescription was given for 36.7% of problems managed
- two prescriptions were given for 5.9% of problems managed
- three or more prescriptions were rarely given (1.9% of problems managed) (Figure 9.1).



| Per cent | Nil | One | Two | Three | Four |
|---|---|---|---|---|---|
| | 55.6 | 36.7 | 5.9 | 1.4 | 0.5 |

**Number of medications prescribed**

**Figure 9.1: Number of medications prescribed per problem**
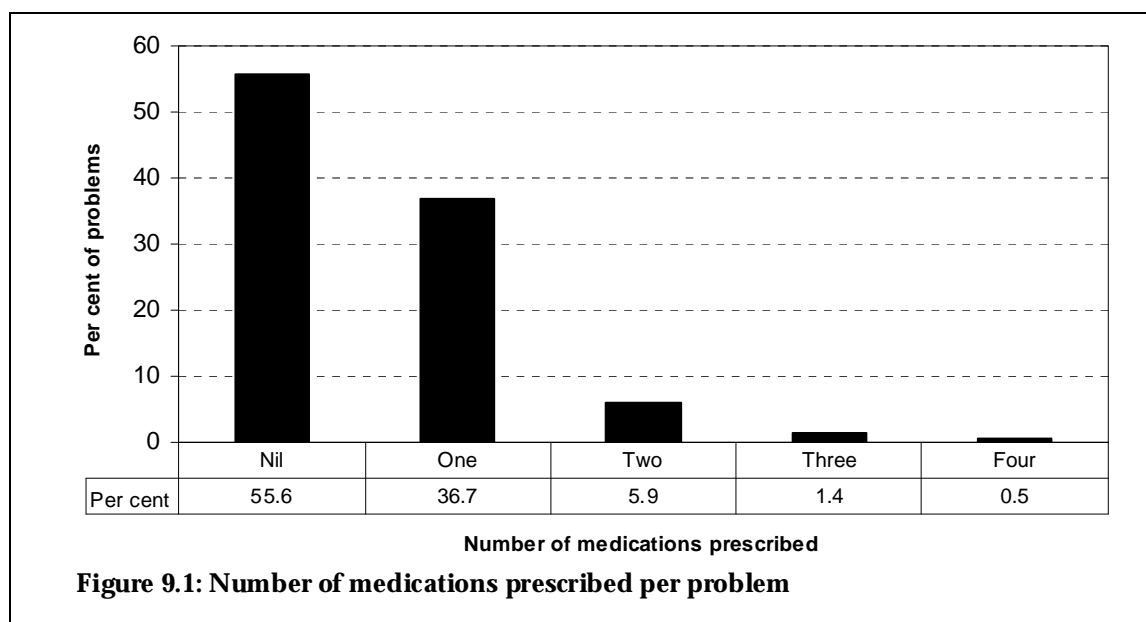
## Number of repeats

For 60,733 prescriptions (76.8% of all prescriptions) the GPs recorded 'number of repeats'. The distribution of the specified number of repeats (from nil to more than five) is provided in Figure 9.2. For 34.5% of these prescriptions, the GP specified that no repeats had been prescribed, and for 33.8% five repeats were ordered. The latter proportion reflects the 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 (16.8% and 10.2%) was also quite common.

## Age–sex-specific rates of prescribed medications

Age–sex-specific analysis found similar prescription rates per 100 encounters for males and females (82.1 and 82.7, respectively). It also showed the well-described tendency for the number of prescriptions written at each encounter to rise with the advancing age of the patient, with a rate of 56 per 100 encounters with patients aged less than 25 years rising to 110 per 100 encounters for patients aged 65 years and over (results not tabled).

Figure 9.3, 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 9.2: Number of repeats ordered per prescription**

| Per cent | Nil | One | Two | Three | Four | Five | > Five |
|----------|-----|-----|-----|-------|------|------|--------|
| | 34.5 | 16.8 | 10.2 | 3.7 | 0.8 | 33.8 | 0.1 |

**Number of repeats ordered**



| | <1 | 1–4 | 5–14 | 15–24 | 25–44 | 45–64 | 65–74 | 75+ |
|---|-----|-----|------|-------|-------|-------|-------|-----|
| Male | 37 | 47.1 | 47.3 | 46.9 | 51.2 | 57.7 | 61.7 | 61.8 |
| Female | 39.3 | 47.3 | 47 | 44.7 | 45.8 | 55.3 | 61.7 | 63.2 |

**Age group (years)**

**Figure 9.3: Age–sex-specific prescription rates per 100 problems managed**
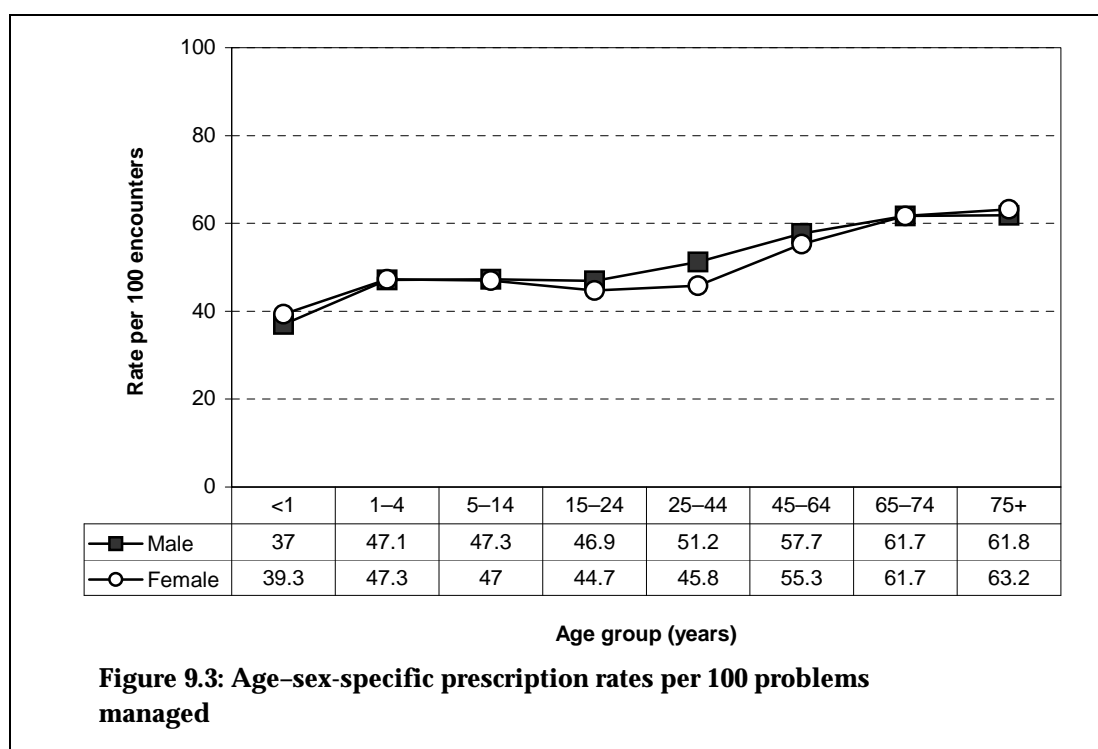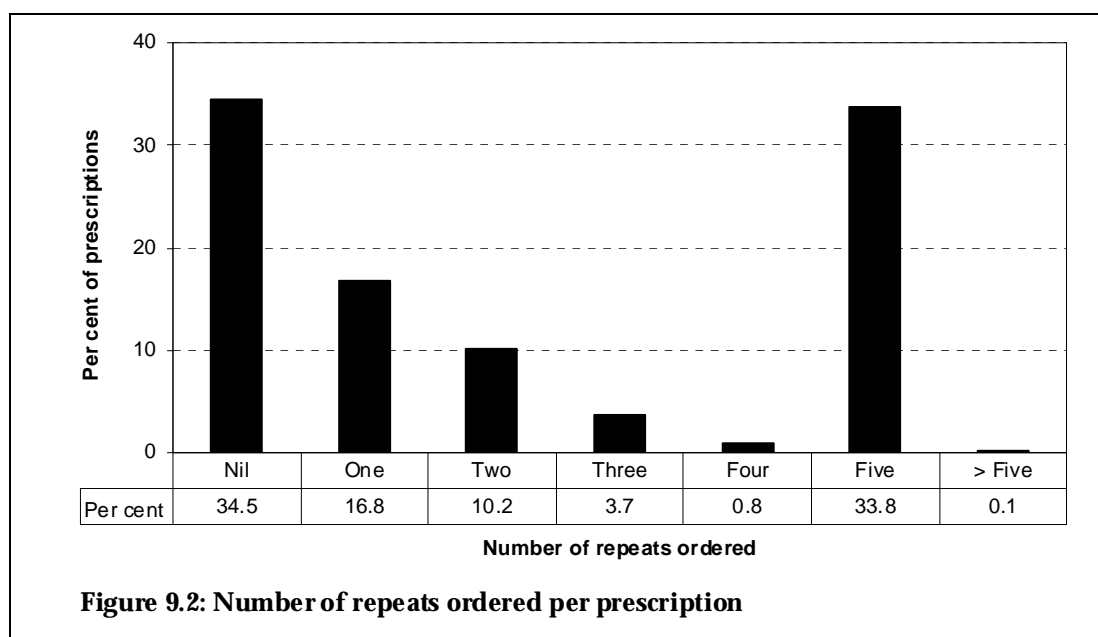
## Types of medications prescribed

Table 9.1 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 9.1: 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 = 79,051) | Rate per 100 encs[a] (n = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|
| **Nervous system** | | **17,051** | **21.6** | **17.8** | **17.1** | **18.5** |
| Other analgesics and antipyretics | | 4,933 | 6.2 | 5.1 | 4.8 | 5.5 |
| | Paracetamol | 2,381 | 3.0 | 2.5 | 2.2 | 2.7 |
| | Paracetamol combinations excl. psycholeptics | 1,922 | 2.4 | 2.0 | 1.8 | 2.2 |
| | Acetylsalicylic acid | 622 | 0.8 | 0.7 | 0.6 | 0.7 |
| Antidepressants | | 3,254 | 4.1 | 3.4 | 3.2 | 3.6 |
| | Sertraline | 586 | 0.7 | 0.6 | 0.5 | 0.7 |
| Opioids | | 2,921 | 3.7 | 3.1 | 2.8 | 3.3 |
| | Oxycodone | 989 | 1.3 | 1.0 | 0.9 | 1.2 |
| | Tramadol | 817 | 1.0 | 0.9 | 0.8 | 0.9 |
| Anxiolytics | | 1,855 | 2.4 | 1.9 | 1.7 | 2.1 |
| | Diazepam | 1,057 | 1.3 | 1.1 | 1.0 | 1.2 |
| | Oxazepam | 537 | 0.7 | 0.6 | 0.5 | 0.6 |
| Hypnotics and sedatives | | 1,592 | 2.0 | 1.7 | 1.5 | 1.8 |
| | Temazepam | 1,054 | 1.3 | 1.1 | 1.0 | 1.2 |
| | Venlafaxine | 531 | 0.7 | 0.6 | 0.5 | 0.6 |
| Antipsychotics | | 1,056 | 1.3 | 1.1 | 1.0 | 1.2 |
| | Prochlorperazine | 544 | 0.7 | 0.6 | 0.5 | 0.6 |
| Antiepileptics | | 516 | 0.7 | 0.5 | 0.5 | 0.6 |
| **Cardiovascular system** | | **15,863** | **20.1** | **16.5** | **15.6** | **17.5** |
| Lipid modifying agents, plain | | 3,407 | 4.3 | 3.6 | 3.3 | 3.8 |
| | Atorvastatin | 1,664 | 2.1 | 1.7 | 1.6 | 1.9 |
| | Simvastatin | 879 | 1.1 | 0.9 | 0.8 | 1.0 |
| ACE inhibitors, plain | | 2,487 | 3.2 | 2.6 | 2.4 | 2.8 |
| | Perindopril | 1,133 | 1.4 | 1.2 | 1.1 | 1.3 |
| | Ramipril | 772 | 1.0 | 0.8 | 0.7 | 0.9 |
| Angiotensin ii antagonists, plain | | 2,114 | 2.7 | 2.2 | 2.0 | 2.4 |
| | Irbesartan | 919 | 1.2 | 1.0 | 0.9 | 1.1 |
| | Candesartan | 597 | 0.8 | 0.6 | 0.5 | 0.7 |
| | Telmisartan | 503 | 0.6 | 0.5 | 0.4 | 0.6 |
| Beta blocking agents | | 1,651 | 2.1 | 1.7 | 1.6 | 1.9 |
| | Atenolol | 835 | 1.1 | 0.9 | 0.8 | 1.0 |
| Selective calcium channel blockers with mainly vascular effects | | 1,510 | 1.9 | 1.6 | 1.4 | 1.7 |
| | Amlodipine | 689 | 0.9 | 0.7 | 0.6 | 0.8 |
| Angiotensin ii antagonists, combinations | | 1,215 | 1.5 | 1.3 | 1.1 | 1.4 |
| | Irbesartan and diuretics | 723 | 0.9 | 0.8 | 0.7 | 0.9 |

*(continued)*

| ATC Level 1 | ATC Level 3 | ATC Level 5 | Number | Per cent of scripts (n = 79,051) | Rate per 100 encs[a] (n = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|---|
| | High-ceiling diuretics | | 584 | 0.7 | 0.6 | 0.5 | 0.7 |
| | | Furosemide | 581 | 0.7 | 0.6 | 0.5 | 0.7 |
| | ACE inhibitors, combinations | | 551 | 0.7 | 0.6 | 0.5 | 0.6 |
| | Selective calcium channel blockers with direct cardiac effects | | 497 | 0.6 | 0.5 | 0.5 | 0.6 |
| **Anti-infectives for systemic use** | | | **15,219** | **19.3** | **15.9** | **15.3** | **16.5** |
| | Beta-lactam antibacterials, penicillins | | 5,930 | 7.5 | 6.2 | 5.9 | 6.5 |
| | | Amoxicillin | 3,330 | 4.2 | 3.5 | 3.2 | 4.2 |
| | | Amoxicillin and enzyme inhibitor | 1,648 | 2.1 | 1.7 | 1.6 | 1.9 |
| | Other beta-lactam antibacterials | | 2,962 | 3.8 | 3.1 | 2.9 | 3.3 |
| | | Cefalexin | 2,333 | 3.0 | 2.4 | 2.3 | 2.6 |
| | | Cefaclor | 565 | 0.7 | 0.6 | 0.5 | 0.7 |
| | Macrolides, lincosamides and streptogramins | | 2,168 | 2.7 | 2.3 | 2.1 | 2.5 |
| | | Roxithromycin | 1,174 | 1.5 | 1.2 | 1.1 | 1.4 |
| | Viral vaccines | | 954 | 1.2 | 1.0 | 0.9 | 1.1 |
| | Tetracyclines | | 822 | 1.0 | 0.9 | 0.8 | 1.0 |
| | | Doxycycline | 702 | 0.9 | 0.7 | 0.6 | 0.8 |
| | Sulfonamides and trimethoprim | | 622 | 0.8 | 0.7 | 0.6 | 0.7 |
| **Alimentary tract and metabolism** | | | **7,561** | **9.6** | **7.9** | **7.5** | **8.3** |
| | Drugs for peptic ulcer and gastro-oesophageal reflux | | 2,868 | 3.6 | 3.0 | 2.8 | 3.2 |
| | | Esomeprazole | 1,121 | 1.4 | 1.2 | 1.1 | 1.3 |
| | | Pantoprazole | 510 | 0.6 | 0.5 | 0.5 | 0.6 |
| | | Omeprazole | 478 | 0.6 | 0.5 | 0.4 | 0.6 |
| | Propulsives | | 612 | 0.8 | 0.6 | 0.6 | 0.7 |
| | | Metoclopramide | 530 | 0.7 | 0.6 | 0.5 | 0.6 |
| | Blood glucose lowering drugs, excl. insulins | | 2,035 | 2.6 | 2.1 | 1.9 | 2.3 |
| | | Metformin | 1,134 | 1.4 | 1.2 | 1.1 | 1.3 |
| | | Gliclazide | 512 | 0.7 | 0.5 | 0.5 | 0.6 |
| **Respiratory system** | | | **4,871** | **6.2** | **5.1** | **4.8** | **5.4** |
| | Adrenergics, inhalants | | 2,515 | 3.2 | 2.6 | 2.4 | 2.8 |
| | | Salbutamol | 1,241 | 1.6 | 1.3 | 1.2 | 1.4 |
| | | Salmeterol and other drugs for obstructive airways disease | 775 | 1.0 | 0.8 | 0.7 | 0.9 |
| | Other drugs for obstructive airways disease, inhalants | | 772 | 1.0 | 0.8 | 0.7 | 0.9 |
| | Decongestants and other nasal preparations for topical use | | 731 | 0.9 | 0.8 | 0.7 | 0.8 |

*(continued)*

**Table 9.1 (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* = 79,051) | Rate per 100 encs[a] (*n* = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|---|
| **Musculoskeletal system** | | | **4,544** | **5.8** | **4.7** | **4.4** | **5.0** |
| | Anti-inflammatory and antirheumatic products, non-steroid | | 3,315 | 4.2 | 3.5 | 3.2 | 3.7 |
| | | Meloxicam | 899 | 1.1 | 0.9 | 0.8 | 1.1 |
| | | Diclofenac | 743 | 0.9 | 0.8 | 0.7 | 0.9 |
| | Drugs affecting bone structure and mineralization | | 620 | 0.8 | 0.7 | 0.6 | 0.7 |
| **Dermatologicals** | | | **3,740** | **4.7** | **3.9** | **3.7** | **4.1** |
| | Corticosteroids, plain | | 2,322 | 2.9 | 2.4 | 2.3 | 2.6 |
| | | Mometasone | 724 | 0.9 | 0.8 | 0.7 | 0.8 |
| | | Betamethasone | 688 | 0.9 | 0.7 | 0.6 | 0.8 |
| **Genitourinary system and sex hormones** | | | **3,237** | **4.1** | **3.4** | **3.2** | **3.6** |
| | Hormonal contraceptives for systemic use | | 1,664 | 2.1 | 1.7 | 1.6 | 1.9 |
| | | Levonorgestrel and estrogen | 931 | 1.2 | 1.0 | 0.9 | 1.1 |
| | Estrogens | | 596 | 0.8 | 0.6 | 0.6 | 0.7 |
| **Sensory organs** | | | **2,341** | **3.0** | **2.4** | **2.3** | **2.6** |
| | Anti-infectives | | 967 | 1.2 | 1.0 | 0.9 | 1.1 |
| | | Chloramphenicol | 896 | 1.1 | 0.9 | 0.9 | 1.0 |
| | Corticosteroids and anti-infectives in combination | | 616 | 0.8 | 0.6 | 0.6 | 0.7 |
| **Blood and blood-forming organs** | | | **2,056** | **2.6** | **2.1** | **2.0** | **2.3** |
| | Antithrombotic agents | | 1,475 | 1.9 | 1.5 | 1.4 | 1.7 |
| | | Warfarin | 1,030 | 1.3 | 1.1 | 0.9 | 1.2 |
| **Systemic hormonal preparations, excl. sex hormones** | | | **1,827** | **2.3** | **1.9** | **1.8** | **2.1** |
| | Corticosteroids for systemic use, plain | | 1,126 | 1.4 | 1.2 | 1.1 | 1.3 |
| | | Prednisolone | 742 | 0.9 | 0.8 | 0.7 | 0.9 |
| | Thyroid preparations | | 639 | 0.8 | 0.7 | 0.6 | 0.7 |
| | | Levothyroxine sodium | 636 | 0.8 | 0.7 | 0.6 | 0.7 |
| **Antineoplastic and immunomodulating agents** | | | **355** | **0.5** | **0.4** | **0.3** | **0.4** |
| **Various** | | | **243** | **0.3** | **0.3** | **0.2** | **0.3** |
| **Antiparasitic products, insecticides and repellents** | | | **143** | **0.2** | **0.2** | **0.1** | **0.2** |
| **Total prescribed medications** | | | **79,051** | **100.0** | **82.4** | **80.3** | **84.6** |

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

*Note:* ATC—Anatomical Therapeutic Chemical classification; scripts—prescriptions; encs—encounters; LCL—lower confidence limit; UCL—upper confidence limit; excl—excluding; ACE—angiotensin converting enzyme.

## Most frequently prescribed medications

The most frequently prescribed individual medications are reported at the CAPS generic level (ATC Level 5 equivalent) in Table 9.2. Together, these 30 medications accounted for 44.3% of all prescribed medications. Of the top five medications, two were antibiotics, two were plain or combination paracetamol, and the fifth was atorvastatin, a lipid-modifying agent, which was among the top five for the first time.

Readers interested in changes in antibiotic prescribing information over time will find more information in Pan et al. *Antibiotic prescribing in Australian general practice: How has it changed from 1990–91 to 2002–03?*[59]

**Table 9.2: Most frequently prescribed medications (CAPS generic level)**

| Generic medication | Number | Per cent of scripts (*n* = 79,051) | Rate per 100 encounters[a] (*n* = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Amoxycillin | 3,330 | 4.2 | 3.5 | 3.2 | 3.7 |
| Paracetamol | 2,381 | 3.0 | 2.5 | 2.2 | 2.7 |
| Cephalexin | 2,333 | 3.0 | 2.4 | 2.3 | 2.6 |
| Paracetamol/Codeine | 1,816 | 2.3 | 1.9 | 1.7 | 2.1 |
| Atorvastatin | 1,664 | 2.1 | 1.7 | 1.6 | 1.9 |
| Amoxycillin/Potassium clavulanate | 1,648 | 2.1 | 1.7 | 1.6 | 1.9 |
| Salbutamol | 1,283 | 1.6 | 1.3 | 1.2 | 1.5 |
| Roxithromycin | 1,174 | 1.5 | 1.2 | 1.1 | 1.4 |
| Metformin | 1,134 | 1.4 | 1.2 | 1.1 | 1.3 |
| Perindopril | 1,133 | 1.4 | 1.2 | 1.1 | 1.3 |
| Esomeprazole | 1,121 | 1.4 | 1.2 | 1.1 | 1.3 |
| Diazepam | 1,057 | 1.3 | 1.1 | 1.0 | 1.2 |
| Temazepam | 1,054 | 1.3 | 1.1 | 1.0 | 1.2 |
| Warfarin sodium | 1,030 | 1.3 | 1.1 | 0.9 | 1.2 |
| Oxycodone | 989 | 1.3 | 1.0 | 0.9 | 1.2 |
| Levonorgestrel/Ethinyloestradiol | 931 | 1.2 | 1.0 | 0.9 | 1.1 |
| Irbesartan | 919 | 1.2 | 1.0 | 0.9 | 1.1 |
| Meloxicam | 899 | 1.1 | 0.9 | 0.8 | 1.1 |
| Chloramphenicol eye | 896 | 1.1 | 0.9 | 0.9 | 1.0 |
| Simvastatin | 879 | 1.1 | 0.9 | 0.8 | 1.0 |
| Atenolol | 835 | 1.1 | 0.9 | 0.8 | 1.0 |
| Tramadol | 817 | 1.0 | 0.9 | 0.8 | 0.9 |
| Fluticasone/Salmeterol | 775 | 1.0 | 0.8 | 0.7 | 0.9 |
| Ramipril | 772 | 1.0 | 0.8 | 0.7 | 0.9 |
| Mometasone | 724 | 0.9 | 0.8 | 0.7 | 0.8 |
| Irbesartan/Hydrochlorothiazide | 723 | 0.9 | 0.8 | 0.7 | 0.9 |
| Doxycycline | 702 | 0.9 | 0.7 | 0.7 | 0.8 |
| Amlodipine | 689 | 0.9 | 0.7 | 0.6 | 0.8 |

*(continued)*

**Table 9.2 (continued): Most frequently prescribed medications (CAPS generic level)**

| Generic medication | Number | Per cent of scripts (*n* = 79,051) | Rate per 100 encounters[a] (*n* = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Betamethasone topical | 688 | 0.9 | 0.7 | 0.6 | 0.8 |
| Diclofenac sodium systemic | 659 | 0.8 | 0.7 | 0.6 | 0.8 |
| *Subtotal* | *35,053* | *44.3* | — | — | — |
| **Total prescribed medications** | **79,051** | **100.0** | **82.4** | **80.3** | **84.6** |

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

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

# 9.3   Medications supplied by GPs

GPs supplied their patients with 9,702 medications in this study, at a rate of 10.1 medications per 100 encounters. At least one medication was supplied at 7.9% of encounters for 5.3% of problems**.** Table 9.3 shows the most commonly supplied medications at the CAPS generic level (ATC Level 5 equivalent), with vaccines accounting for about 70% of this group. The Papillomavirus vaccine, which was government-funded for a GP-implemented catch-up program for women aged 18–26 years, was the second most commonly supplied medication.

**Table 9.3: Medications most frequently supplied by GPs**

| Generic medication | Number | Per cent of GP-supplied (*n* = 9,702) | Rate per 100 encounters[a] (*n* = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Influenza virus vaccine | 1,403 | 14.5 | 1.5 | 1.2 | 1.7 |
| Papillomavirus (HPV) vaccine | 917 | 9.5 | 1.0 | 0.9 | 1.1 |
| Pneumococcal vaccine | 563 | 5.8 | 0.6 | 0.5 | 0.7 |
| Vitamin B12 (Cobalamin) | 350 | 3.6 | 0.4 | 0.3 | 0.4 |
| Mumps/Measles/Rubella vaccine | 299 | 3.1 | 0.3 | 0.3 | 0.4 |
| *Haemophilus B* vaccine | 255 | 2.6 | 0.3 | 0.2 | 0.3 |
| Polio vaccine oral sabin/injection | 216 | 2.2 | 0.2 | 0.2 | 0.3 |
| ADT–CDT (diphtheria–tetanus) vaccine | 202 | 2.1 | 0.2 | 0.2 | 0.3 |
| Diphtheria–pertussis–tetanus–polio vaccine | 180 | 1.9 | 0.2 | 0.1 | 0.2 |
| Chickenpox (Varicella zoster) | 169 | 1.8 | 0.2 | 0.1 | 0.2 |
| Meningitis vaccine | 168 | 1.7 | 0.2 | 0.1 | 0.2 |
| Diphtheria–pertussis–tetanus–hepatitis B vaccine | 164 | 1.7 | 0.2 | 0.1 | 0.2 |
| Meloxicam | 161 | 1.7 | 0.2 | 0.1 | 0.2 |
| Diphtheria–pertussis–tetanus–hep B–polio–Hib vaccine | 159 | 1.6 | 0.2 | 0.1 | 0.2 |
| Rotavirus vaccine | 139 | 1.4 | 0.1 | 0.1 | 0.2 |
| Metoclopramide | 124 | 1.3 | 0.1 | 0.1 | 0.2 |
| Hepatitis B vaccine | 116 | 1.2 | 0.1 | 0.1 | 0.2 |
| Hepatitis A vaccine | 112 | 1.2 | 0.1 | 0.1 | 0.2 |
| Allergen treatment | 102 | 1.1 | 0.1 | 0.1 | 0.1 |

*(continued)*

**Table 9.3 (continued): Medications most frequently supplied by GPs**

| Generic medication | Number | Per cent of GP-supplied (n = 9,702) | Rate per 100 encounters[a] (n = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Typhoid vaccine (*Salmonella typhi*) | 101 | 1.0 | 0.1 | 0.1 | 0.1 |
| Hepatitis A and B vaccine | 90 | 0.9 | 0.1 | 0.1 | 0.1 |
| *Haemophilus B*–hepatitis B vaccine | 88 | 0.9 | 0.1 | 0.1 | 0.1 |
| Methylprednisolone | 85 | 0.9 | 0.1 | 0.1 | 0.1 |
| Esomeprazole | 83 | 0.9 | 0.1 | 0.1 | 0.1 |
| Triple antigen (diphtheria–pertussis–tetanus) | 80 | 0.8 | 0.1 | 0.1 | 0.1 |
| Betamethasone systemic | 78 | 0.8 | 0.1 | 0.1 | 0.1 |
| Hepatitis A–*salmonella typhi* vaccine | 76 | 0.8 | 0.1 | 0.1 | 0.1 |
| Medroxyprogesterone | 73 | 0.8 | 0.1 | 0.1 | 0.1 |
| Lignocaine | 64 | 0.7 | 0.1 | 0.0 | 0.1 |
| Salbutamol | 59 | 0.6 | 0.1 | 0.0 | 0.1 |
| *Subtotal* | *6,678* | *68.8* | — | — | — |
| **Total medications supplied** | **9,702** | **100.0** | **10.1** | **9.5** | **10.7** |

(a)    Column will not add to 100, as 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.

# 9.4   Medications advised for over-the-counter purchase

The GPs recorded 9,686 medications as recommended for OTC purchase, at rates of 10.1 per 100 encounters and 6.7 per 100 problems managed. At least one OTC medication was recorded as advised at 8.9% of encounters and for 6.1% of problems. Table 9.4 shows the top 30 advised medications at the CAPS generic level (ATC Level 5 equivalent). Analgesics made up almost one-third of this group.

**Table 9.4: Most frequently advised over-the-counter medications**

| Generic medication | Number | Per cent of OTC (n = 9,686) | Rate per 100 encounters[a] (n = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Paracetamol | 2,442 | 25.2 | 2.6 | 2.2 | 2.9 |
| Ibuprofen | 549 | 5.7 | 0.6 | 0.5 | 0.7 |
| Loratadine | 194 | 2.0 | 0.2 | 0.2 | 0.3 |
| Diclofenac topical | 179 | 1.9 | 0.2 | 0.1 | 0.2 |
| Saline bath/solution/gargle | 174 | 1.8 | 0.2 | 0.1 | 0.2 |
| Sodium chloride topical nasal | 161 | 1.7 | 0.2 | 0.1 | 0.2 |
| Sodium–potassium–citric–glucose | 155 | 1.6 | 0.2 | 0.1 | 0.2 |
| Fexofenadine | 138 | 1.4 | 0.1 | 0.1 | 0.2 |
| Aspirin | 134 | 1.4 | 0.1 | 0.1 | 0.2 |

*(continued)*

**Table 9.4 (continued): Most frequently advised over-the-counter medications**

| Generic medication | Number | Per cent of OTC (n = 9,686) | Rate per 100 encounters[a] (n = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Cetirzine | 123 | 1.3 | 0.1 | 0.1 | 0.2 |
| Paracetamol–codeine | 120 | 1.2 | 0.1 | 0.1 | 0.2 |
| Clotrimazole topical | 120 | 1.2 | 0.1 | 0.1 | 0.2 |
| Cold and Flu medication NEC | 112 | 1.2 | 0.1 | 0.0 | 0.2 |
| Glucosamine | 104 | 1.1 | 0.1 | 0.1 | 0.1 |
| Hyoscine butylbromide | 103 | 1.1 | 0.1 | 0.1 | 0.1 |
| Hydrocortisone/Clotrimazole | 100 | 1.0 | 0.1 | 0.1 | 0.1 |
| Brompheniramine–phenylephrine | 99 | 1.0 | 0.1 | 0.1 | 0.1 |
| Cream–ointment–lotion NEC | 97 | 1.0 | 0.1 | 0.1 | 0.1 |
| Codeine–paracetamol–pseudoephidrine | 94 | 1.0 | 0.1 | 0.0 | 0.2 |
| Sorbolene–glycerol–cetomac | 91 | 0.9 | 0.1 | 0.1 | 0.1 |
| Bromhexine | 82 | 0.9 | 0.1 | 0.0 | 0.1 |
| Vitamin C (ascorbic acid) | 81 | 0.8 | 0.1 | 0.0 | 0.2 |
| Simple analgesics | 80 | 0.8 | 0.1 | 0.0 | 0.1 |
| Clotrimazole vaginal | 78 | 0.8 | 0.1 | 0.1 | 0.1 |
| Psyllium hydrophillic mucilloid | 72 | 0.8 | 0.1 | 0.1 | 0.1 |
| Chlorpheniramine–pseudoephidrine | 70 | 0.7 | 0.1 | 0.0 | 0.1 |
| Multivitamins with minerals | 69 | 0.7 | 0.1 | 0.0 | 0.1 |
| Promethazine hydrochloride | 67 | 0.7 | 0.1 | 0.1 | 0.1 |
| Pholcodine | 66 | 0.7 | 0.1 | 0.0 | 0.1 |
| Loperamide | 66 | 0.7 | 0.1 | 0.0 | 0.1 |
| *Subtotal* | *6,021* | *62.2* | — | — | — |
| **Total medications advised** | **9,686** | **100.0** | **10.1** | **9.3** | **10.9** |

(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:* OTC—over-the-counter medication; LCL—lower confidence limit; UCL—upper confidence limit; NEC—not elsewhere classified.

# 10  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. These groups are defined in Appendix 4, <www.aihw.gov.au/publications/index.cfm/subject/19>. Patient observations that were regarded as routine clinical measurements or observations, such as measurements of blood pressure and physical examinations, were not included if undertaken by the GP, but were included if undertaken by the practice nurse.

The GPs were also asked to indicate whether the treatment was done by a practice nurse (tick box). In this chapter all 'other treatments' are reported, irrespective of whether they were done by the GP or by the practice nurse. That is, the non-pharmacological management provided in general practice patient encounters is described, rather than management provided specifically by the GP. Treatments provided by the practice nurse are reported separately in Chapter 13.

Data on other treatments are reported for each year from 1998–99 to 2007–08 in the 10 year report *General practice activity in Australia 1998–99 to 2007–08: 10 year data tables* available from <www.aihw.gov.au/publications/index.cfm/subject/19> (AIHW catalogue number GEP 23).

## 10.1  Number of other treatments

Other treatments were commonly provided in the management of patient morbidity. In 2007–08, a total of 49,130 other treatments were recorded, at a rate of 51.2 per 100 encounters. Two-thirds of these were clinical treatments (Table 10.1).

**Table 10.1: Summary of other treatments**

|  | Number | Rate per 100 encs (*n* = 95,898) | 95% LCL | 95% UCL | Rate per 100 problems (*n* = 145,078) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|---|
| Other treatments | 49,130 | 51.2 | 48.9 | 53.6 | 33.9 | 32.4 | 35.3 |
| Clinical treatments | 33,121 | 34.5 | 32.5 | 36.5 | 22.8 | 21.6 | 24.1 |
| Procedural treatments | 16,009 | 16.7 | 15.9 | 17.5 | 11.0 | 10.5 | 11.6 |
| At least one other treatment | 38,222 | 39.9 | 38.3 | 41.4 | — | — | — |

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

Table 10.2 shows the proportion of problems for which at least one other treatment was given.

- In nearly two-thirds of the problems that were managed with another treatment, no concurrent pharmacological treatment was provided.

- Nearly one in five problems were managed with a clinical treatment. Of these, nearly two-thirds were not provided with medication for that problem.

- A procedure was undertaken in the management of 10.3% of problems, with no pharmacological management given for two-thirds of these problems.

**Table 10.2: Relationship between other treatments and pharmacological treatments**

| Co-management of problems with other treatments | Number of problems | Per cent within class | Per cent of problems (*n* = 145,078) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| At least one other treatment | 43,877 | 100.0 | 30.2 | 29.1 | 31.4 |
|    Without pharmacological treatment | 27,798 | 64.6 | 19.2 | 18.4 | 19.9 |
| At least one clinical treatment | 29,937 | 100.0 | 20.6 | 19.6 | 21.7 |
|    Without pharmacological treatment | 18,563 | 63.3 | 12.8 | 12.1 | 13.5 |
| At least one procedural treatment | 14,974 | 100.0 | 10.3 | 9.8 | 10.8 |
|    Without pharmacological treatment | 9,812 | 66.5 | 6.8 | 6.4 | 7.1 |

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

# 10.2  Clinical treatments

Clinical treatments include general and specific advice, counselling or education, family planning, and administrative processes. During 2007–08, there were 33,121 clinical treatments recorded, at a rate of 34.5 per 100 encounters, or 22.8 per 100 problems managed (Table 10.1).

## Most frequent clinical treatments

Table 10.3 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.

General advice and education was the most frequently recorded clinical treatment, at a rate of 7.2 per 100 encounters. The most common preventive activity was counselling about nutrition and weight (4.2 per 100 encounters). There were a number of other groups that also could be considered preventive in nature, including counselling/advice for exercise, smoking, prevention, lifestyle and alcohol. Together, the abovementioned preventive treatments accounted for 14.4% of all clinical treatments, provided at a rate of 7.4 per 100 encounters. Psychological counselling was provided at a rate of 3.2 per 100 encounter, and advice and education about medication was given at a rate of 2.0 per 100 encounters (Table 10.3).

**Table 10.3: Most frequent clinical treatments**

| Clinical treatment | Number | Per cent of other treatments (*n* = 49,130) | Rate per 100 encounters (*n* = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Advice/education* | 6,872 | 14.0 | 7.2 | 6.3 | 8.1 |
| Counselling—problem* | 4,149 | 8.5 | 4.3 | 3.8 | 4.9 |
| Counselling/advice—nutrition/weight* | 4,041 | 8.2 | 4.2 | 3.8 | 4.6 |
| Advice/education—treatment* | 3,310 | 6.7 | 3.5 | 3.1 | 3.8 |
| Counselling—psychological* | 3,065 | 6.2 | 3.2 | 2.9 | 3.4 |
| Advice/education—medication* | 1,944 | 4.0 | 2.0 | 1.8 | 2.2 |
| Sickness certificate* | 1,622 | 3.3 | 1.7 | 1.4 | 2.0 |
| Other admin/document* | 1,463 | 3.0 | 1.5 | 1.4 | 1.7 |
| Reassurance, support | 1,322 | 2.7 | 1.4 | 1.2 | 1.6 |
| Counselling/advice—exercise* | 1,245 | 2.5 | 1.3 | 1.1 | 1.5 |
| Counselling/advice—smoking* | 581 | 1.2 | 0.6 | 0.5 | 0.7 |
| Counselling/advice—prevention* | 501 | 1.0 | 0.5 | 0.4 | 0.6 |
| Counselling/advice—lifestyle* | 413 | 0.8 | 0.4 | 0.3 | 0.5 |
| Counselling/advice—alcohol* | 359 | 0.7 | 0.4 | 0.3 | 0.4 |
| Family planning* | 334 | 0.7 | 0.4 | 0.3 | 0.4 |
| Observe/wait* | 329 | 0.7 | 0.3 | 0.2 | 0.4 |
| Counselling/advice—health/body* | 288 | 0.6 | 0.3 | 0.2 | 0.4 |
| *Subtotal* | *31,840* | *64.8* | — | — | — |
| **Total clinical treatments** | **33,121** | **67.4** | **34.5** | **32.5** | **36.5** |

\*    Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note:* Includes the most common clinical treatments, those accounting for > 0.5% of all other treatments. LCL—lower confidence limit; UCL—upper confidence limit.

## Problems managed with clinical treatments

Table 10.4 lists the top 10 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 29,937 problems (20.6% of all problems).
- The 10 most common problems managed with a clinical treatment accounted for almost one-third of all problems for which a clinical treatment was provided.
- Depression and upper respiratory tract infections were the most frequently managed problems with a clinical treatment, each at a rate of 1.8 per 100 encounters.
- Half the contacts with depression involving management with a clinical treatment did not result in a medication being prescribed/advised/supplied.
- Twenty-nine per cent of upper respiratory tract infection contacts involved a clinical treatment, with nearly 60% of these being managed without medication.
- One in ten hypertension contacts resulted in a clinical treatment, with 45% of these being managed without medication.

- A clinical treatment was used at one-quarter of diabetes contacts, and approximately two-thirds of these did not involve medication.

**Table 10.4: The 10 most common problems managed with a clinical treatment**

| Problem managed | Number | Per cent of problems with clinical treatment | Rate per 100 encounters[a] (*n* = 95,898) | 95% LCL | 95% UCL | Per cent of this problem[b] | Per cent of treated problems no meds[c] |
|---|---|---|---|---|---|---|---|
| Upper respiratory tract infection | 1,729 | 5.8 | 1.8 | 1.6 | 2.0 | 29.1 | 58.9 |
| Depression* | 1,720 | 5.8 | 1.8 | 1.6 | 1.9 | 45.0 | 50.9 |
| Hypertension* | 1,168 | 3.9 | 1.2 | 1.1 | 1.4 | 12.3 | 45.1 |
| Lipid disorders* | 915 | 3.1 | 1.0 | 0.9 | 1.1 | 25.8 | 59.9 |
| Diabetes* | 885 | 3.0 | 0.9 | 0.8 | 1.0 | 23.8 | 64.1 |
| Anxiety* | 753 | 2.5 | 0.8 | 0.7 | 0.9 | 44.5 | 60.5 |
| Gastroenteritis* | 761 | 2.5 | 0.8 | 0.7 | 0.9 | 48.1 | 61.4 |
| Test results* | 598 | 2.0 | 0.6 | 0.5 | 0.7 | 35.6 | 93.4 |
| Back complaint* | 521 | 1.7 | 0.5 | 0.5 | 0.6 | 19.9 | 52.4 |
| Viral disease, other/NOS | 464 | 1.6 | 0.5 | 0.4 | 0.6 | 39.7 | 69.5 |
| *Subtotal* | *9,515* | *31.8* | — | — | — | — | — |
| **Total problems with clinical treatments** | **29,937** | **100.0** | **31.2** | **29.5** | **33.0** | — | — |

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

(b)   Percentage 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 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

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

# 10.3  Procedural treatments

Procedural treatments included therapeutic actions and diagnostic procedures undertaken at the encounter. Injections for immunisations/vaccinations are not counted here as procedures, as these have already been reported as medications (see Chapter 9). There were 16,009 procedural treatments provided in these general practice encounters during 2007–08 (Table 10.1).

## Most frequent procedures

Table 10.5 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. These results only report investigations actually undertaken at the encounter. They do not include investigations that were ordered by the GP from an external provider. A summary of all investigations (both undertaken and ordered) is provided in Table 12.6.

There were 16,009 procedures recorded at a rate of 16.7 per 100 encounters. The most frequently recorded group of procedures in 2007–08 were excisions, at a rate of 3.4 per 100 encounters, and accounting for 6.7% of all other treatments. Other procedural treatments

that were frequently recorded included local injections (2.3 per 100 encounters), dressings (2.2 per 100 encounters) and physical medicine/rehabilitation (1.3 per 100 encounters) (Table 10.5).

**Table 10.5: Most frequent procedural treatments**

| Procedural treatment | Number | Per cent of other treatments (*n* = 49,130) | Rate per 100 encounters (*n* = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Excision/removal tissue/biopsy/destruction/ debridement/cauterisation* | 3,304 | 6.7 | 3.4 | 3.1 | 3.8 |
| Local injection/infiltration*(a) | 2,166 | 4.4 | 2.3 | 2.1 | 2.5 |
| Dressing/pressure/compression/tamponade* | 2,146 | 4.4 | 2.2 | 2.1 | 2.4 |
| Physical medicine/rehabilitation* | 1,232 | 2.5 | 1.3 | 1.1 | 1.5 |
| Incision/drainage/flushing/aspiration/removal body fluid* | 1,139 | 2.3 | 1.2 | 1.1 | 1.3 |
| Pap smear* | 1,039 | 2.1 | 1.1 | 0.9 | 1.2 |
| Repair/fixation—suture/cast/prosthetic device (apply/remove)* | 881 | 1.8 | 0.9 | 0.8 | 1.0 |
| Other therapeutic procedures/surgery NEC* | 740 | 1.5 | 0.8 | 0.6 | 0.9 |
| Electrical tracings* | 542 | 1.1 | 0.6 | 0.5 | 0.6 |
| Physical function test* | 491 | 1.0 | 0.5 | 0.4 | 0.6 |
| Urine test* | 420 | 0.9 | 0.4 | 0.4 | 0.5 |
| INR test | 352 | 0.7 | 0.4 | 0.3 | 0.5 |
| Check-up—practice nurse | 348 | 0.7 | 0.4 | 0.3 | 0.4 |
| Other preventive procedures/high-risk medication* | 322 | 0.7 | 0.3 | 0.3 | 0.4 |
| *Subtotal* | *15,121* | *30.8* | — | — | — |
| **Total procedural treatments** | **16,009** | **32.6** | **16.7** | **15.9** | **17.5** |

(a)     Excludes all local injection/infiltrations performed for immunisations.

*     Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note:* Includes the most common procedural treatments, those accounting for > 0.5% of all other treatments. LCL—lower confidence limit; UCL—upper confidence limit; NEC—not elsewhere classified.

## Problems managed with a procedural treatment

Table 10.6 lists the top 10 problems managed with a procedural treatment. It also demonstrates the proportion of contacts with each problem that was managed with a procedure, and the proportion of problems managed with a procedure that had no concomitant medication.

- A total of 14,974 problems involved a procedural treatment in their management (10.3% of all problems).
- The top 10 problems accounted 36.0% of all problems for which a procedure was used.
- Solar keratosis/sunburn was the most common problem managed with a procedure, with a procedure undertaken for nearly 70% of all contacts.
- Almost half the malignant skin neoplasm contacts were managed with a procedural treatment, and the vast majority of these did not have a medication prescribed, supplied or advised.

**Table 10.6: The 10 most common problems managed with a procedural treatment**

| Problem managed | Number | Per cent of problems with procedure | Rate per 100 encs[a] (n = 95,898) | 95% LCL | 95% UCL | Per cent of this problem[b] | Per cent of treated problems no meds[c] |
|---|---|---|---|---|---|---|---|
| Solar keratosis/sunburn | 885 | 5.9 | 0.9 | 0.8 | 1.1 | 68.2 | 96.4 |
| Female genital check-up* | 877 | 5.9 | 0.9 | 0.8 | 1.0 | 51.0 | 96.7 |
| Laceration/cut | 666 | 4.5 | 0.7 | 0.6 | 0.8 | 78.6 | 77.3 |
| Excessive ear wax | 546 | 3.7 | 0.6 | 0.5 | 0.6 | 76.0 | 93.4 |
| Malignant neoplasm skin | 521 | 3.5 | 0.5 | 0.4 | 0.6 | 45.5 | 96.6 |
| Warts | 485 | 3.2 | 0.5 | 0.4 | 0.6 | 77.7 | 95.1 |
| Chronic ulcer skin (including varicose ulcer) | 378 | 2.5 | 0.4 | 0.3 | 0.5 | 74.8 | 76.2 |
| General check-up* | 362 | 2.4 | 0.4 | 0.3 | 0.5 | 15.0 | 86.5 |
| Sprain/strain* | 363 | 2.4 | 0.4 | 0.3 | 0.5 | 24.0 | 59.3 |
| Skin symptom/complaint | 309 | 2.1 | 0.3 | 0.2 | 0.4 | 48.0 | 95.0 |
| *Subtotal* | *5,392* | *36.0* | — | — | — | — | — |
| **Total problems with procedural treatments** | **14,974** | **100.0** | **15.6** | **14.9** | **16.4** | — | — |

(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 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

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

# 11 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 (that is, 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.

Data on referrals and admissions are reported for each year from 1998–99 to 2007–08 in the 10 year summary report *General practice activity in Australia 1998–99 to 2007–08: 10 year data tables* available from <www.aihw.gov.au/publications/index.cfm/subject/19> (AIHW catalogue number GEP 23).

## 11.1 Number of referrals and admissions

Table 11.1 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 11.8% of all encounters, and for 8.3% 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 11.1: Summary of referrals and admissions**

| Variable | Number | Rate per 100 encounters (*n* = 95,898) | 95% LCL | 95% UCL | Rate per 100 problems (*n* = 145,078) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|---|
| At least one referral[a] | 11,302 | 11.8 | 11.3 | 12.2 | 8.3 | 8.0 | 8.6 |
| Referrals | 12,008 | 12.5 | 12.0 | 13.0 | 8.3 | 8.0 | 8.6 |
| Specialist | 7,647 | 8.0 | 7.6 | 8.3 | 5.3 | 5.1 | 5.5 |
| Allied health service | 3,305 | 3.4 | 3.2 | 3.7 | 2.3 | 2.1 | 2.4 |
| Hospital | 381 | 0.4 | 0.3 | 0.5 | 0.3 | 0.2 | 0.3 |
| Emergency department | 210 | 0.2 | 0.2 | 0.3 | 0.1 | 0.1 | 0.2 |
| Other medical services | 83 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 |
| Other referrals | 382 | 0.4 | 0.3 | 0.5 | 0.3 | 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* = 11,277).

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

## 11.2 Most frequent referrals

There were 12,008 referrals to other health services, at a rate of 12.5 per 100 encounters. Table 11.2 shows the specialists and allied health service groups to whom GPs most often referred. The most common referrals were to surgeons (11%), orthopaedic surgeons (9%), dermatologists (8%) and ophthalmologists (8%). About 34% of referrals to allied health

services were to physiotherapists, 19% to psychologists, 9% to podiatrists or chiropodists and 7% to dietitians or nutritionists.

**Table 11.2: The most frequent referrals, by type**

| Professional/organisation | Number | Per cent of referrals | Per cent of referral group | Rate per 100 encounters (*n* = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|
| **Medical specialist** | **7,647** | **63.7** | **100.0** | **8.0** | **7.6** | **8.3** |
| Surgeon | 803 | 6.7 | 10.5 | 0.8 | 0.8 | 0.9 |
| Orthopaedic surgeon | 653 | 5.4 | 8.6 | 0.7 | 0.6 | 0.7 |
| Dermatologist | 634 | 5.3 | 8.3 | 0.7 | 0.6 | 0.7 |
| Ophthalmologist | 631 | 5.3 | 8.3 | 0.7 | 0.6 | 0.7 |
| Cardiologist | 521 | 4.3 | 6.8 | 0.5 | 0.5 | 0.6 |
| Ear, nose and throat | 492 | 4.1 | 6.4 | 0.5 | 0.5 | 0.6 |
| Gastroenterologist | 476 | 4.0 | 6.2 | 0.5 | 0.4 | 0.6 |
| Gynaecologist | 419 | 3.5 | 5.5 | 0.4 | 0.4 | 0.5 |
| Urologist | 278 | 2.3 | 3.6 | 0.3 | 0.3 | 0.3 |
| Paediatrician | 224 | 1.9 | 2.9 | 0.2 | 0.2 | 0.3 |
| *Subtotal: top 10 specialist referrals* | *5,133* | *42.7* | *67.1* | — | — | — |
| **Allied health and other professionals** | **3,305** | **27.5** | **100.0** | **3.5** | **3.2** | **3.7** |
| Physiotherapy | 1,132 | 9.4 | 34.3 | 1.2 | 1.1 | 1.3 |
| Psychologist | 635 | 5.3 | 19.2 | 0.7 | 0.6 | 0.7 |
| Podiatrist/chiropodist | 299 | 2.5 | 9.0 | 0.3 | 0.3 | 0.4 |
| Dietitian/nutritionist | 215 | 1.8 | 6.5 | 0.2 | 0.2 | 0.3 |
| Dentist | 178 | 1.5 | 5.4 | 0.2 | 0.1 | 0.2 |
| Audiologist | 98 | 0.8 | 3.0 | 0.1 | 0.1 | 0.1 |
| Optometrist | 79 | 0.7 | 2.4 | 0.1 | 0.1 | 0.1 |
| Breast clinic | 67 | 0.6 | 2.0 | 0.1 | 0.1 | 0.1 |
| Diabetes education | 64 | 0.5 | 2.0 | 0.1 | 0.0 | 0.1 |
| Counsellor | 62 | 0.5 | 1.9 | 0.1 | 0.0 | 0.1 |
| *Subtotal: top 10 allied health referrals* | *2,830* | *23.6* | *85.6* | — | — | — |
| **Total referrals** | **12,008** | **100.0** | — | **12.5** | **12.0** | **13.0** |

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

# 11.3 Problems most often referred

A referral to a specialist was provided in the management of 7,820 problems. The 10 problems most commonly referred to a specialist accounted for 19.5% of all problems referred to a specialist, and those most often referred were pregnancy (3.1% of problems referred to a specialist), diabetes, malignant skin neoplasm and osteoarthritis (Table 11.3).

Table 11.3 also shows the rate of referral per 100 contacts for each problem. Pregnancy and malignant neoplasm were the problem most likely to result in a referral to a specialist.

**Table 11.3: The 10 problems most frequently referred to a medical specialist**

| Problem managed | Number | Per cent of problems referred | Rate per 100 encs (n = 95,898) | 95% LCL | 95% UCL | Rate per 100 contacts of this problem[a] |
|---|---|---|---|---|---|---|
| Pregnancy* | 238 | 3.1 | 0.3 | 0.2 | 0.3 | 18.6 |
| Diabetes—all* | 226 | 2.9 | 0.2 | 0.2 | 0.3 | 6.1 |
| Malignant skin neoplasm | 214 | 2.7 | 0.2 | 0.2 | 0.3 | 18.7 |
| Osteoarthritis* | 155 | 2.0 | 0.2 | 0.1 | 0.2 | 6.2 |
| Back complaint* | 138 | 1.8 | 0.1 | 0.1 | 0.2 | 5.3 |
| Sleep disturbance | 117 | 1.5 | 0.1 | 0.1 | 0.2 | 7.6 |
| Depression* | 114 | 1.5 | 0.1 | 0.1 | 0.2 | 3.0 |
| Ischaemic heart disease* | 112 | 1.4 | 0.1 | 0.1 | 0.1 | 10.7 |
| Abnormal test results* | 105 | 1.4 | 0.1 | 0.1 | 0.1 | 10.8 |
| Oesophagus disease | 103 | 1.3 | 0.1 | 0.1 | 0.1 | 4.7 |
| *Subtotal: top 10 problems referred to a specialist* | *1,522* | *19.5* | — | — | — | — |
| **Total problems referred to specialist** | **7,820** | **100.0** | **8.2** | **7.8** | **8.5** | **—** |

(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 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

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

There were 3,422 problems referred to an allied health professional or service. The 10 most common of these accounted for 47.9% of all problems referred to allied health services, with depression the most common. However, the problem most likely to result in a referral to an allied health service was teeth/gum disease, with more than one in four contacts resulting in referral (Table 11.4).

**Table 11.4: The 10 problems most frequently referred to allied health services**

| Problem managed | Number | Per cent of problems referred | Rate per 100 encs (n = 95,898) | 95% LCL | 95% UCL | Rate per 100 contacts of this problem[a] |
|---|---|---|---|---|---|---|
| Depression* | 414 | 12.1 | 0.4 | 0.4 | 0.5 | 10.8 |
| Back complaint* | 273 | 8.0 | 0.3 | 0.2 | 0.3 | 10.4 |
| Sprain/strain* | 206 | 6.0 | 0.2 | 0.2 | 0.3 | 13.7 |
| Diabetes—all* | 197 | 5.8 | 0.2 | 0.2 | 0.3 | 5.3 |
| Anxiety* | 131 | 3.8 | 0.1 | 0.1 | 0.2 | 7.7 |
| Teeth/gum disease | 121 | 3.5 | 0.1 | 0.1 | 0.2 | 28.8 |
| Osteoarthritis* | 109 | 3.2 | 0.1 | 0.1 | 0.1 | 4.4 |
| Musculoskeletal injury NOS | 65 | 1.9 | 0.1 | 0.1 | 0.1 | 7.8 |
| Bursitis/tendonitis/synovitis NOS | 64 | 1.9 | 0.1 | 0.1 | 0.1 | 8.1 |
| Obesity | 60 | 1.7 | 0.1 | 0.0 | 0.1 | 8.7 |
| *Subtotal: top 10 problems referred to AHS* | *1,639* | *47.9* | — | — | — | — |
| **Total problems referred to AHS** | **3,422** | **100.0** | **3.6** | **3.3** | **3.8** | **—** |

(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 4, <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.

The 10 problems most frequently referred to hospital are shown in Table 11.5. Pregnancy was the most common. However, appendicitis was the problem most likely to be referred, with one in four contacts being referred to hospital.

**Table 11.5: The 10 problems most frequently referred to hospital**

| Problem managed | Number | Per cent of problems referred | Rate per 100 encs (*n* = 95,898) | 95% LCL | 95% UCL | Rate per 100 contacts of this problem[a] |
|---|---|---|---|---|---|---|
| Pregnancy* | 33 | 8.4 | 0.03 | 0.02 | 0.05 | 2.6 |
| Appendicitis | 13 | 3.3 | 0.01 | 0.01 | 0.02 | 25.4 |
| Pneumonia | 13 | 3.3 | 0.01 | 0.01 | 0.02 | 4.7 |
| Fracture* | 12 | 3.1 | 0.01 | 0.00 | 0.02 | 1.3 |
| Phlebitis/thrombophlebitis | 8 | 2.1 | 0.01 | 0.00 | 0.02 | 3.2 |
| Stroke/cerebrovascular accident | 8 | 2.0 | 0.01 | 0.00 | 0.02 | 3.7 |
| Atrial fibrillation/flutter | 7 | 1.9 | 0.01 | 0.00 | 0.02 | 0.8 |
| Skin infection, other | 7 | 1.9 | 0.01 | 0.00 | 0.02 | 2.6 |
| Abortion, spontaneous | 7 | 1.7 | 0.01 | 0.00 | 0.01 | 8.1 |
| Heart failure | 6 | 1.6 | 0.01 | 0.00 | 0.01 | 1.1 |
| *Subtotal: top 10 problems referred for admission* | *116* | *29.5* | — | — | — | — |
| **Total problems referred to hospital** | **394** | **100.0** | **0.41** | **0.35** | **0.47** | — |

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

*    Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

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

# 12  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 (for example, Pap smear, HbA1c) or for a battery of tests (for example, 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 (for example, X-ray chest, CT head).

Data on investigations are reported for each year from 1998–99 to 2007–08 in the 10 year summary report *General practice activity in Australia 1998–99 to 2007–08: 10 year data tables* available from <www.aihw.gov.au/publications/index.cfm/subject/19> (AIHW catalogue number GEP 23).

## 12.1  Number of investigations

Table 12.1 shows the number of encounters and problems at which a pathology or imaging test was ordered. There were no tests recorded at a large majority (76.6%) of encounters.

At least one pathology test order was recorded at 17.4% of encounters (for 13.1% of problems managed), and at least one imaging test was ordered at 8.3% of encounters (for 5.7% of problems managed).

**Table 12.1: Number of encounters and problems for which pathology or imaging ordered**

| Pathology/imaging test ordered | Number of encounters | Per cent of encounters (*n* = 95,898) | 95% LCL | 95% UCL | Number of problems | Per cent of problems (*n* = 145,078) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|---|---|
| Pathology and imaging ordered | 2,191 | 2.3 | 2.1 | 2.4 | 1,539 | 1.1 | 1.0 | 1.1 |
| Pathology only ordered | 14,448 | 15.1 | 14.5 | 15.6 | 17,494 | 12.1 | 11.6 | 12.5 |
| Imaging only ordered | 5,767 | 6.0 | 5.8 | 6.3 | 6,667 | 4.6 | 4.4 | 4.8 |
| No tests ordered | 73,492 | 76.6 | 75.9 | 77.3 | 119,379 | 82.3 | 81.8 | 82.8 |
| At least one pathology ordered | 16,639 | 17.4 | 16.7 | 18.0 | 19,033 | 13.1 | 12.7 | 13.6 |
| At least one imaging ordered | 7,958 | 8.3 | 8.0 | 8.6 | 8,205 | 5.7 | 5.4 | 5.9 |
| At least one other investigation ordered | 887 | 0.9 | 0.8 | 1.0 | 908 | 0.6 | 0.6 | 0.7 |
| At least one other investigation performed in the practice | 1,204 | 1.3 | 1.1 | 1.4 | 1,212 | 0.8 | 0.7 | 0.9 |
| At least one other investigation ordered or performed | 2,030 | 2.1 | 1.9 | 2.3 | 2,064 | 1.4 | 1.3 | 1.5 |

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

## 12.2  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 then Department of Health and Aged Care in 2000.[15] A report on changes in pathology ordering by GPs from 1998 to 2001 was also produced by the GPSCU as an AIHW–University of Sydney book in the GP series in 2003.[16] Readers may wish to compare those results with the information presented below.

### Nature of pathology orders at encounter

The GPs recorded 41,375 orders for pathology tests/batteries of tests, at a rate of 43.2 per 100 encounters.

The distribution of pathology tests by MBS group, and the most common tests within each group are presented in Table 12.2. 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 4, <www.aihw.gov.au/publications/index.cfm/subject/19>. The main pathology groups reflect those used in previous analyses of pathology tests by Medicare Australia (MBS groups).[60]

Test orders classed as chemistry accounted for more than half of all pathology test orders, the most common being lipids, for which there were 4.3 orders per 100 encounters, liver function (3.1), EUC (3.0), and glucose/glucose tolerance (2.5 per 100 encounters).

**Table 12.2: 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 encounters (n = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|
| **Chemistry*** | **23,916** | **57.8** | **100.0** | **24.9** | **23.6** | **26.2** |
| Lipids* | 4,079 | 9.9 | 17.1 | 4.3 | 4.0 | 4.5 |
| Liver function* | 2,954 | 7.1 | 12.4 | 3.1 | 2.8 | 3.4 |
| EUC* | 2,848 | 6.9 | 11.9 | 3.0 | 2.7 | 3.2 |
| Glucose/tolerance* | 2,429 | 5.9 | 10.2 | 2.5 | 2.3 | 2.8 |
| Thyroid function* | 2,324 | 5.6 | 9.7 | 2.4 | 2.2 | 2.6 |
| Multibiochemical analysis* | 1,886 | 4.6 | 7.9 | 2.0 | 1.7 | 2.2 |
| Chemistry; other* | 1,258 | 3.0 | 5.3 | 1.3 | 1.1 | 1.5 |
| Ferritin* | 1,191 | 2.9 | 5.0 | 1.2 | 1.1 | 1.4 |
| HbA1c* | 990 | 2.4 | 4.1 | 1.0 | 0.9 | 1.2 |
| Prostate specific antigen* | 826 | 2.0 | 3.5 | 0.9 | 0.8 | 0.9 |
| Hormone assay* | 745 | 1.8 | 3.1 | 0.8 | 0.6 | 0.9 |
| C reactive protein | 591 | 1.4 | 2.5 | 0.6 | 0.5 | 0.7 |

*(continued)*

**Table 12.2 (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 encounters (*n* = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|
| **Haematology*** | **7,572** | **18.3** | **100.0** | **7.9** | **7.5** | **8.3** |
| Full blood count* | 5,602 | 13.5 | 74.0 | 5.8 | 5.5 | 6.2 |
| ESR | 917 | 2.2 | 12.1 | 1.0 | 0.8 | 1.1 |
| Coagulation* | 793 | 1.9 | 10.5 | 0.8 | 0.7 | 0.9 |
| **Microbiology*** | **5,432** | **13.1** | **100.0** | **5.7** | **5.3** | **6.0** |
| Urine M,C&S* | 1,709 | 4.1 | 31.5 | 1.8 | 1.7 | 1.9 |
| Microbiology; other* | 755 | 1.8 | 13.9 | 0.8 | 0.7 | 0.9 |
| Hepatitis serology* | 498 | 1.2 | 9.2 | 0.5 | 0.4 | 0.6 |
| Faeces M,C&S* | 326 | 0.8 | 6.0 | 0.3 | 0.3 | 0.4 |
| Vaginal swab and M,C&S | 313 | 0.8 | 5.8 | 0.3 | 0.3 | 0.4 |
| HIV* | 304 | 0.7 | 5.6 | 0.3 | 0.3 | 0.4 |
| Chlamydia* | 290 | 0.7 | 5.3 | 0.3 | 0.3 | 0.4 |
| **Cytology*** | **1,806** | **4.4** | **100.0** | **1.9** | **1.7** | **2.1** |
| Pap smear* | 1,765 | 4.3 | 97.7 | 1.8 | 1.6 | 2.0 |
| **Other NEC*** | **950** | **2.3** | **100.0** | **1.0** | **0.8** | **1.2** |
| Blood test | 424 | 1.0 | 44.6 | 0.4 | 0.3 | 0.6 |
| Other test NEC | 344 | 0.8 | 36.2 | 0.4 | 0.3 | 0.4 |
| **Tissue pathology*** | **740** | **1.8** | **100.0** | **0.8** | **0.6** | **0.9** |
| Histology; skin | 652 | 1.6 | 88.1 | 0.7 | 0.6 | 0.8 |
| **Immunology*** | **633** | **1.5** | **100.0** | **0.7** | **0.6** | **0.7** |
| Immunology, other* | 286 | 0.7 | 45.3 | 0.3 | 0.2 | 0.4 |
| Antinuclear antibodies | 167 | 0.4 | 26.5 | 0.2 | 0.1 | 0.2 |
| **Simple basic tests*** | **175** | **0.4** | **100.0** | **0.2** | **0.1** | **0.2** |
| **Infertility/pregnancy*** | **152** | **0.4** | **100.0** | **0.2** | **0.1** | **0.2** |
| **Total pathology tests** | **41,375** | **100.0** | **—** | **43.2** | **41.3** | **45.0** |

\*    Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

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

## Problems for which pathology tests were ordered

Table 12.3 describes the most common problems for which pathology was ordered, in decreasing frequency order of problem–pathology combinations. Diabetes, hypertension, general check-ups and lipid disorders were the most common problems for which pathology tests were 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, 29.3% of contacts with diabetes resulted in pathology orders, and when pathology was ordered for diabetes, 283 tests were ordered per 100 diabetes contacts that resulted in a pathology test order. In contrast, only 10.9% of contacts with hypertension problems resulted in a pathology test, but the resulting test orders accounted for almost as many tests (6.8%) as did diabetes.

**Table 12.3: The 10 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—all* | 3,717 | 3,078 | 7.2 | 29.3 | 282.9 |
| Hypertension* | 9,496 | 2,896 | 6.8 | 10.9 | 278.6 |
| General check-up* | 2,407 | 2,564 | 6.0 | 33.7 | 315.7 |
| Lipid disorders | 3,541 | 2,181 | 5.1 | 27.6 | 222.8 |
| Female genital check-up* | 1,722 | 1,593 | 3.7 | 78.9 | 117.2 |
| Weakness/tiredness general | 625 | 1,473 | 3.4 | 62.4 | 377.9 |
| Blood test NOS | 413 | 1,193 | 2.8 | 85.2 | 339.5 |
| Urinary tract infection* | 1,525 | 957 | 2.2 | 54.7 | 114.7 |
| Pregnancy* | 1,279 | 881 | 2.1 | 31.9 | 215.7 |
| Abnormal test results* | 976 | 864 | 2.0 | 52.1 | 169.9 |
| *Subtotal* | *25,701* | *17,680* | *41.3* | — | — |
| **Total problems** | **145,078** | **42,835** | **100.0** | **13.1** | **225.1** |

(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 41,375 pathology test orders and 42,835 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 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

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

# 12.3  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, and published by the AIHW and the University of Sydney in 2001.[17]

## Nature of imaging orders at encounter

There were 9,143 imaging test orders recorded, at a rate of 9.5 per 100 encounters.

The distribution of imaging tests by MBS group and the most common tests within each group are presented in Table 12.4. 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. Diagnostic radiology accounted for half of all imaging test orders while ultrasound accounted for a further 35.2%.

**Table 12.4: The most frequent imaging tests ordered, by MBS group**

| Imaging test ordered | Number | Per cent of all imaging | Per cent of group | Rate per 100 encounters (*n* = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|
| **Diagnostic radiology*** | **4,599** | **50.3** | **100.0** | **4.8** | **4.6** | **5.0** |
| X-ray; chest | 1,009 | 11.0 | 21.9 | 1.1 | 1.0 | 1.1 |
| X-ray; knee | 449 | 4.9 | 9.8 | 0.5 | 0.4 | 0.5 |
| Mammography; female | 329 | 3.6 | 7.2 | 0.3 | 0.3 | 0.4 |
| Test; densitometry | 303 | 3.3 | 6.6 | 0.3 | 0.3 | 0.4 |
| X-ray; foot/feet | 253 | 2.8 | 5.5 | 0.3 | 0.2 | 0.3 |
| X-ray; hip | 224 | 2.4 | 4.9 | 0.2 | 0.2 | 0.3 |
| X-ray; shoulder | 201 | 2.2 | 4.4 | 0.2 | 0.2 | 0.2 |
| X-ray; ankle | 176 | 1.9 | 3.8 | 0.2 | 0.1 | 0.2 |
| X-ray; wrist | 142 | 1.6 | 3.1 | 0.2 | 0.1 | 0.2 |
| X-ray; spine; lumbosacral | 137 | 1.5 | 3.0 | 0.1 | 0.1 | 0.2 |
| X-ray; spine; lumbar | 131 | 1.4 | 2.8 | 0.1 | 0.1 | 0.2 |
| X-ray; hand | 131 | 1.4 | 2.8 | 0.1 | 0.1 | 0.2 |
| X-ray; abdomen | 109 | 1.2 | 2.4 | 0.1 | 0.1 | 0.1 |
| X-ray; spine; cervical | 99 | 1.1 | 2.1 | 0.1 | 0.1 | 0.1 |
| X-ray; finger(s)/thumb | 95 | 1.0 | 2.1 | 0.1 | 0.1 | 0.1 |
| X-ray; spine; thoracic | 82 | 0.9 | 1.8 | 0.1 | 0.1 | 0.1 |
| **Ultrasound*** | **3,215** | **35.2** | **100.0** | **3.4** | **3.2** | **3.5** |
| Ultrasound; pelvis | 515 | 5.6 | 16.0 | 0.5 | 0.5 | 0.6 |
| Ultrasound; shoulder | 293 | 3.2 | 9.1 | 0.3 | 0.3 | 0.3 |
| Ultrasound; breast; female | 278 | 3.0 | 8.7 | 0.3 | 0.2 | 0.3 |
| Ultrasound; abdomen | 276 | 3.0 | 8.6 | 0.3 | 0.2 | 0.3 |
| Ultrasound; obstetric | 230 | 2.5 | 7.2 | 0.2 | 0.2 | 0.3 |
| Test; doppler | 140 | 1.5 | 4.3 | 0.2 | 0.1 | 0.2 |
| Echocardiography | 139 | 1.5 | 4.3 | 0.2 | 0.1 | 0.2 |
| Ultrasound; kidney | 104 | 1.1 | 3.2 | 0.1 | 0.1 | 0.1 |
| Ultrasound; renal tract | 100 | 1.1 | 3.1 | 0.1 | 0.1 | 0.1 |
| Ultrasound; scrotum | 90 | 1.0 | 2.8 | 0.1 | 0.1 | 0.1 |
| Ultrasound; abdomen upper | 79 | 0.9 | 2.4 | 0.1 | 0.1 | 0.1 |
| Ultrasound; leg | 75 | 0.8 | 2.3 | 0.1 | 0.1 | 0.1 |
| Ultrasound; neck | 70 | 0.8 | 2.2 | 0.1 | 0.1 | 0.1 |
| Ultrasound; thyroid | 69 | 0.8 | 2.1 | 0.1 | 0.1 | 0.1 |
| **Computerised tomography*** | **1,164** | **12.7** | **100.0** | **1.2** | **1.1** | **1.3** |
| CT scan; brain | 181 | 2.0 | 15.6 | 0.2 | 0.2 | 0.2 |
| CT scan; abdomen | 175 | 1.9 | 15.1 | 0.2 | 0.2 | 0.2 |
| CT scan; spine; lumbar | 133 | 1.5 | 11.4 | 0.1 | 0.1 | 0.2 |
| CT scan; head | 111 | 1.2 | 9.6 | 0.1 | 0.1 | 0.1 |
| CT scan; spine; lumbosacral | 94 | 1.0 | 8.1 | 0.1 | 0.1 | 0.1 |

*(continued)*

**Table 12.4 (continued): The most frequent imaging tests ordered, by MBS group**

| Imaging test ordered | Number | Per cent of all imaging | Per cent of group | Rate per 100 encounters (*n* = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|---|
| CT scan; chest | 79 | 0.9 | 6.8 | 0.1 | 0.1 | 0.1 |
| CT scan; sinus | 76 | 0.8 | 6.5 | 0.1 | 0.1 | 0.1 |
| **Nuclear medicine imaging\*** | **105** | **1.1** | **100.0** | **0.1** | **0.1** | **0.1** |
| Scan; bone(s) | 62 | 0.7 | 59.6 | 0.1 | 0.0 | 0.1 |
| **Magnetic resonance imaging** | **60** | **0.7** | **100.0** | **0.1** | **0.0** | **0.1** |
| **Total imaging tests** | **9,143** | **100.0** | — | **9.5** | **9.2** | **9.9** |

\* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

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

## Problems for which imaging tests were ordered

Table 12.5 describes the most common problems for which imaging was ordered, in decreasing frequency order of problem–imaging combinations. The most common problem for which imaging was ordered was back complaint, accounting for 5.7% of orders, followed by osteoarthritis (4.5%), and fracture (4.2%). 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 was ordered. For example, 36.7% of contacts with fractures resulted in an imaging test and 109.6 tests were ordered per 100 fracture contacts when at least one test was ordered.

**Table 12.5: The 10 problems for which an imaging test was most frequently ordered**

| Problem managed | Number of problems | 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 problems with imaging[c] |
|---|---|---|---|---|---|
| Back complaint\* | 2,624 | 524 | 5.7 | 17.0 | 117.7 |
| Osteoarthritis\* | 2,484 | 413 | 4.5 | 14.6 | 113.8 |
| Fracture\* | 959 | 386 | 4.2 | 36.7 | 109.6 |
| Sprain/strain\* | 1,509 | 319 | 3.5 | 17.5 | 120.7 |
| Injury musculoskeletal NOS | 841 | 300 | 3.3 | 31.2 | 114.4 |
| Pregnancy\* | 1,279 | 292 | 3.2 | 22.2 | 102.6 |
| Abdominal pain\* | 628 | 253 | 2.7 | 37.1 | 108.5 |
| Bursitis/tendonitis/synovitis NOS | 789 | 204 | 2.2 | 22.7 | 113.5 |
| Breast lump/mass (female) | 183 | 198 | 2.2 | 72.2 | 150.0 |
| Injury skin; other | 587 | 153 | 1.7 | 21.6 | 120.4 |
| *Subtotal* | *11,883* | *3,042* | *32.9* | — | — |
| **Total problems** | **145,078** | **9,221** | **100.0** | **5.7** | **112.4** |

(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 9,143 imaging test orders and 9,221 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 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

*Note*: NOS—not otherwise specified.

# 12.4  Other investigations

Other investigations include diagnostic procedures ordered by the GP at the encounter or undertaken by the GP or practice staff. There were a total of 934 other investigations ordered by GPs during the study year and 1,256 other investigations undertaken by the GP or practice staff during the study year. This means there were 2,190 total other investigations either ordered or undertaken in the practice (Table 12.6).

## Most frequent other investigations

The first half of Table 12.6 lists the most common other investigations ordered by GPs. The second half lists the most common other investigations undertaken in the practice by GPs or practice staff. The total number of these investigations ordered by the GP or undertaken in the practice is shown in the table. Each investigation is expressed as a percentage of ordered or undertaken other investigations, and as a rate per 100 encounters with 95% confidence limits.

**Table 12.6: Most frequent other investigations ordered by GPs or performed in the practice**

| Investigation ordered | Number | Per cent of ordered investigations | Rate per 100 encounters ($n$ = 95,898) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Electrical tracings* | 450 | 48.1 | 0.5 | 0.4 | 0.5 |
| Diagnostic endoscopy* | 261 | 27.9 | 0.3 | 0.2 | 0.3 |
| Physical function test* | 190 | 20.4 | 0.2 | 0.1 | 0.3 |
| Other diagnostic procedures* | 24 | 2.5 | 0.0 | 0.0 | 0.0 |
| *Subtotal* | *925* | *98.9* | — | — | — |
| **Total other investigations ordered** | **934** | **100.0** | **1.0** | **0.9** | **1.1** |
| Investigation undertaken in the practice | Number | Per cent of undertaken investigations | Rate per 100 encounters ($n$ = 95,898) | 95% LCL | 95% UCL |
| Electrical tracings* | 542 | 43.2 | 0.6 | 0.5 | 0.6 |
| Physical function test* | 491 | 39.1 | 0.5 | 0.4 | 0.6 |
| Other diagnostic procedures* | 185 | 14.7 | 0.2 | 0.1 | 0.3 |
| Diagnostic endoscopy* | 37 | 2.9 | 0.0 | 0.0 | 0.1 |
| *Subtotal* | *1,255* | *99.9* | — | — | — |
| **Total other investigations undertaken** | **1,256** | **100.0** | **1.3** | **1.1** | **1.5** |
| **Total other investigations ordered or undertaken in the practice** | **2,190** | **—** | **2.3** | **2.1** | **2.5** |

\*      Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

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

# 13  Practice nurse activity

This section describes the activities of practice nurses recorded in association with the GP–patient encounters recorded by the GPs in BEACH.

In November 2004, four Medicare item numbers were introduced into the MBS that allowed GPs to claim for specified tasks undertaken by a practice nurse under the direction of the GP. The recording form for the 2005–06 BEACH year was amended to allow the capture of this information.

- 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 include all clinical and procedural treatments provided at the encounters. These groups are defined in Appendix 4, <www.aihw.gov.au/ publications/index.cfm/subject/19>.

In November 2007, a new Medicare item number was added for practice nurse services. This item, 10997, was only available to BEACH 2007–08 participants between November 2007 and March 2008 inclusive. The seven practice nurse Medicare items available during the 2007–08 BEACH data period are listed with a short description in Table 13.1.[61]

This section investigates:

- the distribution of the Medicare items claimed for practice nurses (the total number of these items was reported as one group in Table 5.5)

- treatments provided by practice nurses in association with the GP-recorded encounters

- problems for which the practice nurse provided the treatment in direct association with the GP-recorded encounters.

In Chapter 10, all treatments (other than medications) recorded by the GPs were reported, irrespective of whether they were provided by the GP or by a practice nurse. As in previous years, injections recorded in the provision of immunisations and vaccinations were not included, as these are already counted as pharmacological management. In contrast, this section, being a description of practice nurse activity, reports only the activities indicated as being conducted by a practice nurse and includes the injections for immunisation/vaccination that were not counted in Chapter 10. GPs are also instructed not to record their taking of routine clinical measurements, such as blood pressure. However, where the practice nurse undertook these activities at the consultation, and it was recorded as a practice nurse activity, they have been included in the analysis in this chapter.

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 (for example, immunisations/vaccinations) provided under instruction from the GP but not provided at the time of the encounter recorded in BEACH, or

provision of other services not currently claimable from Medicare (for example, dietary advice on a one-to-one basis, or in a group situation).

# 13.1  Practice nurse Medicare claims versus practice nurse activity

Practice nurses were involved in 5,712 GP–patient encounters, assisting in the management of 5,909 problems. However, only 2,073 practice nurse item numbers were recorded as claimable from Medicare, and practice nurse items accounted for 2.0% of all Medicare items recorded in 2007–08 (Table 5.5). At two-thirds (65.3%) of encounters at which the practice nurse performed a clinical or procedural activity, no practice nurse item number was recorded as claimable (results not tabled).

## Distribution of practice nurse item numbers claimed at encounters

GPs recorded 2,073 practice nurse item numbers at 2,047 encounters (Table 5.5). Almost all the practice nurse item numbers recorded for the BEACH encounters were for immunisations/vaccinations (64.1%) and wound treatments (34.4%). Items claimed for practice nurse conduct of cervical smears and/or preventive checks were very few (17 in total), as were services provided to a person with chronic disease, each accounting for less than 1% of all recorded practice nurse item numbers (Table 13.1).

**Table 13.1: Distribution of practice nurse item numbers recorded at encounter**

| Medicare item number | Short descriptor | Number | Per cent of total |
|---|---|---|---|
| 10993 | Immunisation | 1,330 | 64.1 |
| 10994[a] | Cervical smear and preventive checks | 4 | 0.2 |
| 10995[a] | Cervical smear and preventive checks—women 20–69 years, no smear in past 4 years | 2 | 0.1 |
| 10996 | Wound treatment (other than normal aftercare) | 713 | 34.4 |
| 10997[b] | Service provided to a person with a chronic disease by a practice nurse or registered Aboriginal Health Worker | 14 | 0.7 |
| 10998[c] | Cervical smear | 5 | 0.3 |
| 10999[c] | Cervical smear—women 20–69 years, no smear in past 4 years | 6 | 0.3 |
| **Total** | **All Medicare practice nurse item numbers** | **2,073** | **100.0** |

(a)    Item number introduced in November 2006.

(b)    Item number introduced in November 2007.

(c)    Item numbers introduced in November 2004 but broadened in 2006, so they are now not limited to services in rural areas.

## Treatments provided by practice nurses

As reported in Chapter 10, GPs reported 49,130 other treatments. A further 3,634 injections were given for immunisation (not reported in Chapter 10). In total 52,764 other treatments were recorded.

At least one practice nurse activity was recorded at 5,712 encounters—6.0% of all encounters. Nurses were involved in the management of 5,909 problems (4.1% of all problems managed

by the participating GPs). Practice nurses provided 6,283 other treatments, representing 11.9% of all other treatments recorded at BEACH encounters. The majority (84.7%) of the practice nurse activity was procedural in nature. These procedures represented 28.9% of all procedures recorded. Other investigations conducted in the surgery accounted for 8.3% of practice nurse activity and represented 41.5% of all other investigations undertaken during BEACH encounters. In contrast, while clinical treatments accounted for 7.0% of practice nurse activity, the practice nurse provided less than 2% of all clinical treatments (Table 13.2).

**Table 13.2: Summary of treatments given by practice nurse**

| Treatment | Performed/assisted by the practice nurse | | Performed by the GP | | Total number recorded[a] |
|---|---|---|---|---|---|
| | Number | Per cent of total | Number | Per cent of total | |
| Procedural treatments[a] | 5,322 | 28.9 | 13,065 | 71.1 | 18,387 |
| Clinical treatments | 440 | 1.3 | 32,681 | 98.7 | 33,121 |
| Other investigations | 521 | 41.5 | 735 | 58.5 | 1,256 |
| **All other treatments** | **6,283** | **11.9** | **46,481** | **88.1** | **52,764** |

(a)   Procedural treatments here includes all injections for immunisations/vaccinations ($n = 3,634$). These are not included in the summary of the content of encounter in Table 5.1, summary of management in Table 8.1 or in the analyses of other treatments in Chapter 10, because the immunisation/vaccination is already counted as a prescription or GP-supplied medication.

Of the 5,322 procedures done by practice nurses, 40.4% were injections (which were mainly for immunisations/vaccinations) and a further 22.3% were dressing/pressure/compression/tamponade. Together these accounted for more than half of all procedures undertaken by practice nurses. Incision/drainage/aspirations made up 7.3%, and check-ups 6.5% of procedures done by the nurse. Practice nurses also undertook a wide range of other procedural activities in association with the GP encounters. The most common are listed in Table 13.3.

Administrative and documentation work was the most frequently recorded clinical treatment, accounting for 25.7% of the clinical treatments provided by nurses, followed by general advice/education (18.6%), advice about treatment (7.6%), counselling about the problem under management (7.2%) and counselling about nutrition or weight (6.7%).

The most common other investigations performed by the nurse were electrical tracings (such as electrocardiogram) (56.8% of other investigations) and physical function tests (38.5%) (Table 13.3).

## Problems managed with practice nurse involvement

The problems managed most often with the assistance of a practice nurse in association with the consultation were immunisation/vaccination (28.5% of all problems managed with the involvement of a practice nurse), followed by laceration/cut (5.8%) and chronic skin ulcer (5.7%) (Table 13.4).

Practice nurses were involved in the management of a wide range of problems in association with the GP encounters. The most common are listed in Table 13.4.

**Table 13.3: Most frequent treatments provided by practice nurses**

| Treatment | Number | Per cent of group[a] | Rate per 100 encs involving practice nurse (n = 5,712)[a] | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| **Procedural treatments** | **5,323** | **100.0** | **93.2** | **91.5** | **94.8** |
| Local injection/infiltration* | 2,153 | 40.4 | 37.7 | 34.7 | 40.7 |
| Dressing/pressure/compression/tamponade* | 1,185 | 22.3 | 20.7 | 18.7 | 22.8 |
| Incision/drainage/flushing/aspiration/removal body fluid* | 387 | 7.3 | 6.8 | 5.6 | 7.9 |
| Check-up—practice nurse* | 348 | 6.5 | 6.1 | 4.8 | 7.4 |
| Repair/fixation-suture/cast/prosthetic device (apply/remove)* | 285 | 5.3 | 5.0 | 4.2 | 5.7 |
| INR test | 282 | 5.3 | 4.9 | 3.6 | 6.2 |
| Excision/removal issue/biopsy/destruction/debride/cauterise* | 278 | 5.2 | 4.9 | 3.8 | 5.9 |
| Urine test* | 121 | 2.3 | 2.1 | 1.3 | 3.0 |
| Other procedures/minor surgery NEC* | 84 | 1.6 | 1.5 | 1.0 | 2.0 |
| Glucose test | 55 | 1.0 | 1.0 | 0.7 | 1.3 |
| Physical medicine/rehabilitation* | 35 | 0.7 | 0.6 | 0.2 | 1.1 |
| Pregnancy test* | 30 | 0.6 | 0.5 | 0.3 | 0.8 |
| Pap smear | 30 | 0.6 | 0.5 | 0.3 | 0.8 |
| **Clinical treatments** | **440** | **100.0** | **7.7** | **6.2** | **9.2** |
| Other admin/document* | 113 | 25.7 | 2.0 | 1.4 | 2.6 |
| Advice/education* | 82 | 18.6 | 1.4 | 0.8 | 2.1 |
| Advice/education—treatment* | 33 | 7.6 | 0.6 | 0.4 | 0.8 |
| Counselling—problem* | 32 | 7.2 | 0.6 | 0.3 | 0.8 |
| Counselling/advice—nutrition/weight* | 29 | 6.7 | 0.5 | 0.1 | 0.9 |
| **Other investigations** | **521** | **100.0** | **9.1** | **7.5** | **10.8** |
| Electrical tracings* | 296 | 56.8 | 5.2 | 4.3 | 6.1 |
| Physical function tests* | 201 | 38.5 | 3.5 | 2.3 | 4.7 |

(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 treatment accounting for >= 0.5% of total treatments by practice nurse are included.

*    Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

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

**Table 13.4: The most common problems managed with the involvement of practice nurse**

| Problem managed | Number | Per cent of problems involving practice nurse (*n* = 5,909) | Rate per 100 encs involving practice nurse[a] (*n* = 5,712) | 95% LCL | 95% UCL |
|---|---|---|---|---|---|
| Immunisation/vaccination—all* | 1,684 | 28.5 | 29.5 | 26.7 | 32.2 |
| Laceration/cut | 345 | 5.8 | 6.0 | 5.0 | 7.0 |
| Chronic ulcer skin (including varicose ulcer) | 266 | 4.5 | 4.7 | 3.7 | 5.6 |
| General check-up* | 244 | 4.1 | 4.3 | 3.1 | 5.4 |
| Diabetes—all* | 173 | 2.9 | 3.0 | 2.4 | 3.7 |
| Atrial fibrillation/flutter | 162 | 2.7 | 2.8 | 2.0 | 3.6 |
| Excessive ear wax | 160 | 2.7 | 2.8 | 2.2 | 3.4 |
| Malignant neoplasm skin | 146 | 2.5 | 2.6 | 1.8 | 3.3 |
| Hypertension* | 100 | 1.7 | 1.8 | 1.2 | 2.3 |
| Skin infection, post-traumatic | 90 | 1.5 | 1.6 | 1.0 | 2.1 |
| Asthma | 70 | 1.2 | 1.2 | 0.9 | 1.6 |
| Abrasion/scratch/blister | 66 | 1.1 | 1.2 | 0.6 | 1.7 |
| Repair/fixate-suture/cast/prosthetic device (apply/remove)* | 65 | 1.1 | 1.1 | 0.8 | 1.5 |
| Burns/scalds | 63 | 1.1 | 1.1 | 0.8 | 1.4 |
| **Total problems involving practice nurse** | **5,909** | **100.0** | **103.4** | **102.7** | **104.2** |

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

*    Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, <www.aihw.gov.au/publications/index.cfm/subject/19>).

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

# 13.2  Discussion

These results suggest that many GPs are using practice nurses to provide immunisations/vaccinations and, to a lesser degree, for dressings. However, they also suggest very little use of the cervical smear/preventive check practice nurse item numbers.

If extrapolated, the 2,047 encounters at which a practice nurse item number was recorded as claimable (at 2.0% of Medicare-claimable encounters in BEACH) (Table 5.4) to the 111 million general practice Medicare items claimed (including practice nurse items)[1], represent an estimated 2.2 million claims were made from Medicare for practice nurse services associated with GP consultations. The MBS claims data for practice nurse item numbers for the 2007–08 BEACH year show that 4.6 million practice nurse items were claimed for that period.[1] This suggests that about 2.4 million services were provided and claimed for practice nurse activities conducted independently of direct GP–patient consultations.

The MBS data suggest that 62.2% of the claims were for immunisation/vaccinations (item 10993), 34.6% were for wound dressings (item 10996) and only 1.4% were for the cervical smear/preventive check items (10994, 10995, 10998, 10999).[62] This compares with BEACH data of 64.1% of the claims being for immunisations/vaccinations, 34.4% for wound dressings and 0.8% for cervical smear/preventive check items. This suggests that more of the wound management and cervical smear/preventive checks are being done (and claimed for) through direct appointments with the practice nurse, as directed by the GP.

In 2005–06, the research team suggested that the low uptake of practice nurse items covering cervical smears may have been partly due to the geographic limitations placed on these item numbers at that time, and on the difficulty of separating the cervical smear from the total clinical activity of a well woman check. These checks often involve (in addition to a cervical smear) a pelvic examination and a breast check, and may also involve discussion of sexual issues and contraception, which in turn may result in prescription of medication. Practice nurses cannot prescribe medication.

The geographic limitations, and the broadening of the cervical smear item numbers in November 2006 removed some of these limitations. But these actions appear to have had little effect on uptake rate of these item numbers.

Comparison of the services provided by practice nurses (Table 13.3) with the common problems for which these services were provided (Table 13.4) suggests that about 78% of the local injections/infiltrations recorded for practice nurses were given for immunisation/ vaccinations, and about 22% were for other types of injections and therefore not eligible to be claimed through Medicare. Table 13.1 suggests that only 1,330 (79%) of the estimated 1,684 immunisations/vaccinations involving the practice nurses were actually claimed through Medicare.

Table 13.3 shows that nurses dealt with 1,185 dressing/pressure/compression/tamponades in conjunction with the GP encounter, but only 713 claims were made for Medicare payment for wound treatment (Table 13.1). This suggests that about 60% of the dressings recorded for practice nurses were claimable under Medicare. Some of the dressings may be follow-up encounters where the follow-up treatment (aftercare) is included in the initial Medicare claim (claimed in the past), and may therefore not be claimable for the practice nurse.

A comparison of practice nurse activity from 2005–06 to 2007–08 is provided in the 10 year summary report *General practice activity in Australia 1998–99 to 2007–08: 10 year data tables* available from <www.aihw.gov.au/publications/index.cfm/subject/19> (AIHW catalogue number GEP 23).

# 14  Patient risk factors

General practice is a useful intervention point for health promotion because about 88% of Australians visit a GP at least once in any given year.[3] GPs, through ongoing professional education, have substantial knowledge of population health, screening programs and other interventions. They are also in an ideal position to advise patients about the benefits of health screening, and to counsel patients about their lifestyle choices on an individual basis.

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 2.4.

The patient risk factors measured include self-reported height and weight (for calculation of body mass index, BMI), alcohol consumption and smoking status. Patient risk factors are investigated for a subsample of 40 of the 100 patient encounters recorded by each GP. An example of the encounter form with the patient risk factor SAND questions is included in Appendix 1. The methods used in the risk factor substudies reported in this chapter are described in each section below.

Data on patient risk factors measured in SAND are reported for each year from 1998–99 to 2007–08 in the 10 year summary report *General practice activity in Australia 1998–99 to 2007–08: 10 year data tables* available from <www.aihw.gov.au/publications/index.cfm/subject/19> (AIHW catalogue number GEP 23).

Summaries of results from all SAND substudies from April 1999 to July 2006 inclusive have been published in *Patient-based substudies from BEACH: abstracts and research tools 1999–2006*.[11] Abstracts of results and the research tools used in SAND substudies conducted between August 2006 and March 2007 were published in *General practice activity in Australia 2006–07*[2] and those conducted from April 2007 to January 2008 are included in Chapter 15 of this report.

## 14.1  Body mass index

It is estimated that overweight and obesity accounted for 7.5% of the total burden of disease in Australia in 2003, and ranked third[63], an increase from 4.3% of total burden and sixth rank in 1996.[64] 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%).[65]

### Method

Patient BMI was investigated for a subsample of 40 of the 100 patient encounters. Each GP was instructed to ask the patient (or their carer in the case of children):

*   What is your height in centimetres (without shoes)?
*   What is your weight in kilograms (unclothed)?

Metric conversion tables (feet and inches; stones and pounds) were provided to the GP.

The BMI for an individual was calculated by dividing weight (kilograms) by height (metres) squared. The recent WHO recommendations[66] for BMI groups were used, which specify that an adult (18 years and over) with a BMI:

- less than 18.5 is underweight

- greater than or equal to 18.5 and less than 25 is normal

- greater than or equal to 25 and less than 30 is overweight

- of 30 or more is obese.

The reported height for adult patients was checked against sex-appropriate upper and lower height limits from the Australian Bureau of Statistics (ABS).[67] Encounters with adults whose reported heights were outside the sex-appropriate limits were excluded from the analysis.

The standard BMI cut-offs described above are not appropriate in the case of children. Cole et al. developed a method which calculates the age–sex-specific BMI cut-off levels for overweight and obesity specific to children aged 2–17 years.[68] There are three categories defined for childhood BMI: underweight/normal, overweight and obese. This method, based on international data from developed Western cultures, is applicable in the Australian setting. The reported height of children was checked against age–sex-appropriate upper and lower height limits from the ABS.[67] Encounters with children whose reported heights were outside either of the age–sex-appropriate limits were excluded from the analysis.

The BEACH data on BMI are presented separately for adults (aged 18 years and over) and children (aged 2–17 years). The standard BMI cut-offs have been applied for the adult sample, and the method described by Cole et al. has been used for defining overweight and obesity in children (aged 2–17 years).[68]

## Results

### Body mass index of adults

The sample size was 31,062 patients aged 18 years and over at encounters with 952 GPs.

- More than half (59.3%) of the patients were overweight or obese—23.9% obese and 35.4% overweight (Table 14.1).

- Only 2.5% of patients were underweight (Table 14.1).

- Four out of ten adult patients had a BMI that was in the normal range (Table 14.1).

- Males were more likely to be overweight or obese (66.1%, 95% CI: 65.0–67.2) than females (54.8%, 95% CI: 53.7–55.8) (results not tabled).

- Overweight/obesity was most prevalent among male patients aged 45–64 years (74.5%) and those aged 65–74 years (72.0%) (Figure 14.1).

- Among female patients overweight/obesity was most prevalent in those aged 65–74 years (66.9%) and 45–64 years (63.3%) (Figure 14.1).

- Underweight was most prevalent in patients aged 18–24 years and 75 years and over. Of young adults (18–24 years), 6.6% of females and 2.3% of males were underweight, and among those aged 75 years and over, 4.9% of women and 1.9% of men were underweight (Figure 14.2).

These results are consistent with those of the 1999–00 AusDiab study[65] (60% of adults aged > 25 years were overweight or obese) and with the ABS 2004–05 figures from the National

Health Survey, which reported that 53% of adults aged 18 or more were overweight or obese.[69]

## Estimation of body mass index for the adult general practice patient population

The BEACH study reports data about patient BMI from a sample of the attending general practice patients. As older people attend a GP more often than young adults, and females attend more often than males, they have a greater chance of being selected in the subsample. This leads to a greater proportion of older and female patients in the sample when compared with the total population who will attend a GP at least once. For the first time in this report we have weighted the BEACH sample to estimate the BMI of the GP–patient population (that is, the 14 million adult patients who have attended a GP at least once), using the method described by Knox et al. (2008).[3]

The estimates for the GP–patient population (after adjusting for age–sex attendance patterns) suggest that 23.5% of the patient population were obese, 35.3% were overweight, 38.9% were normal weight and 2.3% were underweight (Table 14.1).

**Table 14.1: Patient body mass index (aged 18 years and over)**

| BMI class | Male[a] | | Female[a] | | Total respondents | |
|---|---|---|---|---|---|---|
| | Per cent in BEACH sample (95% CI) (*n* = 12,126) | Per cent in patient population (95% CI)[b] | Per cent in BEACH sample (95% CI) (*n* = 18,703) | Per cent in patient population (95% CI)[b] | Per cent in BEACH sample (95% CI) (*n* = 31,062) | Per cent in patient population (95% CI)[b] |
| Obese | 23.1 (22.1–24.1) | 22.8 (21.8–23.8) | 24.3 (23.5–25.2) | 23.9 (23.0–24.8) | 23.9 (23.1–24.6) | 23.5 (22.7–24.2) |
| Overweight | 43.0 (42.0–44.0) | 42.1 (41.0–43.2) | 30.4 (29.7–31.2) | 29.7 (28.9–30.4) | 35.4 (34.7–36.0) | 35.3 (34.6–36.0) |
| Normal | 32.7 (31.6–33.8) | 34.0 (32.7–35.2) | 41.9 (40.9–43.0) | 43.1 (42.1–44.2) | 38.3 (37.4–39.2) | 38.9 (38.0–39.9) |
| Underweight | 1.2 (1.0–1.4) | 1.2 (0.9–1.4) | 3.3 (3.0–3.6) | 3.3 (3.0–3.6) | 2.5 (2.3–2.7) | 2.3 (2.1–2.5) |

(a)　Patient sex was not recorded for 233 respondents.

(b)　Estimation of BMI among the total adult general practice patient population (that is, patients aged 18 years and over who have attended a GP at least once) *n* = 14 million.

*Note:* BMI—body mass index; CI—confidence interval.

## Body mass index of children

BMI was calculated for 3,046 patients aged 2–17 years at encounters with 801 GPs.

- Three in 10 children (28.3%, 95% CI: 26.4–30.2) were classed as overweight or obese— this consists of 11.2% (95% CI: 10.0–12.5) obese and 17.1% (95% CI: 15.7–18.5) overweight (results not tabled).

- There was no difference in prevalence of overweight/obesity among male (29.3%, 95% CI: 26.8–31.8) and female children (27.4%, 95% CI: 25.0–29.9) (results not tabled).

- The age-specific rates of obesity followed similar patterns for both sexes (figures 14.3 and 14.4).

| Age group (years) | 18–24 | 25–44 | 45–64 | 65–74 | 75+ |
|---|---|---|---|---|---|
| ■ Male | 40.8 | 61.9 | 74.5 | 72 | 59.4 |
| □ Female | 33.3 | 47.9 | 63.3 | 66.9 | 54.4 |
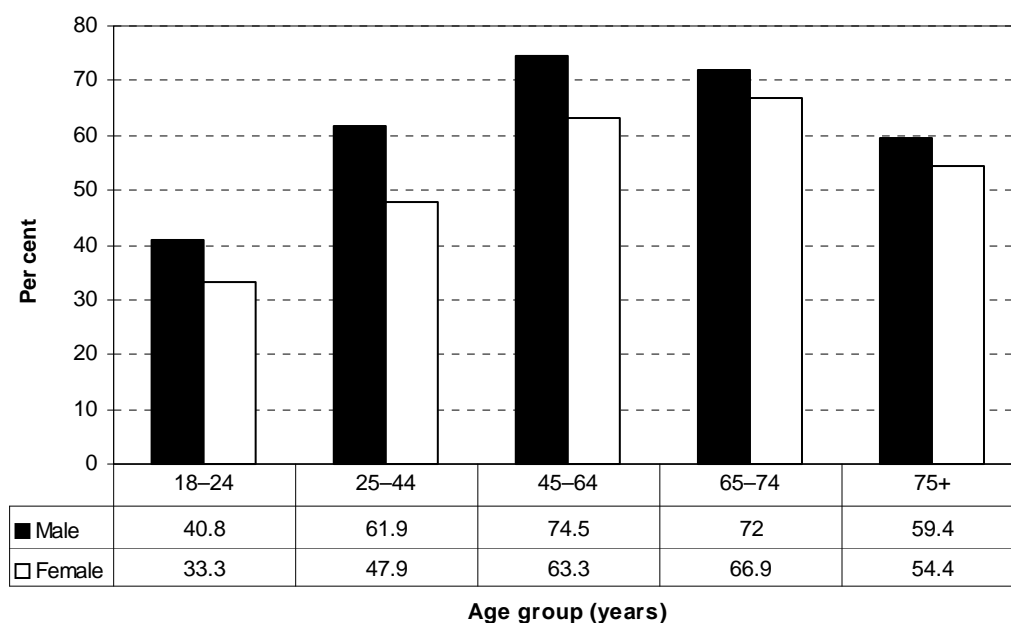
**Figure 14.1: Age–sex-specific rates of overweight/obesity in adults**



| Age group (years) | 18–24 | 25–44 | 45–64 | 65–74 | 75+ |
|---|---|---|---|---|---|
| ■ Male | 2.3 | 1.1 | 0.8 | 0.9 | 1.9 |
| □ Female | 6.6 | 3.4 | 1.8 | 2.3 | 4.9 |
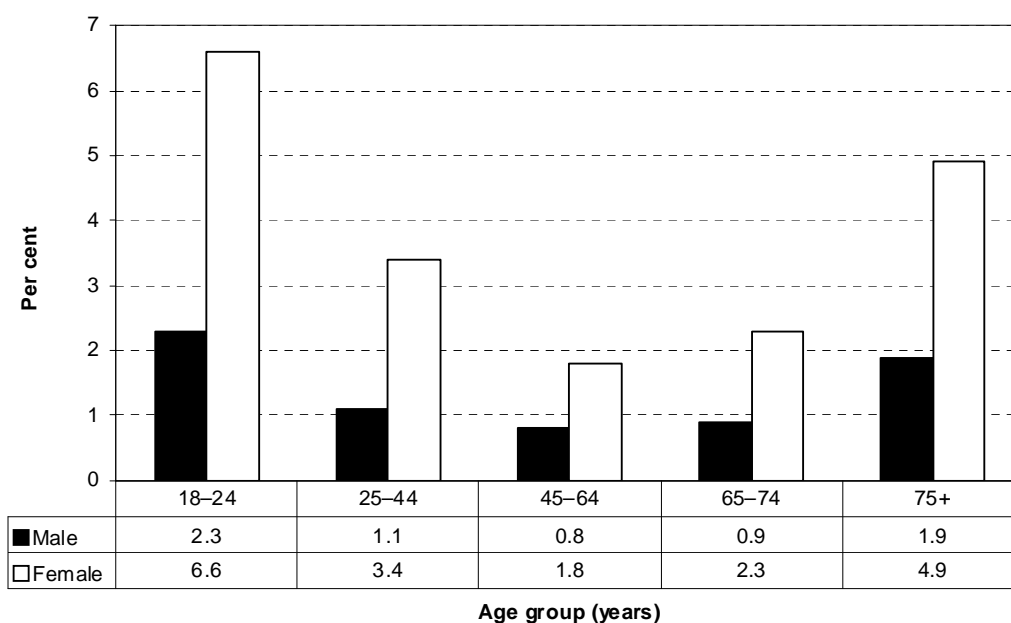
**Figure 14.2: Age–sex-specific rates of underweight in adults**

| | 2–4 | 5–8 | 9–12 | 13–17 |
|---|---|---|---|---|
| Male obese | 16 | 13 | 11.9 | 7 |
| Male overweight | 11.2 | 14.9 | 20.9 | 23.1 |
| Male under/normal | 72.8 | 72.2 | 67.2 | 69.9 |

Age group (years)
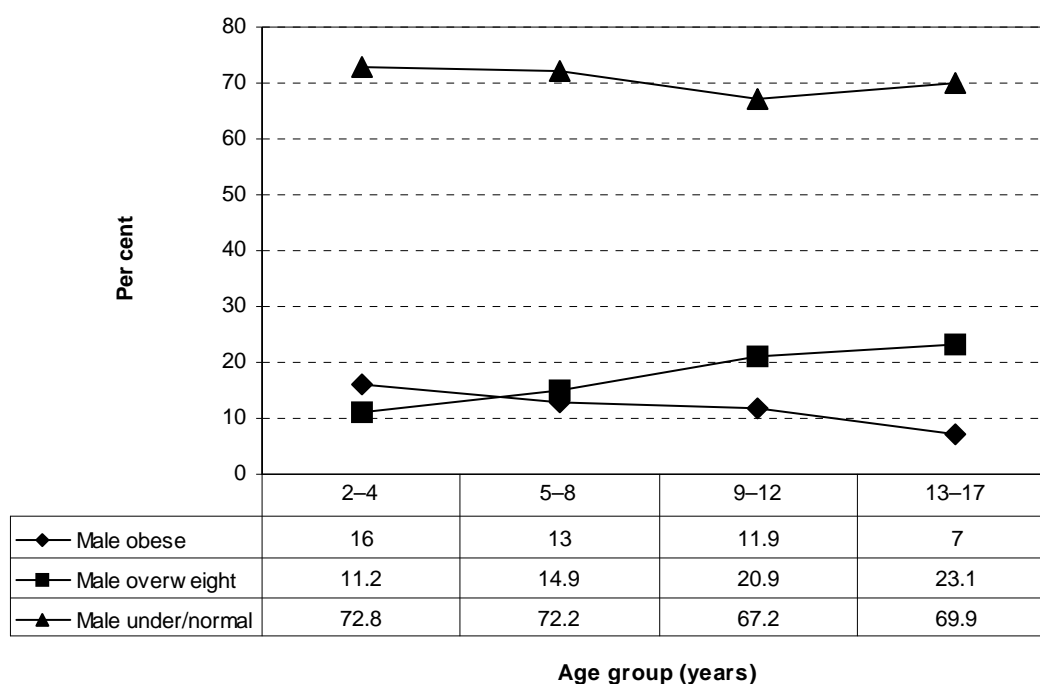
**Figure 14.3: Age-specific rates of obesity, overweight and normal/underweight in male children**



| | 2–4 | 5–8 | 9–12 | 13–17 |
|---|---|---|---|---|
| Female obese | 9.5 | 13.9 | 10.2 | 9.3 |
| Female overweight | 14.0 | 15.1 | 21.1 | 17.5 |
| Female under/normal | 76.5 | 71.0 | 68.7 | 73.2 |

Age group (years)
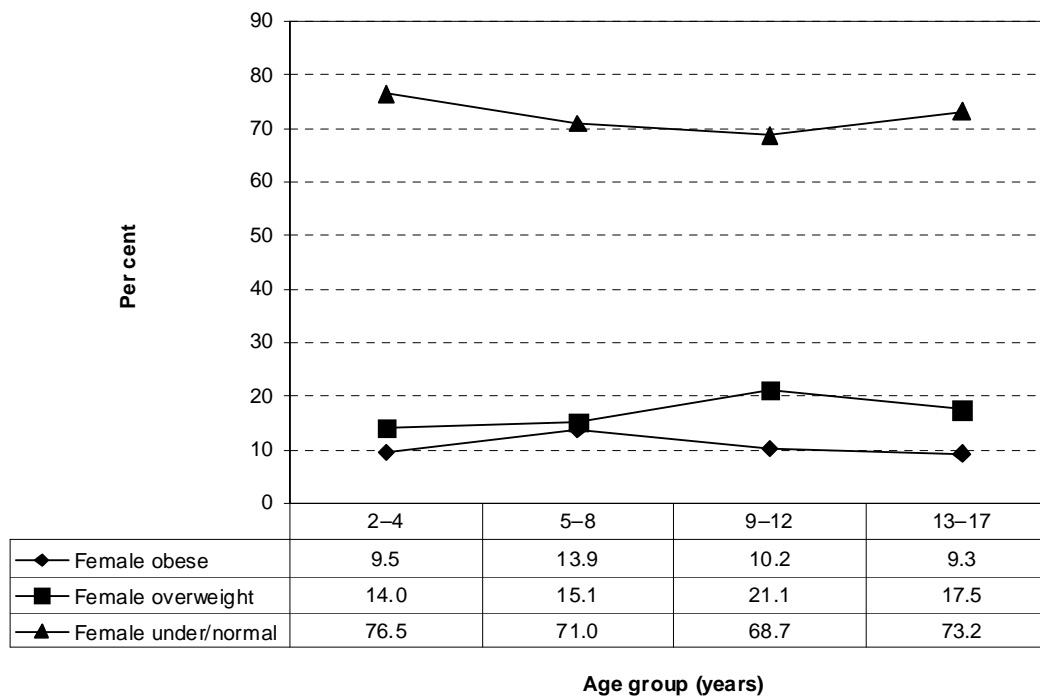
**Figure 14.4: Age-specific rates of obesity, overweight and normal/underweight in female children**

## 14.2 Smoking (patients aged 18 years and over)

Tobacco smoking is the leading cause of drug-related death and hospital separations in Australia.[70] It has been identified as the risk factor associated with the greatest disease burden, accounting for 7.8% of the total burden of disease in Australia in 2003[63], a decrease from 9.7% of total burden in 1996.[64] According to the 2004 National Drug Strategy Household Survey (NDSHS), 17.4% of Australians aged 14 years and over smoked daily: 18.6% of males and 16.3% of females.[71]

## Method

GPs were instructed to ask adult patients (18 years and over):

- What best describes your smoking status?   Smoke daily
                                              Smoker occasionally
                                              Previous smoker
                                              Never smoked

Respondents were limited to adults aged 18 years and over because there are ethical concerns about approaching the younger patient group to ask for information on smoking for survey purposes. In addition, the reliability of this information from patients aged less than 18 years may be compromised if a parent is present at the consultation.

## Results

The smoking status of 31,652 adult patients was established at encounters with 952 GPs. Table 14.2 shows that:

- 16.5% of adult patients were daily smokers

- significantly more male (19.8%) than female patients (14.4%) were daily smokers

- only 2.9% of adult patients were occasional smokers

- more than a quarter of adults (27.9%) were previous smokers.

Daily smoking was most prevalent among younger adult patients (aged 18–24 years and 25–44 years), with almost 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% of males and 4% of females in this age group were daily smokers (figures 14.5 and 14.6).

### Estimation of smoking in the adult general practice patient population

The BEACH study reports data about patient smoking habits from a sample of the attending general practice patients. As older people attend a GP more often than young adults, and females attend more often than males, they have a greater chance of being selected in the subsample. This leads to a greater proportion of older and female patients in the sample when compared with the total population who attend a GP at least once (about 14 million adults). For the first time in this report we have weighted the BEACH sample to estimate the smoking status among the GP–patient population, using the method described by Knox et al. (2008).[3]

The estimates for the GP–patient population (after adjusting for age–sex attendance patterns) show that 19.3% of the patient population were daily smokers, 3.5% were occasional

smokers, 25.7% were previous smokers and 51.5% had never smoked. Male patients in the total general practice population were significantly more likely to be daily (23.4%), occasional (4.1%) and previous smokers (30.5%) than females patients (15.9%, 3.0% and 21.7%, respectively) (Table 14.2).

**Table 14.2: Patient smoking status (aged 18 years and over)**

| Smoking status | Male[a] | | Female[a] | | Total respondents | |
|---|---|---|---|---|---|---|
| | Per cent in BEACH sample (95% CI) (*n* = 12,335) | Per cent in patient population (95% CI)[b] | Per cent in BEACH sample (95% CI) (*n* = 19,081) | Per cent in patient population (95% CI)[b] | Per cent in BEACH sample (95% CI) (*n* = 31,652) | Per cent in patient population (95% CI)[b] |
| Daily | 19.8 (18.8–20.8) | 23.4 (22.2–24.5) | 14.4 (13.7–15.2) | 15.9 (15.1–16.7) | 16.5 (15.8–17.3) | 19.3 (18.5–20.1) |
| Occasional | 3.3 (2.9–3.7) | 4.1 (3.6–4.6) | 2.6 (2.3–2.9) | 3.0 (2.7–3.3) | 2.9 (2.7–3.2) | 3.5 (3.2–3.9) |
| Previous | 36.5 (35.3–37.7) | 30.5 (29.4–31.6) | 22.3 (21.4–23.1) | 21.7 (20.8–22.5) | 27.9 (27.1–28.6) | 25.7 (24.9–26.5) |
| Never | 40.4 (39.2–41.6) | 42.0 (40.7–43.3) | 60.7 (59.6–61.7) | 59.4 (58.3–60.5) | 52.7 (51.7–53.6) | 51.5 (50.4–52.5) |

(a)    Patient sex was not recorded for 236 respondents.

(b)    Estimation of the smoking status of the total adult general practice patient population (that is, patients aged 18 years and over who have attended a GP at least once) *n* = 14 million.

Note: CI—confidence interval.



| Age group (years) | 18–24 | 25–44 | 45–64 | 65–74 | 75+ |
|---|---|---|---|---|---|
| Male daily | 25.4 | 31.4 | 21.8 | 10.8 | 5.3 |
| Male previous | 11.4 | 19.4 | 35.8 | 51.3 | 58.5 |
| Male never | 54.6 | 43.9 | 39.4 | 36.3 | 35.7 |

**Figure 14.5: Smoking status—male age-specific rates**

| Age group (years) | 18–24 | 25–44 | 45–64 | 65–74 | 75+ |
|---|---|---|---|---|---|
| Female daily | 20.4 | 19.6 | 16.1 | 7.1 | 4.1 |
| Female previous | 10.5 | 20.4 | 24.6 | 27.0 | 24.7 |
| Female never | 62.7 | 55.9 | 57.3 | 65.2 | 70.9 |

**Figure 14.6: Smoking status—female age-specific rates**
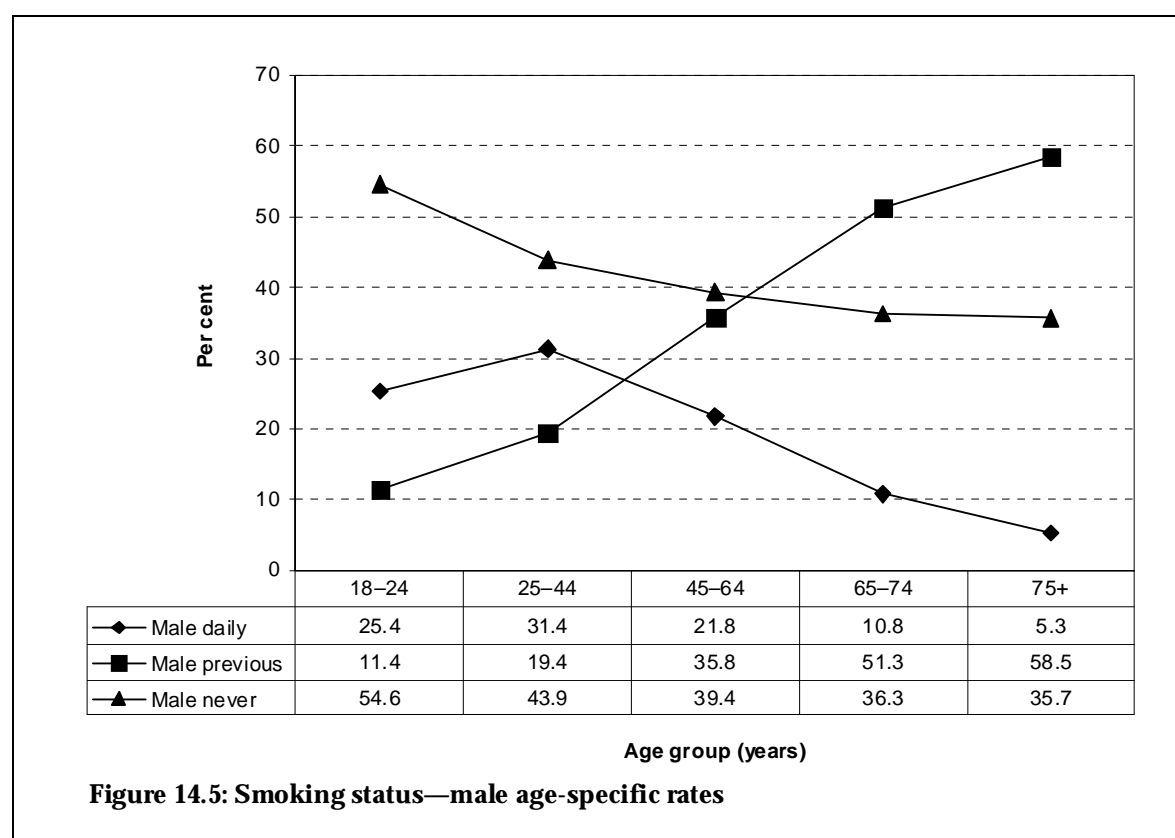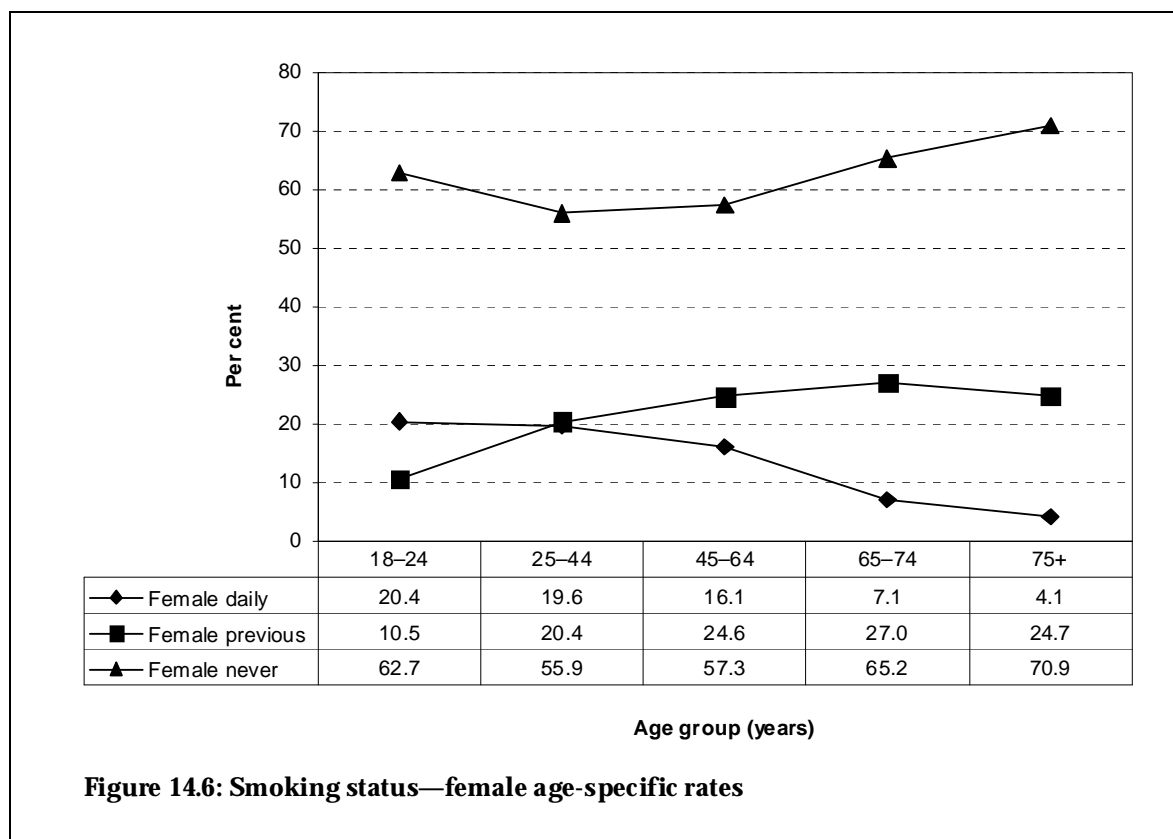
# 14.3  Alcohol consumption (patients aged 18 years and over)

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[70] (in particular ischaemic heart disease).[72] The National Health and Medical Research Council in a review of the evidence concluded that in young women there was no evidence of any cardiovascular mortality benefit from alcohol consumption, and in young men any benefit was outweighed by alcohol-related other causes of death.[72] In 2003 alcohol consumption accounted for 3.3% 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 2.3%.[63]

The 2004 NDSHS found that 9.8% of people aged 14 years and over (10.1% of males and 9.6% of females) drank at levels considered to be risky or high risk for their health in the long term.[71] This risk level of alcohol consumption was based on the NHMRC 2001 guidelines.[73] The NDSHS also found that 35.4% of people aged 14 years and over (40.3% of males and 30.7% of females) drank alcohol during the preceding 12 months at levels that put their health at risk in the short term.[71]

## Method

To measure alcohol consumption, BEACH uses three items from the WHO Alcohol Use Disorders Identification Test (AUDIT)[74], with scoring for an Australian setting.[75] Together, these three questions assess 'at-risk' alcohol consumption. The scores for each question range from zero to four. A total (sum of all three questions) score of five or more for males or four or more for females suggests that the person's drinking level is placing him or her at risk.[75]

GPs were instructed to ask adult patients (18 years and over):

- How often do you have a drink containing alcohol?    Never
  Monthly or less
  Once a week/fortnight
  2–3 times a week
  4+ times a week

- How many standard drinks do you have on a typical day when you are drinking?

  _____

- How often do you have six or more standard drinks on one occasion?
  Never
  Less than monthly
  Monthly
  Weekly
  Daily or almost daily

A standard drinks chart was provided to each GP to help the patient identify the number of standard drinks consumed.

Respondents were limited to adults aged 18 years and over because there are ethical concerns about approaching the younger patient group to ask for information on alcohol consumption for survey purposes. In addition, the reliability of this information from patients aged less than 18 years may be compromised if a parent is present at the consultation.

## Results

Patients' self-reported alcohol consumption was recorded at 30,796 adult patient (18 years and over) encounters with 951 GPs.

- More than one-quarter of adults reported drinking alcohol at at-risk levels (26.2%) (Table 14.3).
- At-risk drinking was more prevalent among male patients (31.7%) than female patients (22.6%) (Table 14.3).
- At-risk drinking was most prevalent in the 18–24 year age group, particularly among men. In this age group half of the males and more than one-third of the females reported at-risk alcohol consumption (Figure 14.7).
- The proportion of patients who were at-risk drinkers decreased with age for both males and females (Figure 14.7).

These estimates are a little lower than those for short-term risk from the NDSHS.[76] This is likely to be due to the difference in the age ranges studied (14 years and over in NDSHS and 18 years and over in BEACH), and to differences in the age–sex distributions of the study populations.

## Estimation of alcohol consumption in the adult general practice patient population

The BEACH study reports data about patient alcohol consumption from a sample of the attending general practice patients. As older people attend a GP more often than young adults, and females attend more often than males, they have a greater chance of being selected in the subsample. This leads to a greater proportion of older and female patients in the sample when compared with the total population who attend a GP at least once (about 14 million adults). For the first time in this report we have weighted the BEACH sample to estimate the alcohol consumption among the GP–patient population, using the method described by Knox et al. (2008).[3]

The estimates for the GP–patient population (after adjusting for age–sex attendance patterns) show that 29.3% of the patient population were at-risk drinkers, 44.2% were responsible drinkers and 26.5% were non-drinkers. Male patients in the total general practice population were significantly more likely to be at-risk drinkers (35.7%) than females patients (24.0%) (Table 14.3).

Readers interested in the relationship between morbidity managed and alcohol consumption will find more information in Proude et al. *The relationship between self-reported alcohol intake and the morbidities managed by GPs in Australia.*[77]

**Table 14.3: Patient alcohol consumption (aged 18 years and over)**

| | Male | | Female | | Total respondents | |
|---|---|---|---|---|---|---|
| **Alcohol consumption** | **Per cent in BEACH sample (95% CI) (n = 12,071)** | **Per cent in patient population (95% CI)[a]** | **Per cent in BEACH sample (95% CI) (n = 18,725)** | **Per cent in patient population (95% CI)[a]** | **Per cent in BEACH sample (95% CI) (n = 30,796)** | **Per cent in patient population (95% CI)[a]** |
| At-risk drinker | 31.7 (30.5–32.9) | 35.7 (34.3–37.1) | 22.6 (21.6–23.5) | 24.0 (23.0–25.0) | 26.2 (25.3–27.1) | 29.3 (28.3–30.3) |
| Responsible drinker | 47.6 (46.4–48.8) | 45.0 (43.8–46.3) | 42.6 (41.6–43.7) | 43.4 (42.4–44.5) | 44.6 (43.7–45.5) | 44.2 (43.3–45.1) |
| Non-drinker | 20.7 (19.6–21.8) | 19.3 (18.2–20.4) | 34.8 (33.5–36.1) | 32.6 (31.3–33.9) | 29.3 (28.2–30.3) | 26.5 (25.5–27.5) |

(a)   Estimation of the alcohol consumption of the total adult general practice patient population (that is, patients aged 18 years and over who have attended a GP at least once) *n* = 14 million.

*Note:* CI—confidence interval.

| | 18–24 | 25–44 | 45–64 | 65–74 | 75+ |
|---|---|---|---|---|---|
| Male at-risk | 50.6 | 40.4 | 34.5 | 23.8 | 13.1 |
| Female at-risk | 36.9 | 25.8 | 23.0 | 15.7 | 12.9 |

**Age group (years)**

**Figure 14.7: Age–sex-specific rates of at-risk alcohol consumption**
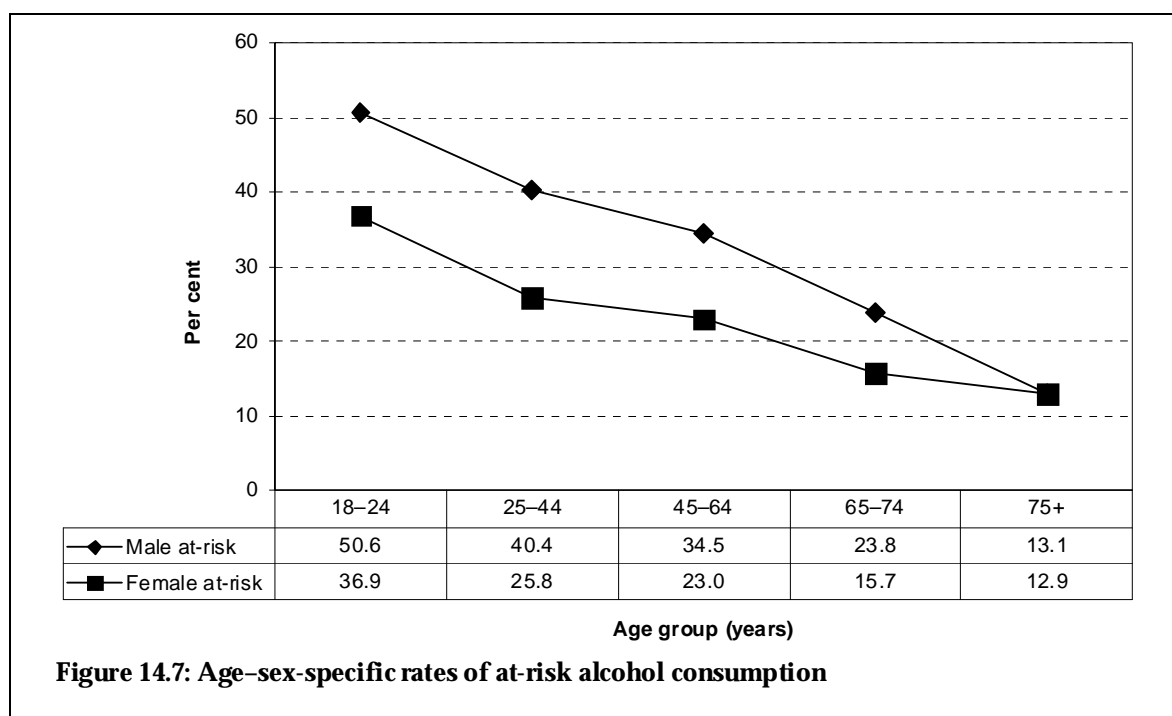
# 14.4  Risk factor profile of adult patients

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 30,002 adult patients (aged 18 years and over) (Table 14.4).

- Half of the adult respondents had one risk factor. The most common was overweight (22.6% of adults) followed by obesity (16.0%).
- One in five patients had two risk factors, the most common combinations being:
  - overweight and at-risk alcohol consumption—7.1% of patients
  - obesity and at-risk alcohol consumption—4.1% of patients
  - daily smoking and at-risk alcohol consumption—3.3% of patients.
- A small group of patients (4.1%) had all three risk factors.

Table 14.5 shows the number of risk factors by patient sex.

- Females were significantly more likely to have no risk factors (29.9%) than males (20.2%).
- One-third of males (31.8%) had two or three risk factors compared with one-fifth (18.7%) of females.

### Estimation of the risk profile of the adult general practice patient population

The BEACH study reports data about patient risk factors from a sample of the attending general practice patients. As older people attend a GP more often than young adults, and females attend more often than males, they have a greater chance of being selected in the subsample. This leads to a greater proportion of older and female patients in the sample

when compared with the total population who attend a GP at least once (about 14 million adults). For the first time in this report we have weighted the BEACH sample to estimate the risk factor profile among the GP–patient population, using the method described by Knox et al. (2008).[3]

The estimates for the GP–patient population (after adjusting for age–sex attendance patterns) show that:

- one-quarter of patients had no risk factors (24.8%)

- almost half of the adult patients had one risk factor (48.2%). The most common was overweight (20.9% of adults) followed by obesity (14.8%)

- one in five patients had two risk factors (21.9%). The most common combinations were overweight and at-risk alcohol consumption (7.7%), followed by obese and at-risk alcohol consumption (4.3%)

- one in twenty patients had three risk factors (Table 14.4).

Table 14.5 shows the estimation of number of risk factors in the total GP–patient population by sex. Male patients in the total patient population were significantly more likely to have two (28.2%) or three risk factors (7.2) and significantly less likely to have none (18.8%) or one risk factor (45.8%) than female patients (16.7%, 3.3%, 29.8% and 50.2%, respectively).

**Table 14.4: Risk factor profile of patients (aged 18 years and over)**

| Number of risk factors | Number | Per cent BEACH sample (95%CI) (n = 30,002) | Per cent in patient population (95% CI)[a] |
|---|---|---|---|
| No risk factors | 7,821 | 26.1 (25.3–26.9) | 24.8 (23.9–25.6) |
| One risk factor | 15,022 | 50.1 (49.4–50.8) | 48.2 (47.5–48.9) |
| Overweight only | 6,779 | 22.6 (22.0–23.2) | 20.9 (20.3–21.6) |
| Obese only | 4,808 | 16.0 (15.4–16.6) | 14.8 (14.2–15.4) |
| At-risk alcohol level only | 2,308 | 7.7 (7.2–8.2) | 8.3 (7.7–8.8) |
| Current daily smoker only | 1,127 | 3.8 (3.5–4.0) | 4.2 (3.9–4.5) |
| Two risk factors | 5,935 | 19.8 (19.1–20.4) | 21.9 (21.2–22.7) |
| Overweight and at-risk alcohol level | 2,131 | 7.1 (6.7–7.5) | 7.7 (7.2–8.1) |
| Obese and at-risk alcohol level | 1,225 | 4.1 (3.8–4.3) | 4.3 (4.1–4.6) |
| Daily smoker and at-risk alcohol level | 982 | 3.3 (3.0–3.5) | 4.0 (3.7–4.3) |
| Overweight and current daily smoker | 931 | 3.1 (2.9–3.4) | 3.5 (3.2–3.8) |
| Obese and current daily smoker | 666 | 2.2 (2.0–2.4) | 2.4 (2.2–2.7) |

*(continued)*

**Table 14.4 (continued): Risk factor profile of patients (aged 18 years and over)**

| Number of risk factors | Number | Per cent BEACH sample (95%CI) (n = 30,002) | Per cent in patient population (95% CI)[a] |
|---|---|---|---|
| **Three risk factors** | **1,224** | **4.1 (3.8–4.4)** | **5.1 (4.7–5.4)** |
| Overweight and current daily smoker and at-risk alcohol level | 775 | 2.6 (2.4–2.8) | 3.3 (3.0–3.5) |
| Obese and current daily smoker and at-risk alcohol level | 449 | 1.5 (1.3–1.7) | 1.8 (1.6–2.0) |

(a)     Estimation of the risk factor profile of the total adult general practice patient population (that is, patients aged 18 years and over who have attended a GP at least once) n = 14 million.

*Note:* CI—confidence interval.

**Table 14.5: Number of risk factors, by patient sex**

| Number of risk factors | Number | Per cent in BEACH sample within sex (95% CI) | Per cent in patient population within sex (95% CI)[a] |
|---|---|---|---|
| **Male patients** | **11,784** | **100.0** | **—** |
| No risk factors | 2,378 | 20.2 (19.2–21.1) | 18.8 (17.8–19.8) |
| One risk factor | 5,657 | 48.0 (47.0–49.0) | 45.8 (44.7–46.9) |
| Two risk factors | 3,051 | 25.9 (24.9–26.9) | 28.2 (27.1–29.3) |
| Three risk factors | 698 | 5.9 (5.4–6.4) | 7.2 (6.6–7.8) |
| **Female patients** | **18,218** | **100.0** | **—** |
| No risk factors | 5,443 | 29.9 (28.9–30.8) | 29.8 (28.8–30.9) |
| One risk factor | 9,365 | 51.4 (50.6–52.3) | 50.2 (49.4–51.1) |
| Two risk factors | 2,884 | 15.8 (15.2–16.5) | 16.7 (16.0–17.4) |
| Three risk factors | 526 | 2.9 (2.6–3.2) | 3.3 (3.0–3.6) |

(a)     Estimation of the risk factor profile of the total adult general practice patient population (that is, patients aged 18 years and over who have attended a GP at least once) n = 14 million.

*Note:* CI—confidence interval.

# 15   SAND abstracts and research tools

Since BEACH began in 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 2.4. All substudies have been approved by the AIHW Ethics Committee (on behalf of the AIHW and the University of Sydney).

The AGPSCC and participating stakeholders of the BEACH program select topics for investigation in each of the SAND studies. In each BEACH year, up to 20 substudies can be conducted in addition to the study of patient risk behaviours (see Chapter 14). Topics are often repeated to increase the size of the sample and its statistical power.

Data from the SAND substudies conducted in the first year of BEACH (1998–99) were published in *Measures of health and health care delivery in general practice in Australia.*[78]

Abstracts of results and research tools for the SAND studies undertaken in 1999–2006 were published in *Patient-based substudies from BEACH: abstracts and research tools 1999–2006* in July 2007.[11] Abstracts and research tools for substudies conducted in 2006–07 that were not included in that report were published in *General practice activity in Australia 2006–07.*[2]

This chapter includes the abstracts and research tools for SAND substudies conducted from April 2007 to January 2008. SAND substudies conducted in February and March 2008 will be reported in *General practice activity in Australia 2008–09* to be published in 2009.

Abstracts of results from all SAND studies are also available from the FMRC's website <www.fmrc.org.au/publications/SAND_abstracts.htm>.

The subjects covered in the abstracts from 2007–08 BEACH year are listed in Table 15.1, with the sample size for each topic.

**Table 15.1: SAND abstracts for 2007–08 and sample size for each**

| Abstract number | Subject | Number of respondents | Number of GPs |
|---|---|---|---|
| 111 | Adverse drug events in general practice patients | 8,602 | 294 |
| 112 | Prevalence and management of chronic pain | 3,131 | 108 |
| 113 | Management of hypertension and hypercholesterolaemia among general practice patients | 3,160 | 112 |
| 114 | Chronic kidney disease among general practice patients | 5,924 | 195 |
| 115 | Type 2 diabetes among general practice patients | 2,784 | 86 |
| 116 | Schizophrenia and bipolar disorder among general practice patients | 3,374 | 116 |
| 117 | Lipid management in patients with high-risk conditions | 8,834 | 301 |
| 118 | Risk factors for osteoporosis among general practice patients | 2,613 | 89 |
| 119 | Management of diabetes among general practice patients | 5,989 | 204 |
| 120 | Management of asthma among general practice patients | 2,987 | 101 |
| 121 | Gastrointestinal symptoms and management among general practice patients | 3,293 | 112 |

# SAND abstract number 111 from the BEACH program 2007–08

## Subject: Adverse drug events in general practice patients

**Organisation supporting this study:** Australian GP Statistics and Classification Centre

**Issues:** The proportion of general practice patients who have experienced an adverse event resulting from the use of a medication during the preceding 6 months. The number, cause and severity of these adverse events, GP confidence in causation and number of resulting hospitalisations.

**Sample:** 8,602 encounters from 294 GPs; data collection period: 16/01/2007 – 19/02/2007; 17/07/2007 – 20/08/2007; 25/09/2007 – 29/10/2007.

**Method:** Detailed in the paper entitled *SAND Method 2007–08* available at <www.fmrc.org.au/publications/SAND_abstracts.htm>.

### Summary of results

The age–sex distribution of respondents was similar to the distribution for all BEACH encounters, with the majority (60.1%) of patients being female.

Of the 8,602 respondents, 801 (9.3%; CI: 8.4–10.3) had experienced an adverse drug event in the previous 6 months. Among male patients, 7.5% (95% CI: 6.4–8.6) reported having an adverse drug event, significantly lower than the 10.5% (95% CI: 9.4–11.7) of female patients. The proportion of patients who reported an adverse drug event increased with age group of patient from 3.3% of infants <1 year to 13.1% of patients aged 75 years or more.

Selective serotonin reuptake inhibitors (SSRIs) were the medication group most frequently reported as the cause of adverse events, but only accounted for 6.1% of the medications, due to the wide variety of medications named. HMG CoA reductase inhibitors (statins) were the second most commonly reported, accounting for 5.0% of the total adverse event medications. Of the 822 medications, the most common individual medications causing adverse events were amoxicillin, which accounted for 3.9%, paracetamol/codeine (3.2%), perindopril (3.0%) and atorvastatin (2.9%).

Of 783 adverse drug events, GPs indicated that in 75% the cause was a recognised side-effect. Drug sensitivity was the reported cause in 9.5%, and allergy in 8.4%. Just 0.8% indicated drug interaction as the cause, and contraindication was recorded in only one case (0.1%).

For 48.1% of patients, the adverse drug events were classed as mild, for 41.3% they were moderate, and for 10.5% they were classed as severe.

Of 764 patients with an adverse drug event for whom this information was known, 35 (4.6%) were hospitalised due to the event. Of 369 patients with a mild event, two (0.5%) were hospitalised, of 317 patients with a moderate event, 9 (2.8%) were hospitalised, and of the 77 patients with a severe event, 24 (31.2%) were hospitalised.

Information regarding GP confidence in causality was available for 781 of the 801 patients with an adverse event. On a scale of 1 to 6 (1=not confident to 6=completely confident) the median level of confidence was 5. For almost 40% of events, the level was 'completely confident'.

*The following page contains the recording form and instructions with which the data in this abstract were collected.*

## PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **ADVERSE PHARMACOLOGICAL EVENTS.**

*You may tear out this page as a guide to completing the following section of forms.*

<u>INSTRUCTIONS</u>

**These questions are about measuring the level of impact of medication events in the community. You will need to ask the patient for information when answering the following questions as you may not know if an adverse event occurred e.g. if the patient did not inform you of side effects they experienced or if the medication in question was prescribed / advised / supplied by another doctor / health professional in any setting (e.g. hospital inpatient, outpatient, primary care etc).**

If you are interested in our previous work on this topic, please see Miller GC, Britt HC, Valenti L. Adverse drug events in general practice patients in Australia. Med J Aust 2006 Apr; 184(7):321-4.

### ASK THE PATIENT

Please ask the patient if they have **experienced an adverse event from the use of any medication** in the **past six months**.

An adverse event is an unintended event which could have harmed or did harm the patient. 'Harm' includes physical, psychological or emotional suffering.

If **no** adverse events were experienced, **end the questions here**.

### Severity of the event

Please indicate the **severity of the event** in terms of harm to the patient (in your clinical opinion).

**Mild** - a reaction of limited duration not requiring further treatment; minimum impact on daily activities.

**Moderate** - a reaction of longer duration or which requires further treatment; limits daily activities.

**Severe** - a reaction of any duration which results in hospitilisation and/or long term limitation of daily activities.

### Confidence of causality

Please indicate **how confident you are that the drug(s) listed caused the adverse event**.

Please **circle a number** on the scale to indicate your level of confidence that the drug(s) you nominated **caused the event**, where **1 = not confident**, and **6 = completely confident**.

*(Scale adapted from Weingart SN et al. Arc Intern Med. 2005;*

### Medication involved in the event

Please **list the drug** (**or drugs** in the case of interactions) **that you suspect were the cause of the most recent adverse event**.

The drug(s) may be listed using the **generic** or **brand** name.

### Cause of event

From the patient's description or your knowledge of the most recent adverse event, what do you think was the **most likely cause**?

Please tick as many options as apply.

### Hospitalisation

As a result of this adverse event, was the patient **hospitalised**?

| In the past six months has this patient experienced an adverse event in response to use of a medication:<br><br>☐ Yes<br><br>☐ No → **End questions**<br><br>BL96C | Please list the drug(s) you suspect caused the most recent event:<br><br>_____<br><br>_____<br><br>_____ | The most recent event was most likely the result of:<br>*(tick all that apply)*<br><br>1☐ Recognised side effect  5☐ Drug sensitivity<br><br>2☐ Drug interaction  6☐ Overdose<br><br>3☐ Contraindication  7☐ Don't know<br><br>4☐ Allergy  8☐ Other | Was the event -<br><br>☐ Mild<br><br>☐ Moderate<br><br>☐ Severe<br><br>☐ Don't know | Was the patient hospitalised due to this event?<br><br>☐ Yes<br><br>☐ No | How confident are you that this / these drug(s) caused the event?<br><br>1  2  3  4  5  6<br>Not confident  *(Please circle a number to indicate your level of confidence)\**  Completely confident |

# SAND abstract number 112 from the BEACH program 2007–08

## Subject: Prevalence and management of chronic pain

**Organisation supporting this study:** Janssen-Cilag Pty Ltd

**Issues:** The prevalence of chronic pain in patients attending general practice; causal conditions of the chronic pain: cancer, osteoarthritis, other arthritis, back problems, other conditions; the severity of pain; current methods for chronic pain management for these patients; reasons for non-use of opioids when opioids were not used.

**Sample:** 3,131 respondents from 108 GPs; data collection period: 27/03/07 – 30/04/07 and 21/08/07 – 24/09/07.

**Method:** Detailed in the paper entitled *SAND Method: 2007–08* available at <www.fmrc.org.au/publications/SAND_abstracts.htm>. Chronic pain grades were defined according to Von Korff M, Ormel J et al. *Pain* 1992; 50(2):133–149. Pain was graded from Grade I (low disability/low intensity) to Grade IV (high disability/high intensity).

### Summary of results

The age–sex distribution of the sample reflected that of all BEACH participants. Of the 3,131 respondents, 548 (17.5%; 95% CI: 15.0–20.0) reported having chronic pain. The prevalence of chronic pain increased significantly with patient age (p<0.0001). Sex-specific rates showed no significant difference between males and females in the prevalence of chronic pain.

Of the 548 patient with chronic pain, 543 advised causal condition (multiple responses were allowed). Of these, 84.9% ($n$=461) reported one causal condition only, 13.4% ($n$=73) reported two and 1.7% ($n$=9) reported three conditions. Nearly half (49.7%; $n$=270) of patients with chronic pain indicated osteoarthritis as a cause, 30.4% ($n$=165) indicated back problems, 7.9% ($n$=43) other arthritis, 3.1% ($n$=17) cancer, and a further 25.6% ($n$=139) indicated 'other conditions' as a cause of their chronic pain. Of the 118 known 'other conditions' 49.2% were musculoskeletal in nature.

Of the 548 patients with chronic pain, 529 provided responses about severity of pain. Of these, 30.6% were at Grade I, 37.2% at Grade II, 25.5% at Grade III, and 6.6% at Grade IV. There was no significant difference in the average pain grading (Grade II) across causal conditions, although 11.8% of patients with back problems were at Grade IV compared with 5.0% of patients with osteoarthritis, and 2.4% of patients with other arthritis. Grade IV pain was also reported in 9.7% of patients with other conditions, and 2 of the 17 patient with cancer (11.8%).

Management method responses were provided for 538 of the 548 patients with chronic pain. The majority (79.2%; $n$=426) used medication only, while 11.7% ($n$=63) used medication and other methods, 2.6% ($n$=14) used other methods only (for example, physiotherapy, exercise, massage), and 6.5% ($n$=35) were using neither medication nor other methods. The most commonly used medications were 'other analgesics' (42.0%; $n$=226). NSAIDs/COX-IIs were taken by 29.6% ($n$=159) of patients, weaker opioids (e.g. tramadol, codeine preparations) by 28.6% ($n$=154), and antidepressants by 8.9% (n=48) of patients. The most common reasons for not taking opioids were that they were not needed (46%; $n$=134), side effects (14.8%; $n$=43), patient choice (12.1%; $n$=35), and concerns about dependence (5.0%; $n$=15).

*The following page contains the recording form and instructions with which the data in this abstract were collected.*

## PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **CHRONIC PAIN**.
*You may tear out this page as a guide to completing the following section of forms.*

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### INSTRUCTIONS

Ask **ALL** of the **next 30 PATIENTS** the following questions **in the order in which the patients are seen.**

Please **DO NOT** select patients to suit the topic being investigated.

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### Chronic Pain

Please indicate by ticking the appropriate box whether this patient suffers from **chronic pain** *(defined\* as 'pain experienced every day for three months in the six months prior to this consultation').*

If **no** chronic pain has been experienced you should **end the questions** here.

\*Blythe FM et al. 2001. Pain 89(2-3):127-134

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### Causal conditions

Please advise the **condition** you identify as being the **cause** of the patient's chronic pain.

Tick as many as apply.

---

### Severity

Ask the patient to rank the severity of their pain according to the Chronic Pain Grades\*\*:

I = low disability - low intensity;

II = low disabiity - high intensity;

III = high disability - moderately limiting;

IV = high disability - severely limiting.

\*\*Von Korff M et al. 1992. Pain 50(2):133-149

> (this Chronic Pain Grade list is also on the laminated card in your research kit)

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### Medication for pain management

Please use the tick boxes to indicate whether the patient is **currently taking** any of the **nominated medications for pain management.** Tick as many as apply.

Below the box labelled **'other medication'** please write in **other medication/s** (not listed) that the patient is taking for pain management.

If **no medication** is taken, please tick the box labelled **'no med'n'**.

Beside the box labelled **'Other mgmt'** please advise what **other managements** are being used for **pain control** (e.g. acupuncture, physiotherapy etc), either **instead of** (for patients taking no medication) or **in conjunction with**, pain medication.

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### Choice of medication

(Where medication was **initiated by you**) If the patient is **not taking an opioid**, please advise the **main reasons** for choosing a non-opioid medication over opioids.

If the medication was initiated by another GP or a specialist please tick the box labelled **'N/A - initiated by other'**.

---

| Does this patient suffer from chronic pain? | If 'yes' from what condition? | In the past week how severe was the pain? | Current medications for pain management are: | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ☐ Yes → | ☐ Cancer | | **Medication** *(tick all that apply)* | **initiated by** | **duration of use** | ☐ other analgesics | Gp/Spec | ____ mths/yrs | If opioids are not used, the main reasons for non-use are? |
| | ☐ Osteoarthritis | ☐ Grade I | ☐ transdermal fentanyl | Gp/Spec | ____ mths/yrs | ☐ psychotropics | GP/Spec | ____ mths/yrs | |
| ☐ No → End questions here | ☐ Other arthritis | ☐ Grade II | ☐ oral slow-release morphine | GP/Spec | ____ mths/yrs | ☐ anti-depressants | GP/Spec | ____ mths/yrs | 1._____ |
| | ☐ Back problem | ☐ Grade III | ☐ oral slow-release oxycodone | GP/Spec | ____ mths/yrs | ☐ anti-epileptics | GP/Spec | ____ mths/yrs | 2._____ |
| | ☐ Other cond'n | ☐ Grade IIV | ☐ transdermal buprenorphine | GP/Spec | ____ mths/yrs | ☐ other medication | GP/Spec | ____ mths/yrs | |
| | | (Pain grades on card or green sheet) | ☐ NSAIDS / Cox-IIs | GP/Spec | ____ mths/yrs | *(please specify other med'n)* | | | 3._____ |
| BL91B | *(please specify)* | | ☐ weaker opioids | GP/Spec | ____ mths/yrs | ☐ NO medication | | | ☐ N/A - initiated by other. |
| | | | *(eg tramadol: codeine prep'ns)* | *(please circle)* | *(please circle)* | ☐ Other mgmt 1._____ 2._____ | | | |

# SAND abstract number 113 from the BEACH program 2007–08

## Subject: Management of hypertension and hypercholesterolaemia among general practice patients

**Organisations supporting this study:** AstraZeneca Pty Ltd (Australia)

**Issues:** The prevalence of diagnosed hypertension (HT) and/or hypercholesterolaemia in general practice patients; the proportion of these patients who also have diagnosed chronic heart failure (CHF), microalbuminuria, diabetes type 2, left ventricular hypertrophy (LVH); the medications taken for the management of HT and/or hypercholesterolaemia, and the proportion that are taking no medication for either condition, or are managing their HT/hypercholesterolaemia with diet and exercise only; the proportion for whom a change to medication regimen was made at that encounter, and the reasons for change.

**Sample:** 3,160 respondents from 112 GPs; data collection period: 27/03/2007 – 30/04/2007 and 21/08/2007 – 24/09/2007.

**Method:** Detailed in the paper entitled *SAND Method 2007–08* available at <www.fmrc.org.au/publications/SAND_abstracts.htm>.

## Summary of results

The age–sex distribution of the respondents was similar to the distribution for all BEACH encounters, with the majority of patients (59.3%) being female.

Of the 3,160 patients, 873 (27.6%, 95% CI: 24.6–30.7) had HT and 690 (21.8%, 95% CI: 19.5–24.2) had hypercholesterolaemia. Three and a half per cent of patients with HT and 5.6% of those with hypercholesterolaemia had been diagnosed at today's encounter. There were 1,115 patients (35.3%) who had HT and/or hypercholesterolaemia. Of the 3,160 patients, 13.5% had HT only, 7.7% had hypercholesterolaemia only, 14.2% had both conditions and 64.7% had neither condition. Of the 1,115 patients with HT and/or hypercholesterolaemia, 5.7% had CHF, 4.0% had microalbuminuria, 16.2% had type 2 diabetes mellitus, and 4.0% had LVH.

Of the 1,115 respondents, 1,110 provided information about current treatment, of whom 86.1% were currently taking at least one HT/hypercholesterolaemia medication and 13.9% were not currently taking medication. Of the 1,189 medications taken by 794 patients for the management of HT, perindopril was the most commonly prescribed medication (10.0% of HT medications). Of the 539 medications taken by 518 patients for the management of hypercholesterolaemia, atorvastatin was the most commonly prescribed medication (45.3% of hypercholesterolaemia medications). There were 154 (13.9%) patients who were not taking a medication for either condition.

One in twelve patients (8.7%) were managed with diet/exercise alone, 85.7% (*n*=951) were managed with medication alone, and 57 patients (5.1%) were not being managed with either medication or diet/exercise. A change in the medication regimen was made at today's encounter for 126 patients (11.4%). No change was made for 984 patients (88.7%). The reason for change was indicated for 113 patients, with lack of BP control being the main reason (52.2%).

*The following page contains the recording form and instructions with which the data in this abstract were collected.*

# PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **HYPERTENSION and CHOLESTEROL MANAGEMENT.**

*You may tear out this page as a guide to completing the following section of forms.*

## INSTRUCTIONS

Ask **ALL** of the **next 30 PATIENTS** the following questions **in the order in which the patients are seen.**

Please **DO NOT** select patients to suit the topic being investigated.

### Reason/s for regimen changes

Please use the tick boxes to advise the **main reason/s** for altering the patient's hypertension or cholesterol management medication regimen. *Tick as many as apply.*

Please **specify** a reason **not listed** by writing this reason in the space below the box labelled '**other reason**'.

### Patient conditions

Please use the tick boxes to indicate whether this patient has **hypertension** or **hyper-cholesterolaemia**, and whether the condition was **diagnosed at a previous encounter** (previous) or is a **new diagnosis** (new) resulting from **today's** visit.

If the patient **does not have hypertension** or **hyper-cholesterolaemia**, you should **end the questions** here. If the patient has either **hypertension** or **hyper-cholesterolaemia**, please advise whether or not they also have any of the other listed conditions. *Tick as many as apply.*

### Current hypertension or high cholesterol therapy

*Note: - for patients with hypertension or hypercholesterolaemia only*

Please write the **name and regimen** for medications **currently taken** (i.e. prior to today's visit) for the management of **hypertension** or **hypercholesterolaemia**. Please use the **tick boxes** on the right hand column to indicate whether **each medication** is for hypertension (**HT**) or cholesterol (**Chol**) management.

If **no medications** for **hypertension** or **high cholesterol** were taken prior to today's encounter, please tick the box labelled '**No current HT/Chol medication**'.

If **cholesterol** is managed with **diet and exercise only**, please tick the box labelled '**Diet/exercise only**'.

### Changes to medication

Please advise whether the patient's medication regimen for either condition **will change as a result of today's visit**.

If the medication/s or regimen for either hypertension or high cholesterol **will stop or change**, please **continue** with the questions.

If a medication is to be **stopped**, please **circle a number** to indicate which medication/s (from those listed in Q.2) will cease. **Change** to medication/s or regimen includes: **adding another** medication to those currently being taken; **changing** a medication **for a different one**; changing the **dosage** of a current medication, either by an **increase** or **decrease**.

If the medication/s and regimen for both will **remain unchanged** you should **END the questions here**.

### New medication regimen

If changes were made to the regimen for **hypertension** or **cholesterol** medication please **write the new medication or regimen** in the space provided (i.e the medication to be added / changed to / dose changed). Only include the **additions/changes made today**.

Please use the tick boxes to advise whether the **new / changed** medication is for hypertension (**HT**) or cholesterol (**Chol**) management.

If high cholesterol will continue to be managed with diet and/or exercise only, please tick the box labelled 'Diet/exercise only'.

---

| Does this patient have any of these conditions? | Diagnosis - previous | new |
|---|---|---|
| Hypertension (HT) ............... | ☐ | ☐ |
| Hypercholesterolaemia ......... | ☐ | ☐ |
| ☐ Neither of the above → **End here** | | |
| Chronic heart failure ............ | ☐ | ☐ |
| Microalbuminuria ................. | ☐ | ☐ |
| Diabetes T2 ......................... | ☐ | ☐ |
| L. Ventricular hypertrophy..... | ☐ | ☐ |

**HT or high cholesterol therapy (prior to this visit):** (for)

| | Name | strength | dose | freq | HT | Chol |
|---|---|---|---|---|---|---|
| 1. | | | | | ☐ | ☐ |
| 2. | | | | | ☐ | ☐ |
| 3. | | | | | ☐ | ☐ |
| 4. | | | | | ☐ | ☐ |
| 5. | | | | | ☐ | ☐ |

☐ No current HT/Chol medication   ☐ Diet /exercise only

**From today's visit, the patient's regimen changed as follows:**

☐ stopped medication
← 1  2  3  4  5 *(please circle)*

☐ add/change med'n
   or regimen → *continue*

☐ NO CHANGE → **End**

**The main reason/s for altering regimen is:**

☐ Cough
☐ Lack of BP control
☐ Lack of lipid control
☐ Other side effects
☐ other reason

*(please specify)*

**Medication added / changed to / dose changed:** (for)

| | Name | strength | dose | freq | HT | Chol |
|---|---|---|---|---|---|---|
| 1. | | | | | ☐ | ☐ |
| 2. | | | | | ☐ | ☐ |
| 3. | | | | | ☐ | ☐ |
| 4. | | | | | ☐ | ☐ |
| 5. | | | | | ☐ | ☐ |

☐ Diet /exercise only

BL91C

# SAND abstract number 114 from the BEACH program 2007–08

## Subject: Chronic kidney disease among general practice patients

**Organisation supporting this study:** Abbott Australasia Pty Ltd

**Issues:** The proportion of patients attending general practice who have undergone a kidney function test in the previous 12 months; prevalence of chronic kidney disease among patients attending general practice; the stage of kidney disease for these patients; the comorbidities and risk factors of patients with chronic kidney disease; the management of chronic kidney disease for patients attending general practice.

**Sample:** 5,924 respondents from 195 GPs; data collection period: 01/05/2007 – 04/06/2007 and 25/09/2007 – 29/10/2007.

**Method:** Detailed in the paper entitled *SAND Method 2007–08* available at <www.fmrc.org.au/publications/SAND_abstracts.htm>. Stages of disease were defined according to National Kidney Foundation Guidelines.

## Summary of results

The age–sex distribution of the sample reflected that of all BEACH participants. Of the 5,924 respondents, 2,960 (50.0%, 95% CI: 46.2–55.1) had had a kidney function test in the previous 12 months, 31.5% (*n*=1,867) a glomerular function test, 45.6% (*n*=2,699) a serum creatinine test, and 3.7% (*n*=219) another kidney function test. Age-specific test rates showed that the likelihood of being tested increased significantly with patient age, with 85.4% of patients aged 75 years and over having been tested. Sex-specific rates showed no significant difference between males and females in the proportion tested.

Of the 5,729 patients for whom a response was recorded, 332 (5.8%, 95% CI: 4.8–6.8) had been diagnosed with chronic renal failure/chronic kidney disease (CRF/CKD). Of the 332, 73.8% had been diagnosed by a GP and 26.2% by a specialist. While there was no difference in the diagnosed prevalence between males and females, the age-specific rate showed that 24.1% (95% CI: 20.5–27.7) of patients aged 75 years and over had diagnosed CRF/CKD.

Of the 322 diagnosed patients with a response about comorbidities, 75.8% had hypertension, 46.3% had dyslipidaemia, 34.2% had diabetes, 21.1% had proteinurea, 10.9% had anaemia and 1.6% had hyperparathyroidism. Of patients with CRF/CKD 6.8% were current smokers, and 9.3% had none of the listed conditions. Stage of disease was provided for 328 of the 332 diagnosed patients. The majority (55.8%) were at Stage 3. For patients aged 75 years and over 63.8% were at Stage 3, while only 1.1% of patients in this age group were at Stage 1 of the disease.

Management method responses were provided for 326 (98.2%) CRF/CKD patients. Half (51.1%) were being managed by a GP only, more that one-third (38.7%) by a GP and specialist, and 10.2% by a specialist only. Of the 222 respondents to questions about the type of management, 67.1% (*n*=149) were managed by diet; 14.4% (*n*=32) by Vitamin D supplements; and 56.3% (*n*=125) were managed with other methods, most commonly the management of risk factors and other diseases including: cardiovascular problems, diabetes, dyslipidaemia or anaemia. Less frequent managements were haemopoetic agents, dialysis, advice about fluids, and avoidance of non-steroidal anti-inflammatory drugs.

*The following page contains the recording form and instructions with which the data in this abstract were collected.*

# PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **CHRONIC RENAL FAILURE or CHRONIC KIDNEY DISEASE.**
*You may tear out this page as a guide to completing the following section of forms.*

## INSTRUCTIONS

Ask **ALL** of the **next 30 PATIENTS** the following questions **in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated.

## Assessment of renal function

Please use the tick boxes to advise whether this patient has had their **kidney function** tested in the past 12 months, and with **what test/s**. Please tick as many as apply.

## Risk factors and comorbidities

Please advise whether the patient **also has** any of the **listed risk factors** or **conditions**. Tick as many as apply.

If the patient has **none** of the listed risk factors or conditions please tick the box labelled '**none of the above**'.

## Perception of management

We are trying to **gauge whether** the CRF / CKD is being **actively managed in its own right**, rather than as a consideration in the management of other conditions.

Please advise whether the CRF / CKD is being managed by a **GP only**, by a **specialist only**, or by a **GP in conjunction with a specialist**.

If '**yes**' please **continue** to the final question.

If the CRF / CKD is **not** being actively managed, please **end the questions here**.

## Diagnosis

Please advise whether the patient has been **diagnosed** with **Chronic Renal Failure (CRF)** or **Chronic Kidney Disease (CKD)**, either today or prior to today's consultation. Also advise whether the diagnosis was made **by you or another GP**, or **by a specialist**.

If the patient has never been diagnosed with CRF or CKD **please end the questions here**.

## Stage of disease*

If the patient has been diagnosed with CRF or CKD, please advise what **stage of the disease** currently applies to this patient.

If you **do not know** (e.g if test results are not available) please tick the box labelled 'don't know'.

*Stages classified as per National Kidney Foundation Guidelines Part 4 - 'Definition and Stages of Chronic Kidney Disease'.

## Management of CRF / CKD

If 'yes' please advise **how** the patient's CRF / CKD is being managed. Please tick all options that apply

| In the past 12 months has this patient had their kidney function assessed? *(tick all that apply)* | Has the patient been diagnosed with Chronic Renal Failure (CRF) or Chronic Kidney Disease (CKD), today or prior to this encounter? | If 'yes' does the patient have: *(tick all that apply)* | At what stage* of CRF or CKD is the patient? | Is this patient's CRF or CKD being actively managed in its own right? | If Yes, how is the patient's CRF / CKD being managed? *(tick all that apply)* |
|---|---|---|---|---|---|
| ☐ Yes - glomerular filtration test | | ☐ Diabetes | ☐ Stage 1 - GFR >= 90 ml/min | | ☐ Diet |
| ☐ Yes - serum creatinine test | | ☐ Hypertension | ☐ Stage 2 - GFR 60 - 89 ml/min | ☐ Yes - by GP only | ☐ Vit D supplement |
| ☐ Yes - other _____ *(please specify)* | ☐ Yes - by you or another GP | ☐ Proteinuria | ☐ Stage 3 - GFR 30 - 59 ml/min | ☐ Yes - by GP + Specialist | ☐ Other |
| ☐ No | ☐ Yes - by a specialist | ☐ Dyslipidaemia | ☐ Stage 4 - GFR 15 - 29 ml/min | ☐ Yes - by Specialist only | |
| ☐ Don't know     **Please continue →** | ☐ No → end questions here | ☐ Hyperparathyroidism | ☐ Stage 5 - GFR <15 ml/min + dialysis | ☐ No → end questions | _____ *(please specify)* |
| | | ☐ Anaemia | ☐ Don't know | | |
| | | ☐ Current smoker | | | |
| | | ☐ None of the above | | | BL92B |

# SAND abstract number. 115 from the BEACH program 2007–08

## Subject: Type 2 diabetes among general practice patients

**Organisations supporting this study:** National Prescribing Service Ltd

**Issues:** The prevalence of Type 2 diabetes among patients attending general practice, their most recent HbA1c level and the duration since their last test; their current blood pressure level; the proportion of these patients currently taking aspirin and/or clopidogrel, an ACE inhibitor; the proportion who also have ischaemic heart disease (IHD), cerebrovascular disease (CVD), peripheral vascular disease (PVD), microalbuminuria/proteinuria.

**Sample:** 2,784 respondents from 86 GPs; data collection period: 01/05/2007 – 04/06/2007.

**Method:** Detailed in the paper entitled *SAND Method 2007–08* available at <www.fmrc.org.au/publications/SAND_abstracts.htm>.

### Summary of results

Of the 2,784 respondents, 215 (7.7%, 95% CI: 6.6–8.9) had Type 2 diabetes. Prevalence increased steadily by patient age from 0.4% of patients aged under 24 years to 18.8% of those aged 65–74 years. It then decreased slightly (though not significantly) to 15.3% among patients aged 75 years and over. Where patient sex was provided ($n$=2,758), prevalence was estimated as 8.9% (95% CI: 7.1–10.8) among males and 6.8% (95% CI: 5.6–8.1) among females, these results were not significantly different.

Of 192 patients with Type 2 diabetes for whom HbA1c levels were recorded, over half (54.7%) had an optimal HbA1c level of <= 7.0% ($n$=105), with the remaining 45.3% ($n$=87) having levels considered high (> 7.0%). Of the patients who had a HbA1c level > 7.0%, one-third had a HbA1c level greater than 8.0%.

The time since the last HbA1c was provided for 169 patients, 146 (86.4%) of whom had been tested in the previous 6 months and 18 (10.7%) in the previous 7–12 months, with 5 patients (3.0%) having not had a HbA1c test for more than 12 months.

Blood pressure (BP) was recorded for 192 of the 215 patients with Type 2 diabetes. Two-fifths (40.6%) of these had BP defined as high-normal according to the National Heart Foundation classification, 16.7% had normal BP, 34.4% had isolated systolic hypertension and 8.3% had high BP.

Of 205 respondents with Type 2 diabetes who provided medication information, half (48.3%) were taking aspirin only (39.0% prescribed; 9.3% OTC), and 5.9% were taking clopidogrel only. There were four patients (2.0%) who were taking both prescribed aspirin and clopidogrel. Overall, 56.1% of patients were taking aspirin, clopidogrel or both medications.

Two-thirds ($n$=136) of patients for whom ACE inhibitor status was provided ($n$=206) were taking an ACE inhibitor medication. Eighty-one patients (39.7%) were taking an ACE inhibitor with aspirin or clopidogrel, and 53 patients were taking the ACE inhibitor alone.

Almost half (47.6%) of 206 respondents with Type 2 diabetes also had at least one of the four listed cardiovascular related conditions/symptoms (IHD 33.5%, CVD 9.2%, PVD 15.1% and microalbuminuria/proteinuria 18.9%).

*The following page contains the recording form and instructions with which the data in this abstract were collected.*

**INSTRUCTIONS**

Ask **ALL** of the **next 30 PATIENTS** the following questions **in the order in which the patients are seen.**

Please **DO NOT** select patients to suit the topic being investigated.

---

**Patient's HbA1C level**

From the results of their **most recent test**, please write the patient's **HbA1C level** in the space provided.

**Patient's blood pressure**

Please **check** the patient's **blood pressure** and write the result in the space provided.

**Patient ACE inhibitor use**

Please advise whether the patient is currently taking an **ACE inhibitor.**

**Type 2 diabetes**

Please advise whether this patient has Type 2 diabetes, diagnosed either today or at a previous encounter.

If '**No**' you should **end the questions here** for this patient.

**Time since last HbA1C test**

Please advise the approximate **time since the patient's most recent HbA1C test**, and **circle an option** to indicate whether the time is in weeks or months
e.g. _____4_____
**wks/mths ago.**
*(Please circle)*

**Patient aspirin use**

Please advise whether the patient is currently taking **aspirin** (either prescribed or advised for over-the-counter purchase by you or another clinician), or **clopidogrel** prescribed by you or by another clinician. If the patient is **not taking** either of these medications please tick the box labelled '**none of the above**'.

**Patient cardiovascular history and risk factors**

Please use the tick boxes to advise whether the patient has any of the listed conditions.

If the patient does **not** have any of these conditions please tick the box labelled '**none of the above**'.

---

| Does this patient have Type 2 Diabetes? | If 'Yes' what was their most recent HbA1C level? | The patient's most recent HbA1C test was approximately | The patient's blood pressure level today is: | Is the patient currently taking: | Is the patient currently taking an ACE inhibitor? | Does the patient have: *(tick all that apply)* |
|---|---|---|---|---|---|---|
| ☐ Yes | | | | ☐ Aspirin (prescribed)? | ☐ Yes | ☐ Ischaemic heart disease? |
| ☐ No → **end questions** | _____ % | _____ **wks/mths ago.** *(please circle)* | ____/____ **mmHg** | ☐ Aspirin (OTC)? | ☐ No | ☐ Cerebrovascular disease? |
| | | | | ☐ Clopidogrel? | | ☐ Peripheral vascular disease? |
| | | | | ☐ None of the above | | ☐ Microalbuminuria/proteinuria? |
| | | | | | | ☐ None of the above |

BL92C

# SAND abstract number 116 from the BEACH program 2007–08

## Subject: Schizophrenia and bipolar disorder among general practice patients

**Organisations supporting this study:** Janssen-Cilag Pty Ltd

**Issues:** The proportion of patients attending general practice who had a history of schizophrenia or bipolar disorder; the management plans these patients were on (shared care plan with a community mental health centre (CMHC), private psychiatrist, treatment order or a discharge plan from hospital or CMHC); number of GP visits by these patients in the previous 3 months; management of general health risk factors in these patients.

**Sample:** 3,374 respondents from 116 GPs; data collection period: 5/06/2007 – 16/07/2007 and 30/10/2007 – 31/11/2007.

**Method:** Detailed in the paper entitled *SAND Method 2007–08* available at <www.fmrc.org.au/publications/SAND_abstracts.htm>.

## Summary of results

Patient sex was provided at 3,353 encounters, with 60.7% (95% CI: 57.9–63.6) being female patients, which is slightly higher than the proportion in the BEACH 2006–07 data (56.3 95% CI: 55.5–57.1). Patient age was provided at 3,349 encounters. The age distribution of patients was similar to that reported for all 2006–07 BEACH encounters.

Of the 3,374 respondents, 50 had a history of schizophrenia (schizophrenia/schizoaffective/ schizophreniform/paranoid psychosis) (1.5%, 95% CI: 1.0–1.9), and 36 had a history of bipolar disorder (1.1%, 95% CI: 0.6–1.5), with no differences in age- and sex-specific rates.

Of the 48 patients with schizophrenia who responded, 20 (41.7%) were being managed as part of a shared care program with a CMHC; 11 (22.9%) with a management plan with a private psychiatrist, and over one-third with none of the listed plans. Of the 32 patients with bipolar who responded, nearly half ($n$=15, 47%) were using none of the listed plans, one-third ($n$=11, 34%) had a management plan with a private psychiatrist, and 5 (16%) had a shared care plan with a CMHC.

Of the 46 patients with schizophrenia who responded, the median number of visits to a GP in the previous 3 months was 5.0, and for the 40 who responded, the median number of visits where schizophrenia was managed was 3.0. Of the 34 bipolar patients who responded, the median number of visits was 2.5, and for the 31 who responded the median number of treatment visits was 1.0. Nearly half of the bipolar patients ($n$=14, 45%) did not have their bipolar treated in the previous 3 months.

Of the 49 schizophrenia patients who responded, 27 (55%) had their cardiovascular risks/ hypertension checked or managed; 25 (51%) had obesity/high BMI checked or managed; and 24 (49%) had diabetes/high blood glucose checked or managed, either at the current encounter or in the previous 3 months. Of the 33 bipolar patients who responded, 23 (70%) had their cardiovascular risks/hypertension checked or managed; 12 (36%) had obesity/ high BMI checked or managed; and over half had diabetes/high blood glucose checked or managed ($n$=20, 61%), either at the current encounter or in the previous 3 months.

*The following page contains the recording form and instructions with which the data in this abstract were collected.*

## PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **SCHIZOPHRENIA and BIPOLAR DISORDER.**

*You may tear out this page as a guide to completing the following section of forms.*

---

### INSTRUCTIONS

This question applies to the following section on Schizophrenia and Bipolar disorder, but as it relates to your practice rather than individual patients we will **only ask it once.**

**PLEASE ANSWER THIS QUESTION HERE and then continue with the remaining questions for the next 30 patients.**

---

**Please note:** In each category we are asking for the **number of nurses** and **how many days** (or part days) **per week** they work so that we can calculate the **full-time equivalents** for these.

**Available support**

In managing patients with **mental health problems**, do you have **support** in your practice from **any** of the following sources?

If **none** are available, please tick the box labelled 'none of the above'.

---

**Do you have support in your practice from:**     *(tick all that apply)*

☐ Mental health nurse (employed by the practice) _____ nurse/s _____ days/wk

☐ Mental health nurse (employed by the area health service) _____ nurse/s _____ days/wk

☐ Practice nurse _____ nurse/s _____ days/wk

☐ GP Shared care liaison/coordinator

☐ None of the above

BL93B

# PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **SCHIZOPHRENIA and BIPOLAR DISORDER**.

*You may tear out this page as a guide to completing the following section of forms.*

## INSTRUCTIONS

Ask **ALL** of the **next 30 PATIENTS** the following questions **in the order in which the patients are seen.**

Please **DO NOT** select patients to suit the topic being investigated.

## Schizophrenia / Bipolar disorders

Please use the tick boxes to advise whether this patient has a history of any of the listed Schizophrenia / Bipolar disorder conditions.

If the patient does not have a history of any of these conditions **please end the questions here**.

## Frequency of management

Please write in the spaces provided the approximate **number of times** the patient has visited a GP for any reason in the past 3 months. Use patient recall, your notes or knowledge, to give the best estimate. Please also write the approximate number of GP visits at which their **schizophrenia / bipolar disorder** was **managed** during that time. (Please include **today's** consultation in the total.) If you **do not know** the number for either, please tick the box labelled '**don't know**'.

## Patient's social circumstances

Please use the tick boxes to advise the patient's **living situation**.

If the patient is aged between 14yrs 9 mths and 65 yrs, please use the tick boxes to advise what level of **employment** they are **capable of undertaking**.

Is the patient on a **disability pension**?

## Health screening

Please use the tick boxes to advise whether the patient was **checked / managed** either at **today's visit**, **in the 3 months prior to today's visit**, or **both** (if both, tick both boxes), for any of the listed **conditions or risk factors**. Tick as many as apply.

If the patient was **not checked / managed** for any of these conditions or risk factors, either **today** or **in the 3 months prior to today's visit**, please tick the boxes labelled '**none of the above**'.

If you **do not know** whether any of these conditions were **checked / managed** in the past 3 months, please tick the box labelled '**don't know**'.

## Management plan

If the patient has a history of any of the previously listed **schizophrenia / bipolar conditions**, please advise whether their condition is **being managed** via any of the methods below.

(CMHC = Community Mental Health Centre)

---

| Does this patient have a history of: | Is the patient being managed as part of: *(tick all that apply)* | Approx. how many times has this patient visited a GP in the past 3 months? | Was the patient checked/managed for: *(tick all that apply)* | Today | In past 3 mths | Don't know | Patient's social factors |
|---|---|---|---|---|---|---|---|
| ☐ Schizophrenia | ☐ Shared care program with CMHC | | Cardiovascular risk/hypertension............. ☐ | ☐ | ☐ | | **Living situation** ☐ hostel/supported ☐ alone ☐ with family/shared |
| ☐ Schizoaffective disorder / Schizophreniform / paranoid psychosis | ☐ Management plan with private psychiatrist | No. ____  ☐ Don't know | Obesity / ↑ BMI ................................. ☐ | ☐ | ☐ | | |
| ☐ Bipolar disorder manic | ☐ Discharge plan from hospital | **At approx. how many of these was the schizophrenia / bipolar disorder managed?** | Diabetes / ↑ blood glucose ...................... ☐ | ☐ | ☐ | | **Employment capability** ☐ full time ☐ part time ☐ sheltered work ☐ none of above |
| ☐ Bipolar disorder depressive | ☐ Discharge plan from CMHC | | Women's / men's health screen............... ☐ | ☐ | ☐ | | |
| ☐ Bipolar disorder mixed | ☐ Community / involuntary treatment order | | Alcohol abuse ☐ | ☐ | ☐ | | |
| ☐ None of the above → **end here** | ☐ None of the above  BL93B | No. ____  ☐ Don't know | Other substance abuse......................... ☐ | ☐ | ☐ | | **Disability pensioner** ☐ Yes  ☐ No |
| | | | Smoking cessation ............................. ☐ | ☐ | ☐ | | |
| | | | None of the above ............................... ☐ | ☐ | | | |

# SAND abstract number 117 from the BEACH program 2007–08

## Subject: Lipid management in patients with high-risk conditions

**Organisations supporting this study:** Merck, Sharp & Dohme (Australia) Pty Ltd and AstraZeneca Pty Ltd (Australia).

**Issues:** Prevalence of selected high-risk conditions among patients attending general practice; current lipid levels; whether target levels were met; lipid lowering management; proportion who had cholesterol test in conjunction with current encounter; proportion ever managed by a specialist for dyslipidaemia; type of specialist; future management plan.

**Sample:** 8,834 patients from 301 GPs; data collection period: 06/06/2006 – 14/08/2006, 05/06/2007 – 16/07/2007 and 30/10/2007 – 03/12/2007.

**Method:** Detailed in the paper entitled *SAND Method 2007–08* available at <www.fmrc.org.au/publications/SAND_abstracts.htm>. High-risk conditions listed: coronary heart disease (CHD), diabetes, hypertension, familial hypercholesterolaemia, elevated cholesterol, family history of CHD and peripheral vascular disease. This abstract is an update of SAND abstract number 99, as additional data were collected in 2007–08.

### Summary of results

The age and sex distributions of respondents were similar to the distributions for all BEACH encounters, with the majority (59.1%) of patients being female.

From the 8,834 encounters, 3,725 (42.2%, 95% CI: 40.2–44.1) patients had at least one of the listed high-risk conditions, the most common being hypertension and elevated cholesterol (24.6% and 18.1%, respectively). Age-specific rates increased with age to 79.7% (95% CI: 77.0–82.5) among patients aged 75 years and over. One-fifth of patients (21.7%) indicated they had only one of the listed high-risk conditions and 20.5% had two or more. The rest of these analyses are limited to the 3,725 encounters with patients with at least one listed high-risk condition.

Total cholesterol (TC) level was provided for 2,928 patients; the average TC level was 5.1 mmol/L. Female patients had a significantly higher average level (5.3, 95% CI: 5.2–5.3) than males (4.9, 95% CI: 4.9–5.0). GP opinion was 55.5% of 2,600 respondents had reached target TC levels. Average high density lipoprotein (HDL) level was 1.5 mmol/L (among 2,448 respondents), 82.8% (of 2,139 respondents) having reached target HDL level. Average low density lipoprotein (LDL) level was 2.9 mmol/L (among 2,367 respondents), 59.7% (of 2,069 respondents) having reached target level. Average triglyceride (TG) level was 1.7 mmol/L (among 2,783 respondents), 73.8% (of 2,364 respondents) having reached target TG level.

Of 3,410 patients for whom information on current lipid medication was available, 1,442 (42.3%) were currently taking 1,471 lipid medications. Atorvastatin accounted for 47.7%, simvastatin for 31.5% and pravastatin for 9.7% of these. Of 2,527 respondents, 57.7% indicated diet and/or exercise advice was a current lipid management strategy.

Of the 3,506 respondents to the question on cholesterol monitoring, 32.1% were tested in conjunction with the current consultation. Specialists had at some time managed 11.3% of 3,387 patients for dyslipidaemia, usually a cardiologist (63.1% of 287 patients for whom specialist type was recorded). Of the 3,462 respondents, changes to medication were planned for 15.1%: 2.9% to increase the dose of the same medication; 2.1% to add a new medication.

*The following page contains the recording form and instructions with which the data in this abstract were collected.*

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# PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **PATIENT LIPID LEVELS and MANAGEMENT.**

*You may tear out this page as a guide to completing the following section of forms.*

## INSTRUCTIONS

Ask **ALL** of the **next 30 PATIENTS** the following questions **in the order in which the patients are seen.**

Please **DO NOT** select patients to suit the topic being investigated.

## FOR THE DOCTOR

Please use the tick boxes to indicate whether this patient has any of the listed **risk factors**.

Tick as many as apply.

If the patient has none of these conditions **please end the questions** here.

## Cholesterol level

Please advise the patient's levels of -

- **Total Cholesterol (TC)**

- **High Density Lipoprotein Cholesterol (HDLC)**

- **Low Density Lipoprotein Cholesterol (LDLC)**

- **Triglycerides (TG)**

at the time of **most recent testing**.

Please circle an option to indicate whether, in your **clinical opinion, target lipid levels** have been reached for this patient.

## Lipid-lowering therapy

Please write the **name, regimen and duration of usage** of the l**ipid-lowering medication** taken by this patient **e.g. atorvastatin  10mg/day  6 mths.**

If **no medication** is currently being taken please tick the box labelled '**none**'.

Please write the **same details for the most recent previous lipid-lowering medication** (if medication has changed). If medication or regimen **has not changed** since treatment commenced, please write '**as above**' in the '**previous medication**' space. If **no medication** was previously taken please tick the box labelled '**none**'.

If the patient's lipid levels are managed through **diet** and/or **advice about exercise or lifestyle changes**, please use the tick boxes beside the **diet/ advice** label to advise whether this is a **current** or **previous** management strategy. If not, please tick the box labelled '**none**'.

## Cholesterol monitoring

Please advise whether the **patient's blood cholesterol** has been **tested in conjunction with this consultation** i.e. for **review at** this consultation, or **as a result of** this consultation.

## Referral

If this patient has **elevated cholesterol** please advise whether the **elevated cholesterol** has ever been **managed by a specialist**.

If '**Yes**' please specify the **type of specialist**.

Please also indicate the initial **reason for referral**. For example:- change of medication, up- or down-titration of dosage, side-effect(s) of medication, etc.

## Management plan

Please use the remaining tick boxes to advise your management plan for this patient.

---

| Does this patient have? | If known, please advise the most recent lipid levels (in mmol/L): | Have target levels been reached? *(please circle)* | Current lipid medication is-      ☐ None | The patient's cholesterol has been tested for/will be tested as a result of this consultation? | Has this patient ever had their elevated cholesterol managed by a specialist? | The management plan for this patient is- |
|---|---|---|---|---|---|---|
| ☐ Existing CHD *(Tick as many as apply)* | | | Name      Dose      Duration of use | | ☐ Yes - _____ *(please specify type of specialist)* | ☐ No change |
| ☐ Diabetes mellitus | | | | | | ☐ Same medication - Increase dose |
| ☐ Hypertension | | | | | | |
| ☐ Familial hyper-cholesterolaemia | TC _____  Yes / No | | Previous lipid medication was-  ☐ None | | Because of _____ | ☐ Change medication_____ *(name and dose)* |
| ☐ Elevated cholesterol | HDLC _____  Yes / No | | Name      Dose      Duration of use | ☐ Yes | ☐ No | ☐ Additional therapy _____ *(name and dose)* |
| ☐ Family history of CHD | LDLC _____  Yes / No | | | | | ☐ Other _____ |
| ☐ Peripher. vasc. disease | TG _____  Yes / No | | Diet/advice- ☐ current ☐ previous ☐ None *(tick either or both as applicable)* | ☐ No | BL93C | *(please specify)* |
| ☐ None of above ➔ END | | | | | | |

# SAND abstract number 118 from the BEACH program 2007–08

## Subject: Risk factors for osteoporosis among general practice patients

**Organisation supporting this study:** National Prescribing Service Ltd

**Issues:** The proportion of patients on medication for osteoporosis; type of medication taken: bisphosphonate, raloxifene, hormone replacement therapy, teriparatide, strontium, vitamin D, calcium; risk factors and history of fracture after minor trauma; proportion with history of fracture referred for bone mineral density (BMD) scan or x-ray; proportion diagnosed with osteoporosis.

**Sample:** 2,613 patients from 89 GPs; data collection period: 17/07/2007 – 20/08/2007.

**Method:** Detailed in the paper entitled *SAND Method 2007–08* available at <www.fmrc.org.au/publications/SAND_abstracts.htm>. Osteoporosis risk factor test from International Osteoporosis Foundation: <www.iofbonehealth.org>.

## Summary of results

The age–sex distribution of respondents was similar to the distribution for all BEACH encounters, with the majority of patients (60.0%) being female.

Of 2,218 respondents to the medication question, 343 (15.5%, 95% CI: 12.7–18.3) were using at least one of the listed medications for osteoporosis: 204 patients (9.2%) used a calcium supplement; 142 (6.4%) a bisphosphonate, 84 patients (3.8%) a vitamin D supplement, and 52 patients (2.3%) used hormone replacement therapy.

There were 617 patients (23.8% of 2,592 respondents) who had at least one risk factor and/or had suffered a fracture after minor trauma, and the incidence was significantly higher for female patients (28.9%, 95% CI: 25.1–32.7) than for male patients (15.9%, 95% CI: 12.4–19.3). The likelihood of risk factor and/or fracture after minor trauma rose significantly with age of patient: 11.0% (95% CI: 8.0–14.1) among those aged 25–44 years, 30.2% (95% CI: 25.2–35.2) among those aged 45–64 years, 39.9% (95% CI: 33.9–45.8) among those aged 65–74 years, and a marginally higher rate, 52.9% (95% CI: 45.8–60.0), among patients aged 75 years and over.

More than half (51.9%) of the 617 patients who had at least one of the risk factors and/or fracture had been referred previously for screening. Of the 293 patients for whom screening method was known, 47.8% were referred for bone mineral density scan, 37.2% for both x-ray and BMD, and 15.0% for an x-ray only. A significantly greater proportion of female patients were referred for screening compared with male patients: of 446 female patients, 59.4% (95% CI: 53.0–65.9) had been referred for screening, while among 163 male patients, 31.3% (95% CI: 21.7–40.8) had been referred.

Of 312 respondents who had been screened, just over half (*n*=162, 51.9%) were diagnosed with osteoporosis. Over half (54.1%) of the 159 patients whose aged was known were aged 75 years and over. There was no significant difference between screened male and female patients in the likelihood of diagnosed osteoporosis. Fracture information was available for 154 of the 162 osteoporosis patients, with over two-thirds (68.2%) having had a fracture. Of 156 respondents with osteoporosis, 92.3% were taking at least one of the listed medications.

*The following page contains the recording form and instructions with which the data in this abstract were collected.*

## PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **OSTEOPOROSIS**.

*You may tear out this page as a guide to completing the following section of forms.*

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### INSTRUCTIONS

Ask **ALL** of the **next 30 PATIENTS** the following questions **in the order in which the patients are seen.**

Please **DO NOT** select patients to suit the topic being investigated.

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### Medications

Please use the tick boxes to advise whether the patient is taking any of the **listed medications**.

For **bisphosphonate (including combination products), raloxifene** and **HRT**, please write the approximate **length of time** the patient has been taking these medications by writing a **number** in the space provided and **circling** either '**months**' or '**years**'

For **Vitamin D** and **Calcium supplement**, please write the **daily dose** in the space provided, eg 500mg.

### Risk factors for Osteoporosis

This question refers to the **risk factors listed on the card**. Please ask the patient to read the card and advise whether or not they have **1 or more** of the **risk factors** listed.

(NB - The patient in not required to indicate which risk factor/s they have, just whether they have one or more.)

### Body site

If the patient has suffered **fractures** following **minor trauma**, please write the total **number** of fractures and which **body sites** were involved.

For example, if the patient fractured a wrist two months ago and a hip seven months ago, the total would be **2** and the body sites would be

1. _wrist_
2. _hip_

### Fractures

Please ask the patient if they have ever suffered **fracture/s** following **minor trauma**.

### Screening

This question refers to **X-ray** and **Bone Mineral Density (BMD)** testing. Please use the tick boxes to advise whether this patient has been **referred today** for screening, has ever been **screened previously**, or has **never been screened or referred** for screening. Please **circle** the **type** of screening which the patient has been referred for or previously received.

For example, if you are referring the patient today for BMD and the patient was previously screened with X-ray, please write:

**Type of screen**

☑ Referred today for screening?   X-ray /(BMD)/ both

☑ Screened previously?   (X-ray)/ BMD / both

☐ Never screened or referred?

### Diagnosis from screening

If **previously screened**, was the patient diagnosed with **osteoporosis (i.e. BMD T-score of -2.5 or less)** as a result of that screening?

---

| Is the patient currently taking: | Duration of use | Does this patient have 1 or more of the risk factors listed on the enclosed card? | Has this patient ever suffered fracture/s following minor trauma? | If 'yes' how many fractures? _____  Which body site? (e.g.vertebral, hip, wrist) | Has this patient been: *(tick all that apply)* | If previously screened, was the patient diagnosed with osteoporosis? |
|---|---|---|---|---|---|---|
| ☐ Bisphosphonate ................. _____ mths/yrs | | | | 1._____ | **Type of screen** *(please circle)* | |
| ☐ Raloxifene (Evista)............ _____ mths/yrs | *(tick all that apply)* | | | | ☐ Referred today for screening?   X-ray / BMD / both | ☐ Yes |
| ☐ HRT ................................... _____ mths/yrs | | ☐ Yes   ☐ No | ☐ Yes   ☐ No | 2._____ | | |
| ☐ Teriparatide (Forteo) | | | | | ☐ Screened previously?   X-ray / BMD / both | ☐ No |
| ☐ Strontium (Protos)   **Daily dose** | | *If 'NO' to both, end questions HERE* | | 3._____ | ☐ Never screened or referred? | |
| ☐ Vitamin D supplement ....... _____ | | *If 'yes' to either, **please continue** →* | | | | |
| ☐ Calcium supplement .......... _____ | | | | | | |
| ☐ None of the above   BL94B | | | | | | |

# SAND abstract number 119 from the BEACH program 2007–08

## Management of diabetes among general practice patients

**Organisation supporting this study:** Sanofi-Aventis Australia Pty Ltd

**Issues:** The prevalence of Type 1 and Type 2 diabetes in patients attending general practice; frequency and type of referrals given in past year for patients with diabetes; proportion of patients taking insulin or other medications for diabetes management; type of insulin used.

**Sample:** 5,989 patients from 204 GPs; data collection period: 21/08/2007 – 24/09/2007 and 01/12/2007 – 21/01/2008.

**Method:** Detailed in the paper entitled *SAND Method 2007–08* available at <www.fmrc.org.au/publications/SAND_abstracts.htm>.

## Summary of results

The age and sex distribution of respondents was similar to the distributions for all BEACH encounters. Of the 5,989 respondents, 561 (9.4%, 95% CI: 8.3–10.4) had either Type 1 or Type 2 diabetes. The majority of patients had Type 2 diabetes (8.5% of respondents, 95% CI: 7.4–9.5, $n$=506), and 55 patients (0.9% of respondents, 95% CI: 0.6–1.3) had Type 1 diabetes.

The proportion of patients with Type 2 diabetes rose significantly with age of patient, to 17.7% of those aged 65–74 years. Males (10.6%, 95% CI: 9.1–12.0) were significantly more likely than females (6.8%, 95% CI: 5.7–7.9) to have Type 2 diabetes. Age and sex did not influence the prevalence of Type 1 diabetes.

Of the 55 patients with Type 1 diabetes, 47 responded to referral questions and 42 (89.4%) had received referrals in the previous year. Patients with Type 1 diabetes were most often referred to ophthalmologists (63.8% of patients, $n$=30), endocrinologists (59.6%, $n$=28) and diabetes nurses (38.3%, $n$=18). Of 481 respondents with Type 2 diabetes, at least one referral had been given to 86.9% of patients in the previous year ($n$=418). The majority of referrals were to ophthalmologists (63.0% of patients), followed by podiatrists (35.1%), diabetes nurses (34.9%), dietitians (34.1%) and endocrinologists (23.1%).

Of the 47 patients with Type 1 diabetes who responded to medication use questions, insulin use was reported by 59.6% ($n$=28). Of these, 25 patients (53.2%) were using basal insulin, 5 (10.6%) used intermediate-acting insulin and 15 (31.9%) used fast-acting insulin. Twenty patients (42.6%) were taking 27 diabetes medications other than insulin. Of these medications, metformin was taken by 11 patients (40.7%), gliclazide by 8 (29.6%) and glimepiride by 2 (7.4%).

For patients with Type 2 diabetes, 488 responded to medication use questions, and 70 (14.3%) were using insulin. Basal insulin was used by 49 patients (10.0%), intermediate-acting insulin by 17 (3.5%) and 16 used fast-acting insulin (3.3%). Medications other than insulin were taken by 341 patients (69.9%). Of these, more than half were taking metformin (53.3%) and 145 gliclazide (29.1%).

*The following page contains the recording form and instructions with which the data in this abstract were collected.*

# PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **DIABETES**.

*You may tear out this page as a guide to completing the following section of forms.*

## INSTRUCTIONS

Ask **ALL** of the **next 30 PATIENTS** the following questions **in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated.

---

**Initiation of insulin**

If the patient is currently taking **insulin** for diabetes management, please advise whether the insulin was **initiated by** yourself or another **GP only**, by a **GP in consultation** with an **endocrinologist**, or by an **endocrinologist only**.

**Referrals to other clinicians**

Please use the tick boxes to advise whether the patient has been **referred** in the past 12 months to any of the listed **specialists** or **allied health workers**. For a referral to a specialist or allied health worker not listed, please tick the box labelled '**other**' and **specify** in the space provided.

Please tick as many as apply.

If **no referrals** were made to a specialist or allied health worker, please tick the box labelled '**none of the above**'.

**Diabetes medication**

If the patient has **either Type 1 or Type 2 diabetes**, please use the tick boxes to indicate the **insulin being used by the patient** (if insulin is being used for diabetes management).

If the patient is **not** taking insulin, please tick the box labelled '**No insulin**'.

In the second section, please write the **name and regimen** of **other medications** currently being taken by the patient to **manage their diabetes**.

If the patient's diabetes is managed with **diet and exercise only**, i.e. they are taking **no** medication, please tick the box labelled '**No medication - diet / exercise controlled**'.

**Diabetes**

Please use the tick boxes to indicate whether this patient has either **Type 1** or **Type 2 dibetes**.

If the patient has **neither** Type 1 or Type 2 diabetes you should **end the questions here** for this patient.

---

**Does this patient have:**

☐ Diabetes Type 1

☐ Diabetes Type 2

☐ Neither →**End questions**

BL95B

**In past year was a referral made to -**

☐ Diabetes nurse educator

☐ Practice nurse

☐ Endocrinologist   *(please tick all that apply)*

☐ Ophthalmologist

☐ Dietitian    ☐ Podiatrist

☐ Other _____

☐ None of the above

**If either type of Diabetes what medication is the patient taking?**

**Basal insulin**

☐ glargine (Lantus)

☐ detemir (Levemir)

☐ ispohane (NPH)
(eg. Humulin, Hypurin, Mixtard, Protaphane)

**Intermediate acting insulin**

☐ aspart protamine suspension.

☐ lispro protamine suspension.

☐ neutral-ispohane (NPH)

**Fast acting insulin**

☐ aspart

☐ lispro

☐ neutral

☐ NO insulin

**Oral/other diabetes medication is-**

| Name & form | strength | dose | frequency |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

☐ **No med'n** - diet / exercise controlled

**If taking insulin, was the insulin initiated by -**

☐ GP only

☐ GP in consultation with endocrinologist

☐ Endocrinologist only

# SAND abstract number 120 from the BEACH program 2007–08

## Management of asthma among general practice patients

**Organisations supporting this study:** AstraZeneca Pty Ltd (Australia)

**Issues:** The prevalence of asthma in the general practice population; severity of asthma; frequency of general practice visits by patients with asthma; frequency of general practice visits where asthma is managed; time since last asthma visit; medications taken for the management of asthma; type and provider of asthma management at the current encounter.

**Sample:** 2,987 patients from 101 GPs; data collection period: 30/10/2007 – 03/12/2007.

**Method:** Detailed in the paper entitled *SAND Method 2007–08* available at <www.fmrc.org.au/publications/SAND_abstracts.htm>. For this study, severity classes for children and adults were adapted from the National Asthma Council Asthma Management Handbook (1998).

### Summary of results

The age distribution of respondents was similar to the distribution for all BEACH encounters, with patients aged 45–64 years accounting for 27.0% of encounters. There were significantly fewer male patients in this study (39.0%, 95% CI: 35.7–42.3) compared with all BEACH encounters (43.7%, 95% CI: 42.9–44.5).

Of the 2,987 respondents, 403 (13.5%, 95% CI: 11.9–15.1) had been diagnosed with asthma. Prevalence among children (0–17 years, *n*=398) was 17.1% (95% CI: 12.7–21.4), and among adults (*n*=2,577) was 13.0% (95% CI: 11.2–14.7). The age-specific rate of asthma was highest for those aged 15–17 years (33.3%), steadily declining to 9.9% of those aged 75 years and over. There was no difference in the prevalence of asthma between males (12.4%) and females (14.2%).

For 80.6% of children with asthma who answered the severity question (*n*=67), severity was 'infrequent'. Of the 330 patients aged 18 years and over with asthma, severity was 'very mild' for 42.7%, 'mild' for 29.4%, 'moderate' for 22.1% and 'severe' for 5.8%.

Of 392 respondents with asthma, 10.2% had not visited a GP for any reason in the previous 12 months, 9.4% had visited once, 28.8% had between 2 and 4 visits, and 51.5% had more than 4 visits. For 396 respondents, 46.2% had not had asthma managed in the previous 12 months, 23.5% once, and 30.3% twice or more. Of 171 respondents who had not had asthma managed in the previous 12 months, 70.2% stated that it was more than 2 years since their asthma had been managed by a GP.

Of 392 respondents who answered the question about medication use, 77.3% were taking at least one of the medications listed; over half (53.6%) a short-acting beta agonist (SABA); and 30.1% a combination inhaled corticosteroid/long-acting beta agonist (ICS/LABA). More than one in five patients (22.7%) were not taking any asthma medication.

Asthma had been managed at 76 of the encounters. Management of asthma by the GP most often involved general questions about asthma (72.4%, *n*=55). Asthma symptoms were discussed with the GP at 65.8% of encounters (*n*=50) and therapy was reviewed at 55.3% (*n*=42). Practice nurses were rarely involved in asthma management at these encounters.

*The following page contains the recording form and instructions with which the data in this abstract were collected.*

## *Severity of asthma reference card*

### Children

| Severity* | Common features |
|---|---|
| Infrequent episodic | Episodes 6-8 weeks or more apart and from 1to 2 days up to 1-2 weeks duration; usually triggered by URTI or environmental allergen; attacks generally not severe; symptoms rare between attacks; normal examination and lung function except when symptomatic. |
| Frequent episodic | Attacks <6 weeks apart; attacks more troublesome; minimal symptoms such as exercise induces wheeze between attacks; normal examination and lung function except when symptomatic; commonly troubled through winter months only. |
| Persistent | Symptoms most days; nocturnal asthma > 1/wk with sleep disturbance; early morning chest tightness; exercise intolerance and spontaneous wheeze; daily use of beta2 antagonist; abnormal lung function; history of emergency room visits or hospital admissions. |

### Adults

| Severity* | Common features |
|---|---|
| Very mild | Episodic |
| Mild | Occasional symptoms (up to 2/wk); exacerbations >6-8 weeks apart; normal $FEV_1$ when asymptomatic |
| Moderate | Symptoms most days; exacerbations <6-8 weeks apart which affect day-time activity and sleep; exacerbations last several days; occasional emergency room visit. |
| Severe | Persistent; limited activity level; nocturnal symptoms > 1/wk; frequent emergency room visits and hospital admission in past year; $FEV_1$ may be significantly reduced between exacerbations. |

* The severity classes are adapted from the NAC Asthma Management Handbook 1998 edition, updated March 2002

## INSTRUCTIONS

Ask **ALL** of the **next 30 PATIENTS** the following questions **in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated.

---

**Presence of asthma**

Please use the tick boxes to advise whether this patient suffers from **asthma.**

If 'no' you should end the questions here.

If 'yes' please answer the following questions about the patient's asthma. You may need to ask the patient or check their notes. If you do not know the exact number please give your best estimations.

**GP visits for asthma management**

Please advise the approximate number of occasions when **asthma** was managed during the **past 12 months**, either as **the main or secondary reason** for the patient's visit.

**Content of asthma consultation**

If asthma was **managed at today's consultation** please describe the content of the **discussion** about asthma and whether the patient discussed their condition with the **GP**, the **practice nurse** (i.e. what the GP **intends** the practice nurse to discuss), or both.

Please tick **all** options that apply.

**Current medication use**

Please use the tick boxes to advise the type of **medication** currently being taken by the patient for **asthma management.**

SABA = short acting beta agonist
LABA = long acting beta agonist
ICS = inhaled corticosteroid

**Severity of asthma**

Please use the tick boxes to advise the **current severity** of this patient's asthma. Use the '**Severity of asthma reference card**' included in your research pack to estimate the severity level.

**Number of visits to a GP**

Please use the tick boxes to advise the approximate **number of times** the patien has consulted a GP **for ANY reason, including asthma management**, during the past **12 months. Do not include today's visit** in this estimation.

**Previous management**

If the patient's asthma was **not managed** in the **past 12 months**, please advise how long since the **most recent visit** where asthma was managed.

---

| Has this patient ever been diagnosed with asthma? | If 'yes' how severe is the patient's asthma? *(see cards)* | | How many times has the patient visited a GP <u>for any reason</u> in the past 12 months (apart from today)? | At how many visits was their asthma managed? | If the patient has NOT had their asthma managed in the past 12 months, how long (approximately) since asthma was last managed? | The patient's current asthma medication is: | If asthma was managed today how was it discussed and with whom? |
|---|---|---|---|---|---|---|---|

| Has this patient ever been diagnosed with asthma? | **Child** | **Adult** | How many times (apart from today)? | At how many visits managed? | how long since asthma was last managed? | medication is: | | GP | Practice nurse |
|---|---|---|---|---|---|---|---|---|---|
| ☐ Yes | ☐ Infrequent | ☐ Very mild | ☐ None | ☐ None  ☐ 2-3 | ☐ < 1.5 years | ☐ SABA *(tick all that apply)* | General question .......... ☐ | ☐ | |
| ☐ No → **End questions** | ☐ Frequent | ☐ Mild | ☐ Once only   ☐ 8-10 times | ☐ Once only  ☐ 4-6 | ☐ > 1.5 and < 2 years | ☐ LABA | Symptoms .................. ☐ | ☐ | |
| | ☐ Persistent | ☐ Moderate | ☐ 2-4 times  ☐ 11-15 times | ☐ >6 | ☐ > 2 years | ☐ ICS | Therapy review ........... ☐ | ☐ | |
| | | ☐ Severe | ☐ 5-7 times  ☐ >15 times | | | ☐ Comb'n ICS/LABA | Compliance ................ ☐ | ☐ | |
| BL97B | | | | | | ☐ None of the above | Repeat prescription ...... ☐ | ☐ | |
| | | | | | | | Asthma action plan ...... ☐ | ☐ | |
| | | | | | | | Device ....................... ☐ | ☐ | |
| | | | | | | | Change of therapy ........ ☐ | ☐ | |

*(tick all that apply)*

# SAND abstract number 121 from the BEACH program 2007–08

## Subject: Gastrointestinal symptoms and management among general practice patients

**Organisation supporting this study:** Janssen-Cilag Pty Ltd

**Issues:** The proportion of patients who have had listed gastrointestinal (GI) symptoms: heartburn or epigastric pain, acid regurgitation, early satiety, nausea/vomiting, bloating, belching; severity of symptoms; the proportion of patients with GI symptoms who had sought treatment and the source of treatment; whether GP was the source of treatment, diagnosis and regimen of medication prescribed/advised.

**Sample:** 3,293 patients from 112 GPs; data collection period: 4/12/2007 – 21/01/2008.

**Method:** Detailed in the paper entitled *SAND Method 2007–08* available at <www.fmrc.org.au/publications/SAND_abstracts.htm>.

### Summary of results

There were some differences in the age–sex distribution, with fewer patients aged 5–14 years and fewer males (40.0%, 95% CI: 37.3–42.8), compared with all 2006–07 BEACH encounters (43.7%, 95% CI: 42.9–44.5).

Of the 3,293 respondents, 990 (30.1%, 95% CI: 27.0–33.2) had experienced heartburn, reflux or other GI symptoms, and over two-thirds of these patients indicated the problem was current or in the previous 12 months. GI symptoms were significantly more common in the older age groups (40.6% of those aged 65–74 years and 39.5% of those aged 75 years and over). Heartburn or epigastric pain was indicated for 79.3% of 986 respondents, and acid regurgitation for 41.0%. Early satiety was the least common symptom, indicated for only 5.5% of patients. For the majority of patients the severity of GI symptoms was defined as mild or moderate. However, for 20.2% of patients with heartburn or epigastric pain, and for 17.2% of patients with bloating the symptoms were severe.

Of 980 respondents to a multiple response question on treatment, 768 (78.4%) had sought treatment. Of these, 28.5% had sought treatment from a supermarket/pharmacy, and, of 166 supermarket/pharmacy medications recorded, mylanta accounted for 41.0% and quick-eze for 25.9%.

Treatment had been sought from a GP by 654 patients (85.2% of those who sought treatment), and a diagnosis was recorded for 562 of these respondents: 437 (77.8%) were diagnosed with oesophageal disease, and for 89.9% of these patients the management was medication. Esomeprazole accounted for over one-quarter (26.9%) of the 581 initial medications prescribed by the GP, followed by omeprazole (20.7%) and pantoprazole (13.6%).

Medication review status could be calculated for 502 patients. For 296 patients (59.0%) on an initial medication, there was no change after review. Medication was ceased after review for 13 (2.6%) patients. For 104 patients (20.7%), the medication was changed to a new medication after review. Information was available for 308 patients on the approximate number of months into treatment when the initial medication was first reviewed. Of these, 47.4% were reviewed 1 month into treatment with an initial medication.

*The following page contains the recording form and instructions with which the data in this abstract were collected.*

# PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **PATIENTS WITH GASTROINTESTINAL SYMPTOMS.**
*You may tear out this page as a guide to completing the following section of forms.*

## INSTRUCTIONS

Ask **ALL** of the **next 30 PATIENTS** the following questions **in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated.

## Heartburn or reflux symptoms

Please use the tick boxes to advise whether this patient has experienced **heartburn** or **reflux symptoms** under the circumstances nominated. Tick as many as apply.

If '**no**' you should end the questions here.

If '**yes**' to any of the options, please answer the following questions about the patient's heartburn or reflux symptoms.

## Treatment sought

Please advise whether the patient **sought treatment**, either as **self-medication** from a **supermarket** or **pharmacy**, or via specific **advice** from a **pharmacist**.

Please advise the **name** of any medication purchased for treatment of these symptoms, and the approximate **duration** of its usage in **weeks or months** per episode.

## Medication

Please write the name and regimen of any **advised or prescribed medication initially** taken by the patient for management of their GI symptoms, and the approximate **duration of its use** (in weeks or months per episode).

If the medication was **changed** for any reason **at review**, please write the same details for the **post review (current) medication** in the space provided.

If **no change** was made to the initial medication, please tick the box labelled '**as above**'.

Please also advise the approximate no. of **months** at which the **review occurred**.

If a **review** has **not yet** taken place (e.g if the patient has recently commenced taking the medication) please tick the box labelled '**n/a**' **(not applicable)**.

## PPI use

If the patient was prescribed a **proton pump inhibitor**, please advise **how often** it was taken **after the first two months** of treatment (even if treatment has since stopped).

If two months has **not yet** lapsed, or a PPI was **never prescribed**, please tick the box labelled '**n/a**' '**not applicable**'.

## Type and severity of symptoms

Please use the tick boxes to indicate which of the **listed symptoms** are/were experienced by the patient and whether they were considered the **primary (1°) (predominant) symptom or a secondary (2°) symptom**. Tick as many as apply

Beside each symptom experienced, please write in a number to indicate the **severity of the symptoms**, where:
**1** = mild; **2** = moderate; **3** = severe; **4** = very severe.
*(please see definition card in your research kit).*

## GP management

If treatment was sought from a **GP**, either today or at a previous encounter, please write the **diagnosis** in the space provided.

If the diagnosis is **unknown** (e.g. if the patient previously consulted another GP) please write '**unknown**' in the space provided.

| Has this patient experienced heartburn or reflux symptoms? | If 'yes' symptoms and severity were: | | | | Did the patient seek treatment? | *(continued)* | Initial GP medication is/was: | Duration | If a PPI is/was taken, how often was it taken after the first two months? |
|---|---|---|---|---|---|---|---|---|---|
| ☐ No → **End questions** | *Symptom* (tick all that apply) | 1° | 2° | *Severity (see card)* | ☐ No → **End** | ☐ Yes - from a GP | | | |
| ☐ Yes (tick all that apply) | Heartburn or epigastric pain | ☐ | ☐ | ___ | ☐ Yes - supermarket/pharmacy | The diagnosis was: | *(medication name & regimen)* *(wks/mths)* | | ☐ > once daily ☐ not applicable |
| ☐ Currently | Acid regurgitation | ☐ | ☐ | ___ | | | **Post-review** medication is/was: ☐ as above | | ☐ once daily |
| ☐ In the past 12 mths | Early satiety | ☐ | ☐ | ___ | ___ ___ *wks/mths* | ___ | | | ☐ 5-6 days per week |
| ☐ > past 12 mths | Nausea/vomiting | ☐ | ☐ | ___ | *(medication name)* *(duration of use)* | *(please specify)* | *(medication name & regimen)* *(wks/mths)* | | ☐ 2-4 days per week |
| ☐ Symptoms resolved | Bloating | ☐ | ☐ | ___ | ☐ Yes - with pharmacist advice | **GP management was:** | ☐ Medication was first reviewed at ___ mths | | ☐ ≤ once per week |
| | Belching | ☐ | ☐ | ___ | ___ ___ *wks/mths* *(medication name)* *(duration of use)* | ☐ Medication → cont. ☐ Advice only → **End** | ☐ n/a BL98C *(please specify)* | | ☐ when symptomatic (prn) |

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# Glossary

*A1 Medicare items:* Medicare item numbers 1, 2, 3, 4, 13, 19, 20, 23, 24, 25, 33, 35, 36, 37, 38, 40, 43, 44, 47, 48, 50, 51, 601, 602.

*Aboriginal:* The patient identifies himself or herself as an Aboriginal person.

*Activity level:* The number of general practice A1 Medicare items claimed during the previous 3 months by a participating GP.

*Allied and other health professionals:* Those who provide clinical and other specialised services in the management of patients, including physiotherapists, occupational therapists, dietitians, dentists and pharmacists.

*Chapters (ICPC-2):* The main divisions within ICPC-2. There are 17 chapters primarily representing the body systems.

*Chronic problem:* see *Diagnosis/problem, Chronic problem.*

*Commonwealth concession card:* An entitlement card provided by the Australian Government that entitles the holder to reduced cost medicines under the Pharmaceutical Benefits Scheme and a limited number of other concessions from state and local government authorities.

*Complaint:* A symptom or disorder expressed by the patient when seeking care.

*Component (ICPC-2):* In ICPC-2 there are seven components which act as a second axis across all chapters.

*Consultation:* See *Encounter.*

*Diagnosis/problem:* A statement of the provider's understanding of a health problem presented by a patient, family or community. GPs are instructed to record at the most specific level possible from the information available at the time. It may be limited to the level of symptoms.

- *New problem:* 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.

- *Old problem:* A previously assessed problem that requires ongoing care, including follow-up for a problem or an initial presentation of a problem previously assessed by another provider.

- *Chronic problem:* A medical condition characterised by a combination of the following characteristics: duration that has lasted or is expected to last 6 months or more, a pattern of recurrence or deterioration, a poor prognosis, and consequences or sequelae that impact on an individual's quality of life. (*Source:* O'Halloran J, Miller GC, Britt H 2004. Defining chronic conditions for primary care with ICPC-2. Fam Pract 21(4):381–6).

- *Work-related problem:* Irrespective of the source of payment for the encounter, it is likely in the GP's view that the problem has resulted from work-related activity or workplace exposures or that a pre-existing condition has been significantly exacerbated by work activity or workplace exposure.

*Encounter (enc):* Any professional interchange between a patient and a GP.

- *Indirect:* Encounter where there is no face-to-face meeting between the patient and the GP but a service is provided (for example prescription, referral).

- *Direct:* Encounter where there is a face-to-face meeting of the patient and the GP.

  Direct encounters can be further divided into:
  - Medicare-claimable
    - *Surgery consultations:* Encounters identified by any one of MBS item numbers 3, 23, 36, 44, 52, 53, 54, 57, 5000, 5020, 5040, 5060, 5200, 5203, 5207, 5208.
    - *Home visits:* Encounters identified by any one of MBS item numbers 4, 24, 37, 47, 58, 59, 60, 65, 5003, 5023, 5043, 5063, 5220, 5223, 5227, 5228.
    - *Hospital encounters:* Encounters identified by any one of MBS item numbers 19, 33, 40, 50, 87, 89, 90, 91.
    - *Residential aged care facility:* Encounters identified by any one of MBS item numbers 20, 35, 43, 51, 92, 93, 95, 96, 5010, 5028, 5049, 5067, 5260, 5263, 5265, 5267.
    - *Health assessments:* Encounters identified by any one of MBS item numbers 700, 702, 704, 706, 708, 710, 712.
    - *Chronic disease management items:* Encounters identified by any one of MBS item numbers 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731.
    - *Case conferences:* Encounters identified by any one of MBS item numbers 734, 736, 738, 740, 742, 744, 746, 749, 757, 759, 762, 765, 768, 771, 773, 775, 778, 779.
    - *Incentive payments:* Encounters identified by any one of MBS item numbers 2497, 2501, 2503, 2504, 2506, 2507, 2509, 2517, 2518, 2521, 2522, 2525, 2526, 2546, 2547, 2552, 2553, 2558, 2559, 2574, 2575, 2577, 2578, 2598, 2600, 2603, 2606, 2610, 2613, 2616, 2620, 2622, 2624, 2631, 2633, 2635, 2664, 2666, 2668, 2673, 2675, 2677, 2704, 2705, 2707, 2708.
    - *Other MBS encounters:* Encounters identified by an MBS item number that does not identify place of encounter (see *A1 Medicare items*).
  - *Workers compensation:* Encounters paid by workers compensation insurance.
  - *Other paid:* Encounters paid from another source (for example state).

*General practitioner (GP):* A medical practitioner who provides primary comprehensive and continuing care to patients and their families within the community (Royal Australian College of General Practitioners).

*Medication:* Medication that is prescribed, provided by the GP at the encounter or advised for over-the-counter purchase.

*Medication rates:* The rate of use of all medications, including medications that were prescribed, supplied by the GP and advised for over-the-counter purchase.

*Medication status:*

- *New:* The medication prescribed/provided at the encounter/advised is being used for the management of the problem for the first time.
- *Continuation:* The medication prescribed/provided at the encounter/advised is a continuation or repeat of previous therapy for this problem.
- *Old:* See *Continuation.*

*Morbidity:* Any departure, subjective or objective, from a state of physiological wellbeing. In this sense, sickness, illness and morbid conditions are synonymous.

*Patient status:* The status of the patient to the practice.

- *New patient*: The patient has not been seen before in the practice.
- *Old patient:* The patient has attended the practice before.

*Prescribed rates:* The rate of use of prescribed medications (that is, does not include medications that were GP-supplied or advised for over-the-counter purchase).

*Problem managed:* See *Diagnosis/problem.*

*Provider:* A person to whom a patient has access when contacting the health care system.

*Reasons for encounter (RFEs):* The subjective reasons given by the patient for seeing or contacting the general practitioner. These can be expressed in terms of symptoms, diagnoses or the need for a service.

*Recognised GP:* A medical practitioner who is:

- vocationally recognised under Section 3F of the Health Insurance Act, *or*
- a holder of the Fellowship of the Royal Australian College of General Practitioners who participates in, and meets the requirements for, quality assurance and continuing medical education as defined in the Royal Australian College of General Practitioners (RACGP) Quality Assurance and Continuing Medical Education Program, *or*
- undertaking an approved placement in general practice as part of a training program for general practice leading to the award of the Fellowship of the Royal Australian College of General Practitioners, or undertaking an approved placement in general practice as part of some other training program recognised by the RACGP as being of equivalent standard. (*Source:* Commonwealth Department of Health and Aged Care 2001. Medicare benefits schedule book. Canberra: DHAC).

*Referral:* 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 to specialists and allied health professionals, and for hospital and residential aged care facility admissions arising at a recorded encounter are included. Continuation referrals are not included. Multiple referrals can be recorded at any one encounter.

*Repatriation health card:* An entitlement card provided by the Department of Veterans' Affairs that entitles the holder to access a range of Repatriation health care benefits, including access to prescription and other medications under the Pharmaceutical Benefits Scheme.

*Rubric:* The title of an individual code in ICPC-2.

*Significant:* This term is used to refer to a statistically significant results. Statistical significance is measured at the 95% confidence level in this report.

*Torres Strait Islander:* The patient identifies himself or herself as a Torres Strait Islander person.

*Work-related problem:* See *Diagnosis/problem.*

# Appendices

## Appendix 1: Example of a 2007–08 recording form

# BEACH (Bettering the Evaluation And Care of Health) - Morbidity and Treatment Survey - National

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| Encounter Number | Date of encounter | Date of Birth | Sex | Patient Postcode |
|---|---|---|---|---|
| | ___/___/___ | ___/___/_____ | M ☐ F ☐ | |

|  | **Yes / No** | |
|---|---|---|
| New Patient ...................... | ☐ | ☐ |
| Health Care/Benefits Card... | ☐ | ☐ |
| Veterans Affairs Card.......... | ☐ | ☐ |
| NESB................................... | ☐ | ☐ |
| Aboriginal............................ | ☐ | ☐ |
| Torres Strait Islander .......... | ☐ | ☐ |

PATIENT SEEN BY GP ............... ☐
PATIENT NOT SEEN BY GP........ ☐
**Medicare**
**Item Nos:** (if applicable)
1. _____
2. _____
3. _____

Workers comp paid....... ☐
State Govt/Other paid ... ☐
No charge ................... ☐

**START Time**
____ : ____
AM / PM
(please circle)

**Patient Reasons for Encounter**
1. _____
2. _____
3. _____

## Diagnosis/Problem ① :

**Problem Status**   New ☐   Old ☐   Work related ☐

| Drug Name AND Form for this problem | Strength of product | Dose | Frequency | No. of Rpts | OTC | GP Supply | Drug status New | Cont. |
|---|---|---|---|---|---|---|---|---|
| 1. | | | | | | | | |
| 2. | | | | | | | | |
| 3. | | | | | | | | |
| 4. | | | | | | | | |

**Procedures, other treatments, counselling this consult** for this problem
1.                  Prac Nurse? ☐   2.                  Prac Nurse? ☐

## Diagnosis/Problem ② :

**Problem Status**   New ☐   Old ☐   Work related ☐

| Drug Name AND Form for this problem | Strength of product | Dose | Frequency | No. of Rpts | OTC | GP Supply | Drug status New | Cont. |
|---|---|---|---|---|---|---|---|---|
| 1. | | | | | | | | |
| 2. | | | | | | | | |
| 3. | | | | | | | | |
| 4. | | | | | | | | |

**Procedures, other treatments, counselling this consult** for this problem
1.                  Prac Nurse? ☐   2.                  Prac Nurse? ☐

## Diagnosis/Problem ③ :

**Problem Status**   New ☐   Old ☐   Work related ☐

| Drug Name AND Form for this problem | Strength of product | Dose | Frequency | No. of Rpts | OTC | GP Supply | Drug status New | Cont. |
|---|---|---|---|---|---|---|---|---|
| 1. | | | | | | | | |
| 2. | | | | | | | | |
| 3. | | | | | | | | |
| 4. | | | | | | | | |

**Procedures, other treatments, counselling this consult** for this problem
1.                  Prac Nurse? ☐   2.                  Prac Nurse? ☐

## Diagnosis/Problem ④ :

**Problem Status**   New ☐   Old ☐   Work related ☐

| Drug Name AND Form for this problem | Strength of product | Dose | Frequency | No. of Rpts | OTC | GP Supply | Drug status New | Cont. |
|---|---|---|---|---|---|---|---|---|
| 1. | | | | | | | | |
| 2. | | | | | | | | |
| 3. | | | | | | | | |
| 4. | | | | | | | | |

**Procedures, other treatments, counselling this consult** for this problem
1.                  Prac Nurse? ☐   2.                  Prac Nurse? ☐

| NEW REFERRALS, ADMISSIONS Problem(s) | IMAGING/Other tests   Body site   Problem(s) | PATHOLOGY   Problem(s) | PATHOLOGY (cont)   Problem(s) |
|---|---|---|---|
| 1. _____ 1 2 3 4 | 1. _____ - _____ 1 2 3 4 | 1. _____ 1 2 3 4 | 4. _____ 1 2 3 4 |
| 2. _____ 1 2 3 4 | 2. _____ - _____ 1 2 3 4 | 2. _____ 1 2 3 4 | 5. _____ 1 2 3 4 |
| | | 3. _____ 1 2 3 4 | |

| Patient reported | To the patient if 18+: Which best describes your smoking status? | To the patient if 18+: How often do you have a drink containing alcohol? | How many 'standard' drinks do you have on a typical day when you are drinking? | How often do you have 6 or more standard drinks on one occasion? | FINISH Time |
|---|---|---|---|---|---|
| Height: ____ cm  Weight: ____ kg | Smoke daily ........................... ☐  Smoke occasionally ............... ☐  Previous smoker ................... ☐  Never smoked...................... ☐ | Never.................................. ☐  Monthly or less .................. ☐  Once a week/fortnight........ ☐  2-3 times a week .............. ☐  4+ times a week ............... ☐ | ____ | Never................................... ☐  Less than monthly ................... ☐  Monthly.................................. ☐  Weekly................................... ☐  Daily or almost daily ................ ☐ | ____ : ____  AM / PM  (please circle) |

BA10

# Appendix 2: GP characteristics questionnaire, 2007–08

**The University of Sydney**
at Westmead Hospital

**Australian General Practice Statistics and Classification Centre**

**Doctor Identification Number**

☐ ☐ ☐ ☐ ☐

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**Please fill in boxes or circle answers**

**1**. Sex ................. **Male / Female**    *(please circle)*

**2**. Age.................................................... ☐

**3**. How many years have you spent in general practice?............................... ☐

**4**. How many GPs (full time equivalents) work at this practice (including yourself)? ☐
*(Practice = shared medical records)*

**5**. Postcode of major practice address .. ☐

**6**. In which GP Division is this practice
_____

**7**. Year of graduation ............................ ☐

**8**. Place of graduation *(primary medical degree)*:
Aust ...................................................... 1
NZ ......................................................... 2
Asia ....................................................... 3
UK / Ireland........................................... 4
Other: (specify) ........................................ 5

**9**. Do you conduct any of your consultations in a language other than English?
No........................................................... 1
Yes - <25%.............................................. 2
Yes - 25 to 50%...................................... 3
Yes - >50%.............................................. 4

**10**. Are you a GP registrar (i.e. in training)?... **Yes / No**

**11**. Do you hold FRACGP ?......................... **Yes / No**

**12**. Is your major practice accredited ?........ **Yes / No**

**13**. Is there a practice nurse at your major practice address ?....................................... **Yes / No**

If yes, how many full time equivalents? ☐

**14**. Number of general practice sessions you usually work per week?
*(1 session = ~4 hrs eg a morning session)* .... ☐

**15**. Direct patient care hours worked per week?
(Include hours of direct patient care, instructions, counselling etc and other services such as referrals, prescriptions, phone calls etc.) ..... ☐

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**16**. Over the past four weeks have you provided any patient care ....*(Circle all that apply)*
As a locum ........................................... 1
In a deputising service ............................ 2
In a residential aged care facility ........................... 3
As a salaried/sessional hospital medical officer..... 4
None of the above ................................. 5

**17**. What are the normal after-hours arrangements for your practice? *(Circle all that apply)*
Practice does its own........................................1
Co-operative with other practices ....................2
Deputising service...........................................3
Referral to other service (eg A&E) ..................4
Other .........................................................5
None ........................................................6

**18**. Do you bulk bill ALL patients?.............. **Yes / No**
**If No,** which groups are bulk billed?
*(Tick those that apply)* **All** **Some**
Pensioner/Healthcare Card holders ... ☐ ☐
Children <16 years...................... ☐ ☐
Selected other patients ........................... ☐

**19**. To what extent are computers used -
(i) <u>at your major practice</u>?    (ii) <u>by you (at work)</u>?

| (i) at your major practice | (ii) by you (at work) |
|---|---|
| Not at all ......................1 | Not at all ......................... 1 |
| Billing...........................2 | Test ordering ................. 2 |
| Prescribing....................3 | Prescribing ......................3 |
| Medical Records...........4 | Medical Records ............ 4 |
| Other Admin.................5 | Internet ........................... 5 |
| Internet / Email.............6 | Email ...............................6 |

(iii) <u>Prescribing / Health record software used is</u> —
_____

**20**. Is your major practice site a teaching practice? *(Circle all that apply)*
for undergraduates............................................ 1
for GP registrars............................................... 2
No.................................................................... 3

**21**. Did any of your BEACH consultations take place in an Aboriginal Community Controlled Health Service (ACCHS)?
No.................................................................... 1
Yes - all...........................................................2
Yes - some (which dates?) _____ 3

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*Thank you for participating in the **BEACH PROGRAM**.*

# Appendix 3: Dissemination of results from the BEACH program

**Available from <www.aihw.gov.au/publications/index.cfm/subject/19>**

A full list of BEACH publications is also available from the Family Medicine Research Centre website: < www.fmrc.org.au/publications/>.

# Appendix 4: Code groups from ICPC-2 and ICPC-2 PLUS

**Available from <www.aihw.gov.au/publications/index.cfm/subject/19>**

# Appendix 5: Chronic code groups from ICPC-2 and ICPC-2 PLUS

**Available from <www.aihw.gov.au/publications/index.cfm/subject/19>**

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