THE UNIVERSITY OF SYDNEY

General practice activity in Australia

2013–14

Family Medicine Research Centre

GENERAL PRACTICE SERIES **N°36**

GENERAL PRACTICE SERIES
Number 36

General practice activity in Australia 2013–14

BEACH
Bettering the Evaluation and Care of Health

Helena Britt, Graeme C Miller, Joan Henderson, Clare Bayram, Christopher Harrison, Lisa Valenti, Carmen Wong, Julie Gordon, Allan J Pollack, Ying Pan, Janice Charles

November 2014

Sydney University Press

Published 2014 by Sydney University Press
SYDNEY UNIVERSITY PRESS
University of Sydney Library
sydney.edu.au/sup

Sydney University Press
Fisher Library F03
University of Sydney NSW 2006 AUSTRALIA
Email: sup.info@sydney.edu.au

Any enquiries about or comments on this publication should be directed to:

The Family Medicine Research Centre
Sydney School of Public Health, University of Sydney
Level 7, 16–18 Wentworth Street, Parramatta NSW 2150
Phone: +61 2 9845 8151; Fax: +61 2 9845 8155
Email: gpstats@fmrc.org.au

This publication is part of the General practice series based on results from the BEACH program conducted by the Family Medicine Research Centre. A complete list of the Centre's publications is available from the FMRC's website <sydney.edu.au/medicine/fmrc/>.

ISSN 1442-3022
ISBN 978-1-74332-421-9 print
ISBN 978-1-74332-422-6 online

Suggested citation
Britt H, Miller GC, Henderson J, Bayram C, Harrison C, Valenti L, Wong C, Gordon J, Pollack AJ, Pan Y, Charles J. General practice activity in Australia 2013–14. General practice series no. 36. Sydney: Sydney University Press, 2014.
Available at <purl.library.usyd.edu.au/sup/9781743324219>

Keywords
Australia, delivery of health care/statistics and numerical data, family practice/statistics and numerical data, general practice, health services utilization, healthcare surveys/methods.

Companion publication
Britt H, Miller GC, Henderson J, Bayram C, Valenti L, Harrison C, Pan Y, Wong C, Charles J, Chambers T, Gordon J, Pollack AJ. A decade of Australian general practice activity 2004–05 to 2013–14. General practice series no. 37. Sydney: Sydney University Press, 2014.
Available at <purl.library.usyd.edu.au/sup/9781743324233>

Cover design by Miguel Yamin

Printed in Australia

Foreword

It gives me great pleasure to introduce the 36th report from the Better the Evaluation and Care of Health (BEACH) program, *General practice activity in Australia 2013–14.* It is a further credit to The Family Medicine Research Centre who undertake this research, and who are responsible for the most comprehensive and objective measure of general practitioner activity undertaken anywhere in the world.

General practice and primary care represent the interface between complex (and expensive) health care services and the wider community. Australian general practice can reasonably claim to represent world best practice in terms of both cost and patient outcomes. The general practitioner's role is described by the RACGP as the provision of "person centred, continuing, comprehensive and coordinated whole person health care to individuals and families in their communities". There is ample evidence that preventive and primary care services that are patient-focussed rather than disease-focussed provide the most cost effective health outcomes for those individuals and communities.

However we live in an era when decisions relating to the allocation of health care funds are fiercely contested and subject to intense scrutiny from many sectors, including the research community and the general media. It has been difficult to move away from a disease focussed funding model, with funding often linked to one of the nationally adopted health priority domains, such as cardiovascular disease or diabetes, or directed to conditions that achieve a high media profile such as childhood or breast cancers. While all diseases are worthy, this funding model does not reflect the scope of services needed in our community.

GPs are expected to undertake 'evidence-based practice', but the quality and utility of the evidence presented to GPs is variable, with insufficient time and resources allocated to determining the perceived discrepancy between 'evidence' and 'practice'. The common model for clinical research is to focus on a particular disease subset or narrowly defined patient cohort, because it is easier to define research hypotheses and obtain funding for focussed research projects. However, the reported results often fail to take into account associated comorbidities, or environmental and psychosocial factors that may influence patient and doctor adoption of guidelines that derive from the research. The BEACH data measures what we *actually* do in our practices, and provides the data template for a broader discussion around any gap between research and actual clinical practice.

By more clearly defining the relativities and complexities of the work that GPs undertake in their practices, the information contained in the current BEACH report assists in challenging some of these traditional disease focussed approaches to health service delivery. While individual diseases are coded and prevalence can be assessed from the database, "all variables can be directly related to the encounter, the GP and the patient characteristics", allowing for a patient centred approach to data interpretation. For example the report indicates a high frequency of musculoskeletal problems presenting to general practitioners (18 per 100 patient encounters, compared to 19 and 17 for respiratory and circulatory disorders respectively), and yet chronic arthritis, which attracts significant attention as a national health priority, accounts for a minority of these presentations. The data contained in the report indicates that GPs see many different musculoskeletal problems in general practice, indicating the need for better understanding of the complexity and diversity of such conditions and their management.

The companion publication, *A decade of Australian general practice activity 2004–05 to 2013–14* can be used to evaluate trends in the rate of ordering investigations, prescribing medications or referral to consultants. The steady increase in test ordering and referrals to specialist consultants and allied health professionals may result from multiple factors including: an increased incidence of patients with diagnosed chronic and complex comorbidities secondary to age and risk factors such as obesity; better therapeutic options and a lower tolerance of adverse outcomes from patients and communities. The BEACH report provides a foundation for exploring these hypotheses.

There are of course potential limitations to any data set. One limitation that may need to be considered in the future is the restriction of recruitment to GPs who undertake a minimum of 375 Medicare rebated services in a 3 month period. It is likely that many GP clinicians who have a fractional clinical role in general practice, or who undertake significantly longer and fewer consultations, are thereby excluded from the study. This group has recently been recognised as providing a significant workforce contribution to Australian general practice and may have a somewhat different activity profile to those included in the BEACH study.

It is essential that we have reliable information that provides a detailed and unbiased picture of the full scope of health issues affecting the Australian community, and an opportunity to triangulate these data with other national data sets including the MBS, PBS and the Australian Health Survey. The BEACH reports provide a key longitudinal resource whose value can only increase over time, particularly as we move closer to achieving an integrated electronic health record. As stated in the report "BEACH 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. Medicare statistics provide information about frequency and cost of visits claimed from Medicare for GP service items, (but) they cannot tell us about the content of these visits. The BEACH program fills this gap."

Simon M Willcock MBBS (Hons1), PhD, FRACGP
Professor of General Practice
University of Sydney Medical Program
Chair: Avant Mutual Insurance Group.

Acknowledgments

The BEACH program 2013–14 was conducted by the Family Medicine Research Centre, University of Sydney.

The Family Medicine Research Centre thanks the 959 general practitioners who participated in BEACH between April 2013 and March 2014. This report would not have been possible without their valued cooperation and effort in providing the data.

We thank the following organisations for their financial support and their contribution to the ongoing development of the BEACH program in 2013–14.

- Australian Government Department of Health
- AstraZeneca Pty Ltd (Australia)
- Novartis Pharmaceuticals Australia Pty Ltd
- bioCSL (Australia) Pty Ltd
- Merck, Sharp and Dohme (Australia) Pty Ltd

Some financial support for the program was also provided by the Australian Government Department of Veterans' Affairs.

We acknowledge the support of the Royal Australian College of General Practitioners, the Australian Medical Association, the Australian General Practice Network, the Australian College of Rural and Remote Medicine, the Consumers Health Forum, and the contribution of their representatives to the BEACH Advisory Board.

We thank Clare Bayram and Carmen Wong for their contribution in editing this report, Timothy Chambers for his IT support, Denise Barratt and Gervaise Woods for their administrative support. We recognise the valuable contribution of the general practitioner recruitment staff (Errol Henderson, Jan Fitzgerald, David Went and Alison Evans) and data entry staff (Julia Leahy, Michelle Lai, Natalie Taylor, Prableen Kaur, Heather Oesterheld, Nathan Cross, Lauren Nicola and Madeleine Chan) and the contribution of past members of the BEACH team. We appreciate the cooperation of the Australian Government Department of Health in regularly supplying general practitioner random samples and national Medicare statistics.

Contents

List of tables

List of figures

Summary

This report describes clinical activity at, or associated with, general practitioner (GP) encounters, from April 2013 to March 2014, inclusive. It summarises results from the 16th year of the Bettering the Evaluation and Care of Health (BEACH) program, using a nationally representative sample of 95,900 patient encounters with 959 randomly selected GPs. After post-stratification weighting, 95,879 encounters were analysed in this report.

BEACH is a continuous cross-sectional national study that began in April 1998. Every year about 1,000 randomly selected GPs, each record details of 100 consecutive encounters on structured paper recording forms, and provide information about themselves and their practice. BEACH is the only continuous randomised study of general practice activity in the world, and the only national program that provides direct linkage of management (such as prescriptions, referrals, investigations) to the problem under management.

The BEACH database now includes information for almost 1.6 million encounters from 15,759 participants representing 9,950 individual GPs.

In subsamples of the BEACH encounters, smaller patient-based (rather than encounter-based) studies are conducted. This publication includes results for patient body mass index, smoking status and alcohol consumption, and abstracts (with the research tools) are provided for each of the other substudies conducted in 2013–14.

The companion report highlighting major change over the most recent 10 years of BEACH, *A decade of Australian general practice activity 2004–05 to 2013–14*,[1] is available at <purl.library.usyd.edu.au/sup/9781743324233>.

The general practitioners (Chapter 4)

Of the 959 participating GPs in 2013–14:

- 57% were male, 48% were aged 55 years and over, 71% had graduated in Australia
- spent an average of 36.8 hours per week (median 37 hours) in direct patient care
- 56% were Fellows of the Royal Australian College of General Practitioners (RACGP), and 6.3% were Fellows of the Australian College of Rural and Remote Medicine (ACRRM)
- 54% had provided care in a residential aged care facility in the previous month
- 69% practised in *Major cities* (using the Australian Standard Geographical Classification)
- 74% worked at only one practice location in a regular week; 21% worked in two
- 52% were in practices of fewer than five full-time equivalent (FTE) GPs (a mean of 5.2 FTE GPs per practice and a median of 4.5 FTE GPs)
- 83% worked in a practice employing practice nursing staff
- nearly three-quarters (74%) had a co-located pathology laboratory or collection centre in, or within 50 metres of the practice, and more than half (56%) had a co-located psychologist
- 43% worked in a practice that provided their own or cooperative after-hours care and 56% in a practice that used a deputising service (multiple responses allowed)
- 70% of GPs reported using electronic medical records exclusively (i.e. were paperless).

There were no significant differences in the characteristics of the final sample of BEACH participants and all GPs in the sample frame in terms of sex or practice location by the Australian Standard Geographical Classification. However, in the final BEACH GP sample

there was a slight under-representation of GPs in the <35 year and 35–44 year age groups, and a slight over-representation in the 55+ years age group; GPs who had graduated from their primary medical degree in Australia, and some slight variations in state representation.

Comparison of the mean number of Medicare Benefits Schedule (MBS) claims over the previous year by participating GPs showed a difference on only six consultations per week, compared with those in the GP sample frame.

The encounters (Chapter 5)

After weighting the data for the minor differences in GP activity and the age–sex distribution of the GP participants, the age–sex distribution of patients at BEACH encounters had an excellent fit (precision ratios 0.91–1.09), with that of patients at all GP services claimed through the MBS.

- On average, patients gave 155 reasons for encounter (RFEs), and GPs managed about 158 problems per 100 encounters.
- Chronic problems accounted for 36%, and new problems for 37% of all problems.
- Work-related problems were managed at a rate of 2.4 per 100 encounters.
- At an 'average' 100 encounters, problem management involved: 103 medications [prescribed, supplied or advised for over-the-counter (OTC) purchase], 49 pathology tests/batteries of tests; 38 clinical treatments; 19 procedures; 15 referrals (including 10 to medical specialists and 5 to allied health services); and 11 imaging tests.
- Direct encounters (patient seen) accounted for 98% of encounters at which a payment source was recorded. Of these: 95% were claimable either through the MBS or the Department of Veterans' Affairs (DVA), 2% through workers compensation, and 1% through other sources.

In a subsample of 31,816 BEACH MBS/DVA-claimable encounters at which start and finish times were recorded, mean consultation length was 14.8 minutes, median 13.0 minutes.

Who were the patients and why did they see the GP? (Chapter 6)

- Females accounted for 57% of encounters, and the greater proportion of encounters in all adult age groups.
- Children (aged <15 years) accounted for 11% of encounters; 15–24 years 8%; 25–44 years 22%; 45–64 years 27%; and patients aged 65 years and over accounted for 32%.
- The patient was new to the practice at 7% of encounters, held a Commonwealth concession card at 44%, held a Repatriation health card at 2% and was from a non-English-speaking background at 10%.
- At 1.7% of encounters, the patient identified themselves as an Aboriginal and/or Torres Strait Islander person.

For every 100 encounters, patients gave 155 reasons for encounters (RFEs) including: 63 symptom and complaint RFEs, 30 diagnosis/disease RFEs, 63 requests for processes of care (e.g. procedures, referrals).

What problems do GPs manage at patient encounters? (Chapter 7)

There were 151,675 problems managed, an average 158 per 100 encounters: one problem was managed at 60% of encounters, two or three managed at 37%, and four at 4%. More problems were managed at encounters with female patients, than with male patients.

Nearly two-thirds (65%) of problems were described as diagnoses or diseases, 19% in terms of symptoms or complaints, and 10% as diagnostic or preventive procedures (e.g. check-ups).

- The most commonly managed were: problems of a general and unspecified nature (20 per 100 encounters), respiratory problems (19 per 100 encounters), musculoskeletal problems (18), skin (18), and circulatory (17).
- Individual problems managed most often were hypertension (8.7 per 100 encounters), check-ups (7.0), immunisation/vaccination (5.8), upper respiratory tract infection (URTI) (4.9), and depression (4.3).
- At least one chronic problem was managed at 42% of encounters and 56 chronic problems were managed per 100 encounters.
- Over half of all chronic problems managed were accounted for by: non-gestational hypertension (15.3% of chronic conditions), depressive disorder (7.6%), non-gestational diabetes (7.4%), chronic arthritis (7.1%), lipid disorder (5.5%), oesophageal disease (4.6%), and asthma (3.5%). Extrapolation of these results to the 133.4 million Medicare GP consultation items claimed in 2013–14 suggests there were 11.5 million encounters involving non-gestational hypertension, 5.7 million involving depression and 5.6 million involving non-gestational diabetes.

Management actions recorded for problems managed? (Chapter 8)

On average, for every 100 problems they managed, GPs provided 53 prescriptions and 24 clinical treatments, undertook 12 procedures, made 6 referrals to medical specialists and 3 to allied health services, and placed 31 pathology test orders and 7 imaging test orders.

Medications (Chapter 9)

There were 98,394 medications recorded, 103 per 100 encounters but only 65 per 100 problems managed: 84% were prescribed, 10% supplied by the GP and 9% recommended for OTC purchase. Extrapolation of these results suggests that, across Australia in 2013–14, GPs wrote 111 million prescriptions, supplied 14 million medications directly to the patient, and advised medications for OTC purchase 12 million times.

- At least one medication (most prescribed) was given for 51% of problems managed.
- No repeats were given for 34% of prescriptions, and five repeats were ordered for 38%. The ordering of one repeat was also quite common (15%).
- Medication types most often prescribed were those acting on: the nervous system (24% of scripts), particularly opioids (7%) and antidepressants (5%); and the cardiovascular system (19%), particularly anti-hypertensives and lipid lowering agents. The most commonly prescribed individual medications were: the antibiotics cephalexin (3% of all prescriptions), amoxycillin (3%) and amoxycillin/potassium clavulanate (2%); the nervous system drugs paracetamol (3%) and oxycodone (2%); and the proton pump inhibitor esomeprazole (2%).
- Medications were GP-supplied at a rate of 7 per 100 problems managed and vaccines accounted for the vast majority of these. The influenza virus vaccine accounted for one-third of GP-supplied medications.
- Medications were advised for OTC purchase at a rate of 6 per 100 problems managed. Paracetamol accounted for 25% of these and ibuprofen made up 7%.

Other treatments (Chapter 10)

At least one other treatment was provided at 43% of encounters and 54,104 other treatments were recorded, two-thirds (67%) being clinical treatments (such as advice and counselling).

Clinical treatments: 36,024 clinical treatments were recorded, 38 per 100 encounters, or 24 per 100 problems managed. General advice and education (17% of clinical treatments), and counselling about the problem being managed (12%) were most common. Preventive counselling/advice about nutrition and weight, exercise, smoking, lifestyle, prevention, and/or alcohol, was also frequently provided by GPs (together at a rate of 7.1 per 100 encounters).

Of all problems for which clinical treatments were provided, the top 10 accounted for 30%. The most common were depression (6% of problems with clinical treatments), URTI (5%), diabetes (4%) and anxiety (3%).

Procedural treatments: 18,081 procedural treatments were recorded, 19 per 100 encounters, or 12 per 100 problems. The most common were: excision (17% of procedural treatments), dressing (15%), local injection (14%) and rehabilitation (7%).

The most common problem for which a procedure was performed was solar keratosis/ sunburn (5% of problems with a procedure).

Practice nurse/Aboriginal health worker activity

These results are limited to practice nurse (PN) and/or Aboriginal health worker (AHW) activities associated with recorded GP–patient encounters.

There were 7,690 GP–patient encounters (8.0% of all encounters) at which at least one PN/AHW activity was recorded. However, for 75 of these, their activity was not described. At the remaining 7,615 encounters a PN/AHW was involved in the management of 8,041 problems (5.3% of all problems managed at all encounters. Extrapolation of this result suggests that in 2013–14, PNs/AHWs were involved in about 10.7 million GP–patient consultations across Australia. A PN/AHW Medicare item was recorded at only 0.4% of all encounters: 5% of encounters involving a PN/AHW.

The problems most often involving the PN/AHWs at GP–patient encounters were: immunisation/vaccination, check-up, laceration/cut, atrial fibrillation/flutter, diabetes and chronic skin ulcer. Together they accounted for more than 40% of all the problems involving PN/AHWs.

The vast majority (87.5%) of the PN/AHW recorded activity was procedural, and these procedures represented 33.6% of all procedures recorded. In contrast, clinical treatments accounted for 12.5% of PN/AHW recorded activity at encounters, but PNs/AHWs provided only 3.0% of all recorded clinical treatments. PNs/AHWs did 39.7% of the recorded immunisation injections at GPs encounters.

Referrals and admissions (Chapter 11)

There were 16 referrals recorded per 100 encounters or 10 per 100 problems managed. The most frequent were to medical specialists (10 per 100 encounters, 6 per 100 problems managed), followed by those to allied health services (5 per 100 encounters, 3 per 100 problems). Very few patients were referred to hospitals or emergency departments (0.7 per 100 encounters, 0.4 per 100 problems).

Referrals to specialists were most often to orthopaedic surgeons (9% of specialist referrals), surgeons (8%), cardiologists (8%) and dermatologists (8%). Malignant skin neoplasms, osteoarthritis, pregnancy and diabetes were the problems most often referred to specialists. The five problems most frequently referred to each of the 10 most common medical

specialties are described. They may represent a small or large proportion of all problems referred to a particular specialty. For example, the top five problems accounted for 25.4% of all referrals to ear, nose and throat specialists (indicative of the broad range of conditions referred to them), and for 58.1% of referrals to orthopaedic surgeons, suggesting a more defined range of problems referred.

Referrals to allied health services were most often to physiotherapists (27% of allied health referrals), psychologists (22%), podiatrists/chiropodists (11%) and dietitians/nutritionists (8%). Problems most likely to be referred were depression, diabetes and anxiety.

Tests and investigations (Chapter 12)

Pathology tests ordered: GPs recorded 47,035 orders for pathology tests/batteries, at a rate of 49 per 100 encounters (31 per 100 problems managed). At least one pathology test was recorded at 19% of encounters (for 14% of problems managed).

- Chemistry tests accounted for 58% of pathology test orders, the most common being: lipid tests (2.6 per 100 problems managed); multi-biochemical analysis (2.2); thyroid function tests (2.0); and electrolytes, urea and creatinine (1.9).
- Haematology tests accounted for 17% of pathology and included full blood count, the most frequently ordered individual test (14% of all pathology), 4.3 being ordered per 100 problems managed.
- Microbiology accounted for 14% of pathology orders. Urine microscopy, culture and sensitivity was the most frequent test ordered within the group.
- Almost 40% of all pathology tests were generated by orders for 10 problems, led by diabetes, general check-ups, hypertension, and weakness/tiredness.

Imaging ordered: There were 10,460 imaging test orders recorded, 11 per 100 encounters and 7 per 100 problems managed. At least one imaging test was ordered at 9% of encounters (for 6% of problems managed). Diagnostic radiology accounted for 42%, ultrasound 41%, and computerised tomography for 12% of all imaging orders.

Patient risk factors (Chapter 13)

Overweight and obesity in adults (18 years and over): Of 31,371 adults, 63% (69% of males and 59% of females) were overweight or obese: 35% being overweight and 28% obese. After adjustment for attendance patterns by age–sex, prevalence in adults who attended general practice at least once in 2013–14 was estimated as 35% overweight and 27% obese.

Overweight and obesity in children (2–17 years): Of 2,536 children, 28% were overweight (19%) or obese (10%). Prevalence and age pattern did not differ between the sexes.

Smoking status (adults 18 years and over): Of 32,166 adults, 14% (17% of men and 12% of women) were daily smokers and this was most prevalent among 25–44 year olds (20%). Adjusted to the attending population, prevalence of daily smoking was 17%.

Alcohol consumption in adults (18 years and over): Of 31,369 adult patients, 23% (28% of men and 20% of women) reported drinking at-risk levels of alcohol. This was most prevalent among 18–24 year olds. Adjusted to the attending population, 26% reported at-risk alcohol consumption.

Adult risk profile (18 years and over): Of the 30,250 patients for whom all three risk factor data were available: 25% had no risk factors, 53% had one, 18% had two, and 3% had three. Adjusted to the attending population, one in four patients (25%) had at least two risk factors.

1 Introduction

This is the 16th annual report and the 36th book in the General Practice 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 2013 to March 2014 inclusive, using details of 959,000 encounters between general practitioners (GPs) and patients (almost a 0.1% sample of all general practice encounters) from a random sample of 959 practising GPs across the country.

Released in parallel with this report is a summary of results from the most recent 10 years of the BEACH program, *A decade of Australian general practice activity 2004–05 to 2013–14*,[1] available at <purl.library.usyd.edu.au/sup/9781743324233>.

The BEACH program began in April 1998 and was the culmination of about 20 years research and development work at the University of Sydney. BEACH is currently supported financially by government and private industry (see Acknowledgments).

BEACH 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. The BEACH database now includes information for almost 1.6 million encounters from 15,759 participants representing 9,950 individual GPs.

1.1 Background

In December 2013, the estimated resident Australian population was 23.3 million people.[2]

Australia's health expenditure in 2011–12 was $140.2 billion, an average $6,230 per head of population, and accounted for 9.5% of gross domestic product (GDP). Governments funded 69.7%, with the remainder (30.3%) being paid by the non-government sector and by individuals.[3] In the 2013–14 financial year, government expenditure on general practice services (including those of practice nurses) was almost $6.4 billion dollars.[4]

GPs are usually the first port of call in the Australian healthcare system. Payment for GP visits is largely on a fee-for-service system, there being no compulsory patient lists or registration. People are free to see multiple practitioners and visit multiple practices of their choice. There is a universal medical insurance scheme (managed by Medicare Australia), which covers all or some of an individual's cost for a GP visit.

In Australia in 2012, there were 25,958 practising GPs (medical practitioners self-identifying as GPs), making up 25,063 full-time equivalents (FTE, based on a 40-hour week), or 111.8 FTE GPs per 100,000 people.[5]

In the April 2013 to March 2014 year, about 85.2% of the Australian population claimed at least one GP service from Medicare (personal communication, Department of Health [DoH], August 2014). In the same period, Medicare paid rebates for about 133.4 million claimed general practice service items (excluding practice nurse items),[6] at an average of about 5.8 GP visits per head of population or 6.8 visits per person who visited at least once. This equates to about 2.57 million GP–patient encounters per week.

While Medicare statistics provide information about frequency and cost of visits claimed from Medicare for GP service items, they cannot tell us about the content of these visits. The BEACH program fills this gap.

1.2 The BEACH program

In summary, the BEACH program is a continuous national study of general practice activity in Australia. Each year an ever-changing random sample of about 1,000 practising GPs participate, each recording details of 100 patient encounters on structured paper-based recording sheets (Appendix 1). This provides details of about 100,000 GP–patient encounters per year. They also provide information about themselves and their major practice (Appendix 2). The BEACH methods are described in Chapter 2 of this report.

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, and provides insight into the evolving character of GP–patient encounters in Australia
- provide an ongoing database of GP–patient encounter information
- 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 17th year. The BEACH database now includes records for 1,585,179 GP–patient encounters from 15,752 participating GPs. Each year we publish an annual report of BEACH results collected in the previous 12 months. This publication reports results from April 2013 to March 2014. The companion publication *A decade of Australian general practice activity 2004–05 to 2013–14*,[1] provides summaries of changes in the most frequent events over the decade.

The strengths of the BEACH program

- 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. 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 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.[7] Our access to a regular random sample of recognised GPs in active practice, through DoH, ensures that the GP sample is drawn from a very reliable sample frame of currently active GPs.
- 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 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. Such measures cannot be generalised to the whole of general practice. Further, where GPs in the group 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.
- We have sufficient details about the characteristics of all GPs in the sample frame to test the representativeness of the final BEACH GP sample, and to apply post-stratification

weighting to correct for any under or over-representation in the sample when compared with the sample frame.

- 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. DoH therefore provides an individual count of activity level (that is, number of Medicare GP service items 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.
- BEACH includes all patient encounters and management activities provided at these encounters, not just those encounters and activities funded by Medicare.
- The structured paper encounter form leads the GP through each step in the encounter, encouraging entry of data for each element (see Appendix 1), with instructions and an example of a completed form. The structure itself forces linkage of actions to the problem being managed. In contrast, systems such as electronic health records rely on the GP to complete fields of interest without guidance.
- BEACH is the only continuous national study in the world in which management actions at encounter are directly linked by the GP to the problems under management. This provides 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 medication data include all prescriptions, rather than being limited to those prescribed medications covered by the Pharmaceutical Benefits Scheme (PBS). BEACH is the only source of information on medications supplied directly to the patient by the GP, and about the medications GPs advised for OTC purchase, the patients to whom they provide such advice and the problems managed in this way.
- 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 use of an internationally standard well-structured classification system (ICPC-2)[8] designed specifically for general practice, together with the use of a clinical interface terminology, facilitates reliable classification of the data by trained secondary coders, and removes the guesswork often applied in word searches of available records (in free text format) and in classification of a concept.
- The use of the World Health Organization's (WHO) Anatomical Therapeutic Chemical (ATC) classification for pharmaceuticals at the generic level ensures reporting of medications data is in terms of the international standard.
- 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 Using BEACH data with other national data

Users of the BEACH data might wish to integrate information from multiple national data sources, to gain 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 other sources. This section summarises differences between BEACH and other national sources of data about general practice in Australia.

The Pharmaceutical Benefits Scheme

Prescribed medications for which a PBS subsidy has been paid when they are dispensed, are recorded by Medicare Australia.

The PBS data:

- count the prescription each time it crosses the pharmacist's counter (so that one by the GP prescription written with five repeats in BEACH would be counted by the PBS six times if the patient filled all repeats)
- count only prescribed medications that cost
  - more than the minimum PBS subsidy for those holding a Commonwealth concession card or and/or who have reached the safety net threshold (and therefore covered by the PBS for all patients), or medications prescribed
  - more than a far higher PBS threshold for non-concession card holders.
- will change with each change in the PBS co-payment level for non-Commonwealth concession cardholders – when the co-payment level increases, those medications that then fall under the new level will no longer be counted in the PBS for non-Commonwealth concession cardholders[9]
- hold no record of the problem being managed (with the exception of authority prescriptions, which require an indication and account for a small proportion of PBS data). Morbidity cannot be reliably assumed on the basis of medication prescribed.[10,11]

In BEACH:

- total medications include those prescribed (whether covered by the PBS or not), 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 patients who do not present their prescription to be filled (this also applies to the PBS).

These differences have a major impact on the numbers of prescriptions counted and also affect their distribution. For example, the majority of broad spectrum antibiotics such as amoxycillin fall under the non-concessional card holders' minimum subsidy level and would not be counted in the PBS data. The PBS data only include those filled under the PBS by a Commonwealth concession card holder or by people who had reached the annual safety net threshold.[9]

Medicare Benefits Schedule

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

- Publicly available MBS claims data do not include data about patients and encounters funded through the Department of Veterans' Affairs (DVA).
- The MBS data include GP services that have been billed to Medicare. BEACH includes all consultations, irrespective of whether a charge is made or who pays for it.
- The MBS data reflect the item number charged to Medicare for a service and include some patient demographics, but hold no information about the content of the consultation.
- BEACH participants are 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. 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.
- One of the advantages of BEACH over the MBS is also the relative consistency over time of the data collection form. BEACH is relatively resilient to changes in MBS payment policies, such as the inclusion or removal of items from the MBS.

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.

- MBS pathology data reflect pathology orders made by GPs and other medical specialists. About 70% of the volume of MBS pathology claims are for pathology ordered by GPs.[12]
- Each pathology company can respond differently to a specific test order label recorded by the GP. For example, 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 DoH pathology payment system. This means that the tests recorded in the MBS include only those charged for, not all those that were done. Coning applies only to GP pathology orders, not to those generated by medical specialists.
- 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.
- 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 MBS items.

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,[13] 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.

Pathology ordering by GPs is described in Chapter 12 of this report. Those interested in pathology test ordering by GPs should also view the following publications:

- *Evaluation of pathology ordering by general practitioners in Australia* (Doctoral thesis).[14]
- *Are rates of pathology test ordering higher in general practices co-located with pathology collection centres?*[15] This publication investigated the independent effect of general practice co-location with pathology collection centres on GP pathology test ordering in Sydney and Melbourne metropolitan areas.
- *Evidence-practice gap in GP pathology test ordering: a comparison of BEACH pathology data and recommended testing*.[16]

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 or additional 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 ordering of imaging tests should see *Evaluation of imaging ordering by general practitioners in Australia*.[17]

The Australian Health Survey

The 2011–13 Australian Health Survey, conducted by the Australian Bureau of Statistics (ABS), includes the National Health Survey, the National Nutrition and Physical Activity Survey and the National Health Measures Survey. The National Health Survey provides estimates of population prevalence of some diseases, and a measure of the problems taken to the GP by people in the two weeks before the survey. The National Health Measures Survey includes biomedical measures related to chronic disease and nutritional biomarkers.[18]

- Prevalence estimates from the National Health Survey 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. Prevalence estimates from the National Health Measures Survey are based on biomedical measures of diagnosed and undiagnosed disease.
- 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 a point estimate of incidence of disease. Prevalence estimates based on biomedical measures have the advantage of measuring diagnosed and undiagnosed disease.
- 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, with about 85.2% of Australians visiting a GP at least once in 2013–14 (personal communication, DoH, August 2014). Disease management rates are a product of both the prevalence of the disease/health problem in the population, and the frequency with which patients visit GPs 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.

Prevalence of selected diseases among patients seen in general practice can be investigated using the Supplementary Analysis of Nominated Data method (see Section 2.6). Those interested in disease prevalence should refer to the following papers: *Estimating prevalence of common chronic morbidities in Australia*,[20] *Prevalence and patterns of multimorbidity in Australia*,[21] and *Prevalence of chronic conditions 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 variety of topics in journals and professional magazines. All published material from BEACH is available at <sydney.edu.au/medicine/fmrc/publications>.

Since April 1998, a section at the bottom of each encounter form has been used to investigate aspects of patient health or healthcare 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 2.6. Abstracts of results and the research tools used in all SAND substudies from April 1998 to March 2014 have been published. Those from:

- April 1998 to March 1999 were published in *Measures of health and health care delivery in general practice in Australia*[23]
- April 1999 to July 2006 were published in *Patient-based substudies from BEACH: abstracts and research tools 1999–2006*[24]
- August 2006 to March 2013 were published in each of the BEACH annual reports[25-31]
- April 2013 to March 2014 are included in Chapter 14 of this report.

Abstracts of results for all SAND substudies are also available on the Family Medicine Research Centre's (FMRC) website <sydney.edu.au/medicine/fmrc/publications/sand-abstracts> where you can search by topic.

Participating organisations

Organisations providing funding for the BEACH program receive summary reports of the encounter data quarterly, and standard reports or specifically designed analyses 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 have been further 'de-identified'. Patients' are not identifiable even from the original encounter data forms, 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 provided only in the form of grouped output (for example, GPs aged less than 35 years) to any organisation.

External purchasers of reports

Non-contributing organisations may purchase standard reports or other ad hoc analyses. Charges are outlined at <sydney.edu.au/medicine/fmrc/beach/data-reports/for-purchase>. The FMRC should be contacted for specific quotations. Contact details are provided at the front of this publication.

Analysis of the BEACH data is a complex task. The FMRC 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 <sydney.edu.au/medicine/fmrc/beach/data-reports/for-purchase>.

Customised 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 new random sample of about 1,000 GPs
- each GP records details of about 100 doctor–patient encounters of all types
- the GP sample is a rolling (ever-changing) sample, with about 20 GPs participating in any one week, 50 weeks a year (with 2 weeks break over Christmas)
- each GP can be selected only once per Quality Improvement & Continuing Professional Development (QI & CPD) Program triennium (that is, once in each 3-year period)
- the encounter information is recorded by the GPs on structured paper encounter forms (Appendix 1)
- GP participants also complete 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 Medicare general practice items of service in the most recently available 3-month Medicare data period (which equates to 1,500 such claims in 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.

The Medicare statistics section of the DoH updates the sample frame from the Medicare records quarterly, using the Medicare claims data, then removes from the sample frame any GPs already randomly sampled in the current triennium, and draws a new sample from those remaining 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, or have already participated or been approached in the current triennium.

2.2 Recruitment methods

The randomly selected GPs are approached by letter, posted to the address provided by the Australian Government DoH.

- 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 a new 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 before the planned start date.
- Each GP receives a telephone reminder early in 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 3 months.

- Participating GPs earn clinical audit points towards their QI & CPD requirements through the Royal Australian College of General Practitioners (RACGP) and/or the Australian College of Rural and Remote Medicine (ACRRM). As part of this QI process, each receives an analysis of his or her results compared with those of nine other de-identified GPs who recorded at about 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 Ethics approval and informed patient consent

Ethics approval for this study in 2013–14 was obtained from the Human Ethics Committee of the University of Sydney.

Although the data collected by the GPs is not sufficient to identify an individual patient, informed consent for GP recording of the encounter details is required from each patient. GPs are instructed to ensure that all patients presenting during their recording period are provided with a Patient Information Card (Appendix 3), and they ask the patient if they are happy for their data to be included in the study. If the patient refuses, details of the encounter are not recorded. This is in accordance with the Ethics requirements for the BEACH program.

2.4 Data elements

BEACH includes three interrelated data collections: GP characteristics, encounter data 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 GP characteristics and encounter data collected are summarised below. Patient health status data are described in Section 2.6.

GP profile form (Appendix 2)

- **GP characteristics:** age and sex, years in general practice, number of direct patient care hours worked per week, intended changes in hours of direct patient care in 5 years, country of graduation, general practice registrar status, Fellow of the RACGP status, Fellow of the ACRRM status, use of computers at work, work undertaken in other clinical settings, number of practice locations worked in a regular week.
- **Practice characteristics:** postcode of major practice; number of individual, and number of full-time equivalent GPs working in the practice; number of individual and number of full-time equivalent practice nurses working in the practice; usual after-hours care arrangements, other health services located at the major practice.

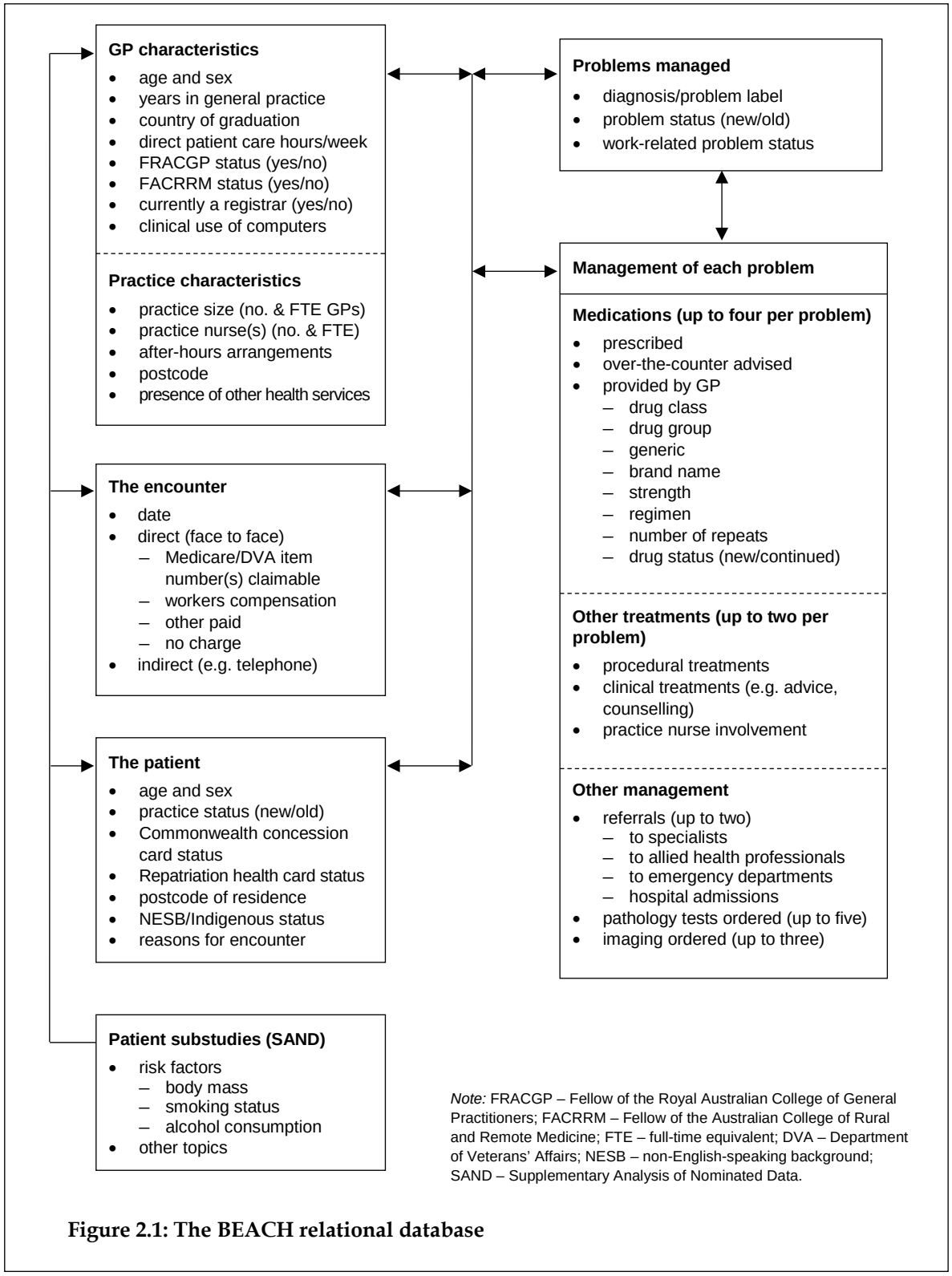
Encounter recording form (Appendix 1)

- **Encounter data:** date of consultation, type of consultation (direct/indirect) (tick box options), 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 (yes/no options) are provided for a Commonwealth concession cardholder, holder of a Repatriation health card (from DVA), non-English-speaking background (patient reported 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) (see 'Glossary').
- **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 and whether the problem is considered by the GP to be work-related.
- **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 (new or continuing medication for this problem), number of repeats
  - other treatments provided for each problem, including counselling, advice and education, and procedures undertaken, and whether the recorded other treatment was provided by practice nurse (tick box)
  - new referrals to medical specialists, allied health services, emergency departments, and hospital admissions
  - investigations, including pathology tests, imaging and other investigations ordered.

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 the encounter, the GP and the patient characteristics
- all types of management are directly related to the problem being managed
- 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 (see Section 6.3).



Note: FRACGP – Fellow of the Royal Australian College of General Practitioners; FACRRM – Fellow of the Australian College of Rural and Remote Medicine; FTE – full-time equivalent; DVA – Department of Veterans' Affairs; NESB – non-English-speaking background; SAND – Supplementary Analysis of Nominated Data.

Figure 2.1: The BEACH relational database

2.6 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.

- Each year the 12-month 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 13. The start and finish times collected on these encounters are 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, so each SAND block includes about 3,000 records. Some topics are repeated to increase sample size. 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 of results and the research tools used in all SAND substudies from April 1998 to March 2014 have been published. Those:

- from April 1998 to March 1999 were published in *Measures of health and health care delivery in general practice in Australia*[23]
- from April 1999 to July 2006 were published in *Patient-based substudies from BEACH: abstracts and research tools 1999–2006*[24]
- conducted between August 2006 and March 2013 have been published in each of the general practice activity annual reports[25-31]
- conducted in the 2013–14 BEACH year are provided in Chapter 14 of this publication.

Abstracts of results for all SAND substudies are also available on the FMRC's website <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

2.7 Statistical methods

The analysis of the 2013–14 BEACH data was conducted with Statistical Analysis System (SAS) version 9.3,[32] 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, patient or GP age and sex), or to describe the distribution of events within a class of events (for example, problem A as a percentage of total problems). Due to rounding, proportions may not always add to exactly 100%.

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 (in the case of management actions) the rate per 100 problems managed, 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. Procedures in SAS version 9.3 were used to calculate intracluster correlation, and adjust the confidence intervals accordingly.[32]

Post-stratification weighting of encounter data adjusts for: any difference in the age–sex distribution of the participating GPs and those GPs in the sample frame from which the samples were drawn; and for the varying activity level of each GP (measured by number of claims each has made in the previous 12 months from Medicare Australia) (see Chapter 3).

Statistical significance is tested by chi-square statistic for GP characteristics. However, where changes over time are investigated in the companion report significance of differences in rates is judged by non-overlapping confidence intervals (CIs) of the results being compared. The magnitude of this difference can be described as at least $p < 0.05$. Assessment using non-overlapping confidence intervals is a conservative measure of significance,[33-35] particularly when differences are assessed by comparing results from independent random samples, as is the case when changes over time are investigated using BEACH data. Due to the number of comparisons made, we believe this conservative approach is warranted.

2.8 Classification of data

The following data elements are classified according to the International Classification of Primary Care – Version 2 (ICPC-2), of the World Organization of Family Doctors (Wonca):[8]

- 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 WHO in the WHO Family of International Classifications,[36] and is the declared national standard in Australia for reporting of health data from general practice and patient self-reported health information.[37]

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 – it can also be expanded to provide data about infections, injuries, neoplasms, congenital anomalies and 'other' diagnoses.

Component 2 (diagnostic, screening and prevention) is often applied in describing the problem managed (for example, check-up, immunisation). Components 3 to 6 cover other processes of care, including referrals, other (non-pharmacological) treatments and orders for pathology and imaging. The components are standard and independent throughout all chapters. The updated component groupings of ICPC-2 codes, released by the Wonca International Classification Committee in 2004[38] have been used in this report.

The ICPC-2 is an excellent epidemiological tool. The diagnostic and symptom 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. ICPC has about 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, FMRU) developed an extended clinical terminology classified according to the ICPC, now called ICPC-2 PLUS.[39] This is an interface terminology, developed from all the terms used by GPs in studies such as *The Australian Morbidity and Treatment Survey 1990–91* (113,468 encounters),[40] *A comparison of country and metropolitan general practice 1990–91* (51,277 encounters),[41] *The Morbidity and Therapeutic Index 1992–1998* (a clinical audit tool that was available to GPs) (approximately 400,000 encounters), and *BEACH 1998–2014* (about 1.5 million encounters). Together, these make up about 2 million encounter records, involving about 3 million free text descriptions of problems managed and a further 3 million for patient reasons for encounter. These terms are classified according to ICPC-2 to ensure data can be compared internationally. Readers interested in seeing how coding works can download the ICPC-2 PLUS Demonstrator at <sydney.edu.au/medicine/fmrc/icpc-2-plus/demonstrator>.

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

Components	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 and unspecified	L	Musculoskeletal	U	Urinary
B	Blood & blood-forming organs	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	Endocrine, nutritional & metabolic		

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 usually at the level of the ICPC-2 classification (for example, acute otitis media/myringitis is 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 available at: <hdl.handle.net/2123/11882>.

Reporting morbidity with groups of ICPC-2 codes

When recording problems managed, GPs 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. Appendix 4, Table A4.1 lists the codes included in these groups.

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, such as 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 classified within all the appropriate ICPC-2 codes are grouped. This group is labelled 'Osteoarthritis*' – the asterisk again indicating multiple codes, but in this case they are PLUS codes rather than ICPC-2 codes. Appendix 4, Table A4.1 lists the codes included in these groups.

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[42] classified according to ICPC-2 was applied to the BEACH data set. Chronic and non-chronic conditions (for example, diabetes and gestational diabetes) are often 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 4, Table A4.2.

Reporting pathology and imaging test orders

All the pathology and imaging tests are coded very specifically in ICPC-2 PLUS, but 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 circulatory 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 regrouped all pathology and imaging ICPC-2 PLUS codes into MBS standard groups. This allows comparison of data between data sources.

The groups are marked with an asterisk, and inclusions are provided in Appendix 4, Tables A4.8 and A4.9.

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 name/composition, and brand name.

The generic name of a medication is its non-proprietary name, which describes the pharmaceutical substance(s) or active pharmaceutical ingredient(s).

When strength and regimen are combined with the CAPS code, we can derive the prescribed daily dose for any prescribed medication or group of medications.

CAPS is mapped to the Anatomical Therapeutic Chemical (ATC)[43] classification, which is the Australian standard for classifying medications at the generic level.[37] 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 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.

There are some differences in the labels applied to generic medications in the two classifications. For example, the medication combination of paracetamol and codeine is labelled as 'Paracetamol/codeine' in CAPS and as 'Codeine combinations excluding psycholeptics' in the ATC.

- When reporting annual results for pharmaceutical data, the CAPS database is used in tables of the 'most frequent medications' (Tables 9.2 to 9.4).
- 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.

Practice nurse and Aboriginal health worker activities associated with the encounter

The BEACH form was changed in 2005–06 to capture 'other treatments' performed by practice nurses (PNs) following the introduction of MBS item numbers for defined PN activities. GPs were asked to tick the 'practice nurse' box if a treatment was provided by the PN. If not ticked, it was assumed that the GP provided the 'other treatment'.

Over the years, new PN item numbers were added to the MBS and some items were broadened to include work done by Aboriginal health workers (AHWs). From 2005–06 to 2010–11 we reported the results referring to PNs alone. As some GPs indicated (of their own accord) that the recorded action was done by an AHW rather than a PN, this information is now included. In this report we refer to work undertaken at encounters by PNs and AHWs in conjunction with the GPs, though the vast majority will have been done by PNs. There is a limitation to this approach. Few GPs specifically indicated that the work was done by an AHW. Others may have considered the question referred specifically to PNs, and therefore did not record work done by AHWs. These results therefore have the potential to be an underestimate of the work undertaken at GP–patient encounters by AHWs.

2.9 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. To ensure reliability of data entry we use 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 regularly.

2.10 Validity and reliability

A discussion of the reliability and validity of the BEACH program has been published elsewhere.[44] This section touches 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 2.7. 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,[45] the degree to which GP-reported patient RFEs and problems managed accurately reflect those recalled by the patient,[46] and reliability of secondary coding of RFEs[47] and problems managed.[40] The validity of ICPC as a tool with which to classify the data has also been investigated in earlier work.[48]

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[49] and Barsky[50] 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.[51]

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.[52,53] 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. Further, in a direct observational study of consultations via a one-way mirror, Bentsen demonstrated that practitioners differ in the way they labelled problems, and suggested that clinical experience may be an important influence on the identification of problems within the consultation.[49] Two other factors that might affect GPs' descriptions of patient RFEs have been identified: although individuals may select the same stimuli, some label each stimulus separately, whereas others cluster them under one label; and individuals differ in the number of stimuli they select (selective perception).[54]

The extent to which therapeutic decisions may influence the diagnostic label selected has also been discussed. Howie[55] and Anderson[52] 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.

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.[56] Crombie identified 'enormous variability in the rates at which doctors perceive and record illnesses'. He was unable to account statistically for this variation by the effect of geography, age, sex or class differences in the practice populations.[57] Differences in the way male and female GPs label problems also appear to be independent of such influences.[58]

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 medical specialist, and often has to draw up general diagnostic hypotheses related to probability, severity and consequences.[59] Anderson suggests that morbidity statistics from family practice should 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'.[52]

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 health records, whether paper or electronic, as they do to active data collection methods.[60,61] 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 labelling 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.[62]

2.11 Extrapolated national estimates

A section at the end of each chapter highlights changes that have occurred over the decade 2004–05 to 2013–14. These sections summarise results published in the companion publication, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1] Where the results demonstrate a significant change over time, the estimated national change across total GP Medicare services from 2004–05 to 2013–14 can be calculated using the method detailed below.

Note that extrapolations are always based on rate per 100 encounters rather than rate per 100 problems because there is no independent measure of the total number of problems managed in Australian general practice. In contrast, the number of national encounters can be drawn from Medicare claims data.

In this report, we also occasionally extrapolate data for the single year 2013–14 to give the reader some feeling of the real size of the issue across Australian general practice.

When extrapolating from a single time point we:

- divide the 'rate per 100 encounters' of the selected event by 100, and then multiply by the total number of GP service items claimed through Medicare in that year, 133.4 million in 2013–14 (rounded to the nearest 100,000, see Table 2.1), to give the estimated number of the selected event across Australia in 2013–14.

When extrapolating measured change over the decade to national estimates, we:

- divide the 'rate per 100 encounters' of the selected event for 2004–05 by 100, and then multiply by the total number of GP service items claimed through Medicare in that year, 98.2 million (rounded to the nearest 100,000, see Table 2.1), to give the estimated national number of events in 2004–05.
- repeat the process using data for 2013–14.

The difference between the two estimates gives the estimated national change in the frequency of that event over the decade. Estimates are rounded to the nearest 100,000 if more than a million, and to the nearest 10,000 if below a million.

Change is expressed as the estimated increase or decrease over the study period (from 2004–05 to 2013–14), in the number of general practice contacts for that event (for example, an increase or decrease in the number of GP management contacts with problem X); or an increase or decrease in the number of times a particular medication type was prescribed in Australia in 2013–14, when compared with 2004–05.

Table 2.1 provides the rounded number of GP service items claimed from Medicare in each financial year from 2004–05 to 2013–14.

Table 2.1: Rounded number of general practice professional services claimed from Medicare Australia each financial year, 2004–05 to 2013–14 (million)

	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12	2012–13	2013–14[(a)]
Rounded number of Medicare GP items of service claimed	98.2	101.1	103.4	109.5	113.0	116.6	119.2	123.9	126.8	133.4

(a) Medicare data for the 2013–14 year included data from the April 2013 to March 2014 quarters because the 2013–14 financial year data were not available at the time of preparation of this report.

Source: Medicare Statistics.[6]

Examples of extrapolation:

Example 1: Number of GP encounters at which depression was managed nationally in 2013–14

Depression was managed at a rate of 4.3 per 100 GP encounters (95% CI: 4.1–4.5) in 2013–14 (shown in Table 7.4). How many times does this suggest that depression was managed in GP encounters across Australia in 2013–14?

Our best estimate is: 5.7 million times [(4.3/100) x 133.4 million], but we are 95% confident that the true number lies between 5.5 million [(4.1/100) x 133.4 million] and 6.0 million [(4.5/100) x 133.4 million].

Using the management rate per 100 encounters as the basis for this extrapolation works very well when estimating total national GP encounters at which a single concept (symptom/complaint, or diagnosis/disease) is managed. However, if you wish to estimate how many GP–patient encounters involve management of any psychological problem, you need to use a different approach (see point 2 below).

Example 2: Number of GP encounters which involve management of psychological problems

The concept 'psychological problems' includes many different individual concepts (e.g. depression; dementia; anorexia nervosa etc). In BEACH, GPs record at least one and up to four problems managed, per encounter. It is therefore possible that at a single encounter a GP can manage more than one of the many problems classified as 'psychological problems' in the International Classification of Primary Care.

If you use the management rate per 100 encounters to estimate the national number of encounters at which one or more psychological problems was managed in 2013–14, you will overestimate the true number of encounters, because more than one of these problems can be managed at a single encounter.

This year we have provided new analyses to allow you to make such extrapolations more accurately. In Table 6.4 *(Patient reasons for encounter by ICPC-2 chapter and most frequent individual reasons for encounter within chapter)* and Table 7.3 (*Problems managed by ICPC-2 chapter and frequent individual problems within chapter*), we have added a new column on the right side, which gives you the proportion of all BEACH encounters, at which at least one problem of each chapter type, was managed.

In the examples provided, we use this column to answer the question: At how many encounters across Australia, did GPs manage one or more psychological problems in 2013–14?

Using the far right column of Table 7.3: our best estimate is: 17.1 million times (12.8% of 133.4 million), but we are 95% confident that the true number lies between 16.4 million (12.3% of 133.4 million) and 17.9 million (13.4% of 133.4 million).

Example 3: National increase in the number of problems managed from 2004–05 to 2013–14

There was a statistically significant increase in the number of problems managed at encounter, from 145.5 per 100 encounters in 2004–05 to 158.2 in 2013–14 (see Table 7.2 in *A decade of Australian general practice activity 2004–05 to 2013–14*).[1] The calculation used to extrapolate the effect of this change across Australia is:

(145.5/100) x 98.2 million = 142.9 million problems managed nationally in 2004–05, and
(158.2/100) x 133.4 million = 211.0 million problems managed nationally in 2013–14.

This suggests there were 68 million (211.0 million minus 142.9 million) more problems managed at GP–patient encounters in Australia in 2013–14 than in 2004–05. This is the result of the compound effect of the increase in the number of problems managed by GPs at encounters **plus** the increased number of visits over the decade across Australia.

Considerations and limitations in extrapolations

The extrapolations to the total events occurring nationally in any one year are only estimates. They may provide:

- an underestimate of the true 'GP workload' of a condition/treatment because the extrapolations are made to GP Medicare items claimed, not to the total number of GP encounters per year – an additional 5% or so of BEACH encounters annually include encounters paid by sources other than Medicare, such as DVA, state governments, workers compensation insurance, and employers, or not charged to anyone.
- an underestimate of activities of relatively low frequency with a skewed distribution across individual GPs. 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.

Further, the base numbers used in the extrapolations are rounded to the nearest 100,000, and extrapolation estimates are rounded to the nearest 100,000 if more than a million, and to the nearest 10,000 if below a million, so can only be regarded as approximations. However, the rounding has been applied to all years, so the effect on measures of change will be very small. Therefore, the extrapolation still provides an indication of the size of the effect of measured change nationally.

3 The sample

This chapter describes the GP sample and sampling methods used in the BEACH program. The methods are only summarised in this chapter. A more detailed explanation of the BEACH methods are described in Chapter 2.

A summary of the BEACH data sets is reported for each year from 2004–05 to 2013–14 in the companion report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1]

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 claims data by the Australian Government Department of Health (DoH) (see Chapter 2).

Contact was attempted with 4,894 GPs, but 24.4% could not be contacted. Nearly one-third of these had moved (and were untraceable), or had retired or died (Table 3.1), but more than half (58.6%) were those with whom contact could not be established after five calls. Younger GPs were harder to contact. In previous years these have largely been registrars moving through practices during training, who were no longer at the nominated practice and could not be traced. This year we were not able to measure the proportion of 'no contact' GPs who were registrars as, owing to changes in the privacy requirements for data provided by the DoH, information relating to any GPs who do not participate in BEACH must be destroyed quarterly, so is not available for comparison.

The fact that one in four GPs were not contactable may be a reflection of the uptake of electronic communication between GPs and DoH. Updating practice location may be overlooked, and may result in the contact details being out-of-date at the time the samples are provided.

The final participating sample consisted of 959 practitioners, representing 25.9% of those who were contacted and available, and 19.6% 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* = 4,894)	Per cent of contacts established (*n* = 3,702)
Letter sent and phone contact attempted	4,894	100.0	—
No contact	1,192	24.4	—
No phone number	18	0.4	—
Moved/retired/deceased	376	7.7	—
Unavailable (overseas, maternity leave, etc)	99	2.0	—
No contact after five calls	699	14.3	—
Telephone contact established	3,702	75.6	100.0
Declined to participate	2,453	50.0	66.3
Agreed but withdrew	290	5.9	7.8
Agreed and completed	959	19.6	25.9

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 (the sample frame) to identify and, if necessary, adjust for any sample bias that may affect the findings of the study. Comparisons between characteristics of the final GP sample and those of the GPs in the sample frame are provided below. The method by which weightings are generated as a result of these comparisons and applied to the data are described in Section 3.3.

Statistical comparisons, using the chi-square statistic (χ^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 their GP profile questionnaire. DoH provided the grouped 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 of BEACH participants and all GPs in the sample frame, in terms of sex and practice location as classified by the Australian Standard Geographical Classification (ASGC). In the final BEACH GP sample, there was a slight under-representation of GPs in the <35 year and 35–44 year age groups, and a slight over-representation in the
55+ years age group, compared with the Australian sample frame. The final BEACH GP sample was also over-represented in the proportion of GPs who had graduated from their primary medical degree in Australia (place of graduation), and there were some slight variations in state representation.

This result differs from year to year (the previous report showed no significant differences in terms of sex, place of graduation, state or practice location by ASGC, but a slight variation in some categories of GP age[31]).The effect of random sampling may influence this measure as, occasionally, the randomly selected recruitment sample can differ slightly from the sample frame in one or more variables, which can affect the ultimate representativeness of the final participant group.

The changes to privacy requirements regarding data provided by the DoH mean that we are no longer able to examine this possibility on an annual basis.

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

	BEACH[a][b]		Australia[a][c]	
Variable	**Number**	**Per cent of GPs (*n* = 959)**	**Number**	**Per cent of GPs (*n* = 22,598)**
Sex (χ^2 = 1.6, *p* = 0.21)				
Males	547	57.0	13,353	59.1
Females	412	43.0	9,245	40.9
Age (χ^2 = 12.8, *p* = 0.005)				
< 35 years	59	6.2	1,873	8.3
35–44 years	171	17.9	4,653	20.6
45–54 years	271	28.4	6,406	28.3
55+ years	453	47.5	9,666	42.8
Missing	5		—	
Place of graduation (χ^2 = 28.1, *p* < 0.001)				
Australia	678	71.0	14,132	62.5
Overseas	277	29.0	8,466	37.5
Missing	4		—	
State (χ^2 = 16.5, *p* = 0.02)				
New South Wales	339	35.6	7,384	32.7
Victoria	233	24.4	5,587	24.7
Queensland	197	20.7	4,557	20.2
South Australia	61	6.4	1,825	8.1
Western Australia	70	7.3	2,108	9.3
Tasmania	31	3.3	601	2.7
Australian Capital Territory	20	2.1	355	0.8
Northern Territory	2	0.2	181	1.6
Missing	6		—	
ASGC (χ^2 = 8.1, *p* = 0.15)				
Major Cities of Australia	657	68.9	15,970	70.7
Inner Regional Australia	205	21.5	4,301	19.0
Outer Regional Australia	80	8.4	1,869	8.3
Remote Australia	9	0.9	275	1.2
Very Remote Australia	2	0.2	180	0.8
Missing	6		3	

(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 MBS GP consultation services during the most recent 3-month Medicare Australia data period. Data provided by the Australian Government Department of Health.

Note: ASGC – Australian Standard Geographical Classification.[63]

GP activity in the previous year

Data on the number of MBS general practice service items claimed in the previous year were also provided by DoH for each GP in the drawn samples, and for all GPs (as a group) in the sample frame. These data were used to determine the 'activity level' of each GP, and to compare the activity level of the final participants with that of GPs in the sample frame.

When comparing GP activity level in the previous 12 months, the proportion of GPs in the final participant sample who had claimed fewer than 1,500 services in the previous year, was half that of GPs in the sample frame, and a larger proportion had claimed 1,501–3,000 services. There was a larger proportion of BEACH participants who claimed 3,001–6,000 and a smaller proportion with >6,000 claims. However, comparison of the mean number of claims made by the participating GPs and those in the GP sample frame showed a difference of only 290.8 services per year, or 5.6 consultations per week (on a 52-week year, or 6 per week on a 48-week year, assuming 4 weeks leave) (Table 3.3).

This result differs from year to year (the previous report showed no significant difference in mean activity level between the final BEACH sample and the Australian sample frame[31]). The effect of random sampling may also influence this measure as, occasionally, the randomly selected recruitment sample can differ slightly from the sample frame in one or more variables, which can affect the ultimate representativeness of the final participant group.

The changes to privacy requirements regarding data provided by the DoH mean that we are no longer able to examine this possibility.

Table 3.3: Activity level in the previous 12 months of participating GPs and GPs in the sample frame (measured by the number of GP service items claimed)

	Participants[(a)] (*n* = 959)		Australia[(b)] (*n* = 21,649)	
Variable	**Number of GPs**	**Per cent**	**Number of GPs**	**Per cent**
Activity (χ^2 = 58.8389, p < 0.0001)				
1–1,500 services in previous year	39	4.1	1,883	8.7
1,501–3,000 services in previous year	235	24.5	4,145	19.1
3,001–6,000 services in previous year	440	45.9	8,606	39.8
> 6,000 services in previous year	245	25.6	7,015	32.4
	Number of claims	**95% CI**	**Number of claims**	
Mean activity level	4,841.5	4,663.4–5,019.6	5,132.3	—
Standard deviation	2,810.3	—	—	—
Median activity level	4,219.0	—	—	—

(a) Missing data removed

(b) Number of GPs for whom these data were provided

Note: The 'n' for Australia reported above differs from that of Table 3.2 because activity level is only provided for GPs who were in the sample frame for the entire year. GPs coming into the sample frame part-way through the year do not have an 'activity level' for the previous year; CI – confidence interval.

3.3 Weighting the data

Age–sex weights

As described in Section 3.2, comparisons are made annually to test how representative BEACH participants are of the GPs in the original Australian sample frame. Occasionally, where participants in a particular age or sex group are over-represented or under-represented, GP age–sex weights need to be applied to the data sets in post-stratification weighting to achieve comparable estimates and precision. Because there are always marginal (even if not statistically significant) differences, even in years where the BEACH participants are representative in all age and sex categories, post-stratification weighting is applied for consistency over recording years.

Activity weights

In BEACH, each GP provides details of 100 encounters. There is considerable variation among GPs in the number of services each provides in a given year. Encounters were therefore assigned an additional weight directly proportional to the activity level of the recording GP. Please note – GP activity level was measured as the number of MBS general practice service items claimed by the GP in the previous 12 months (data supplied by DoH). Because the measure is based on annual activity, estimates could only be provided for GPs who had claimed service items during the whole year. Those entering the sample frame part way through the year (e.g. new graduates, migrants) will have met the eligibility criteria for inclusion in the BEACH sample (i.e. claiming a minimum of 375 MBS GP consultation services during the most recent 3-month Medicare Australia data period) but would not have an annual activity level.

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 encounter data.

3.4 Representativeness of the 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 weighted BEACH encounters with GP consultation service items claimed (excluding those with Department of Veterans' Affairs [DVA] patients) was compared with that of patients at all encounters claimed as GP consultation service items through Medicare in the 2013–14 study period (data provided by DoH).

As shown in Table 3.4, there is an excellent fit of the age–sex distribution of patients at the weighted BEACH encounters with that of the MBS claims distribution, with most precision ratios within the 0.91–1.09 range. This indicates that the BEACH sample is a good representation of Australian GP–patient encounters, as no age–sex category varied by more than 13% from the population distribution, and only a few by 13%.

The age–sex distribution of patients at BEACH encounters and for MBS GP consultation service item claims, is shown graphically for all patients in Figure 3.1, for males in Figure 3.2, and for females in Figure 3.3.

Table 3.4: Age–sex distribution of patients at BEACH and MBS GP consultation service items

Sex/age	BEACH–raw[a]		BEACH–weighted[b]		Australia[c]	Precision ratios (Australia = 1.00)	
	Number	Per cent (*n* = 80,190)	Number	Per cent (*n* = 80,238)	Per cent (*n* = 112,096,991)	Raw[a]	Weighted[c]
All							
< 1 year	1,604	2.0	1,560	1.9	1.9	1.04	1.01
1–4 years	3,603	4.5	3,601	4.5	5.0	0.91	0.91
5–14 years	4,198	5.2	4,362	5.4	6.1	0.86	0.89
15–24 years	6,063	7.6	6,276	7.8	8.5	0.89	0.92
25–44 years	16,991	21.2	17,166	21.4	22.8	0.93	0.94
45–64 years	21,941	27.4	21,711	27.1	26.8	1.02	1.01
65–74 years	12,272	15.3	12,279	15.3	13.6	1.13	1.13
75+ years	13,518	16.9	13,282	16.6	15.4	1.10	1.08
Male							
< 1 year	859	1.1	840	1.0	1.0	1.04	1.02
1–4 years	1,941	2.4	1,941	2.4	2.6	0.92	0.92
5–14 years	2,139	2.7	2,266	2.8	3.1	0.85	0.90
15–24 years	2,025	2.5	2,278	2.8	3.1	0.82	0.92
25–44 years	5,664	7.1	6,306	7.9	8.6	0.82	0.92
45–64 years	8,597	10.7	9,407	11.7	11.6	0.93	1.01
65–74 years	5,244	6.5	5,629	7.0	6.3	1.05	1.12
75+ years	5,356	6.7	5,634	7.0	6.4	1.04	1.09
Female							
< 1 year	745	0.9	720	0.9	0.9	1.04	1.01
1–4 years	1,662	2.1	1,659	2.1	2.3	0.89	0.89
5–14 years	2,059	2.6	2,096	2.6	3.0	0.86	0.88
15–24 years	4,038	5.0	3,998	5.0	5.4	0.93	0.92
25–44 years	11,327	14.1	10,860	13.5	14.2	0.99	0.95
45–64 years	13,344	16.6	12,305	15.3	15.2	1.09	1.01
65–74 years	7,028	8.8	6,650	8.3	7.3	1.20	1.13
75+ years	8,162	10.2	7,648	9.5	8.9	1.14	1.07

(a) Unweighted GP consultation Medicare service 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) MBS claims data provided by the Australian Government Department of Health.

Note: GP consultation Medicare services – see 'Glossary'. Only encounters with a valid age and sex are included in the comparison.

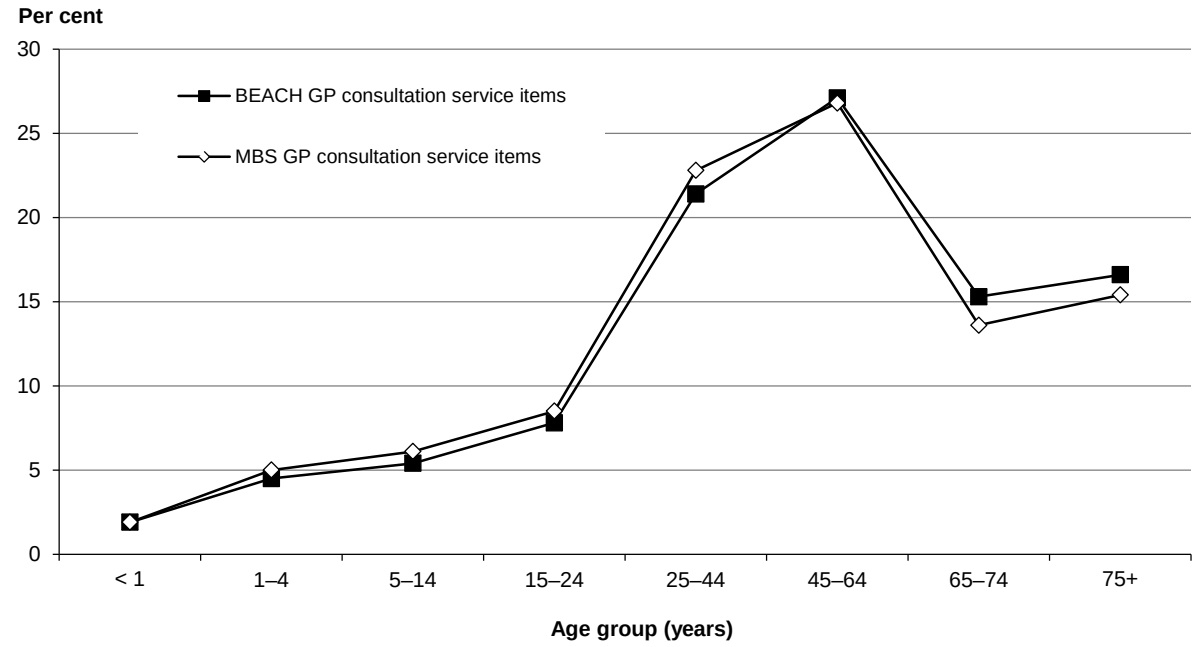


Figure 3.1: Age distribution of all patients at BEACH and MBS GP consultation services, 2013–14

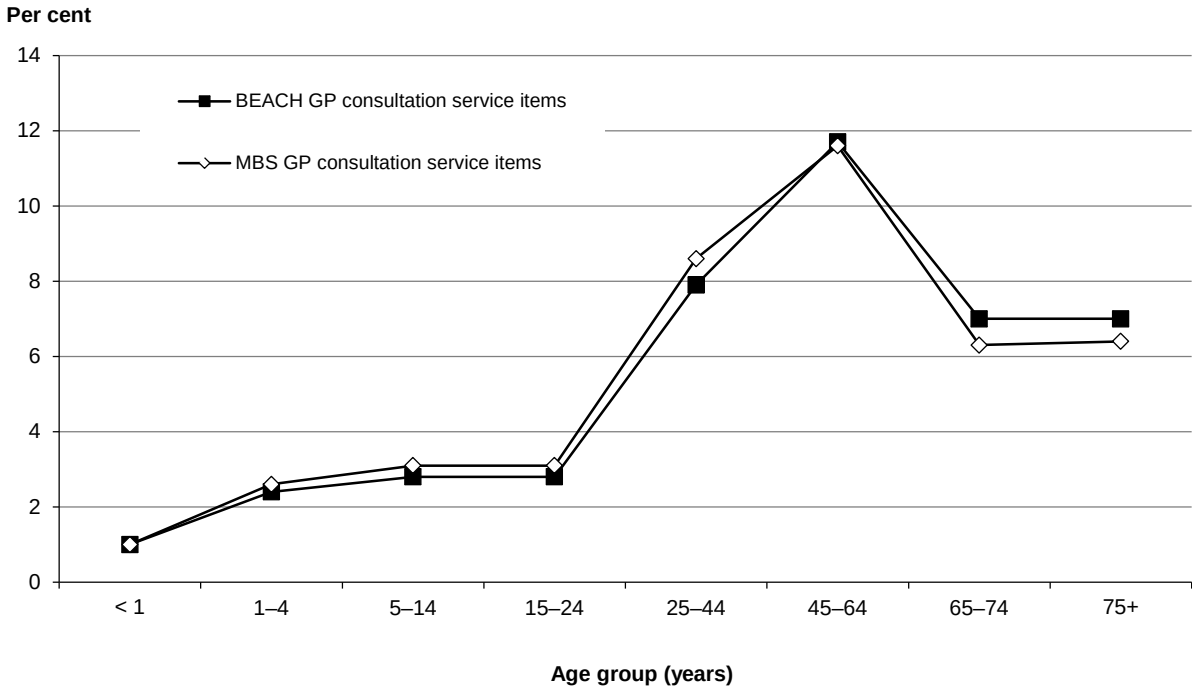


Figure 3.2: Age distribution of male patients at BEACH and MBS GP consultation services, 2013–14

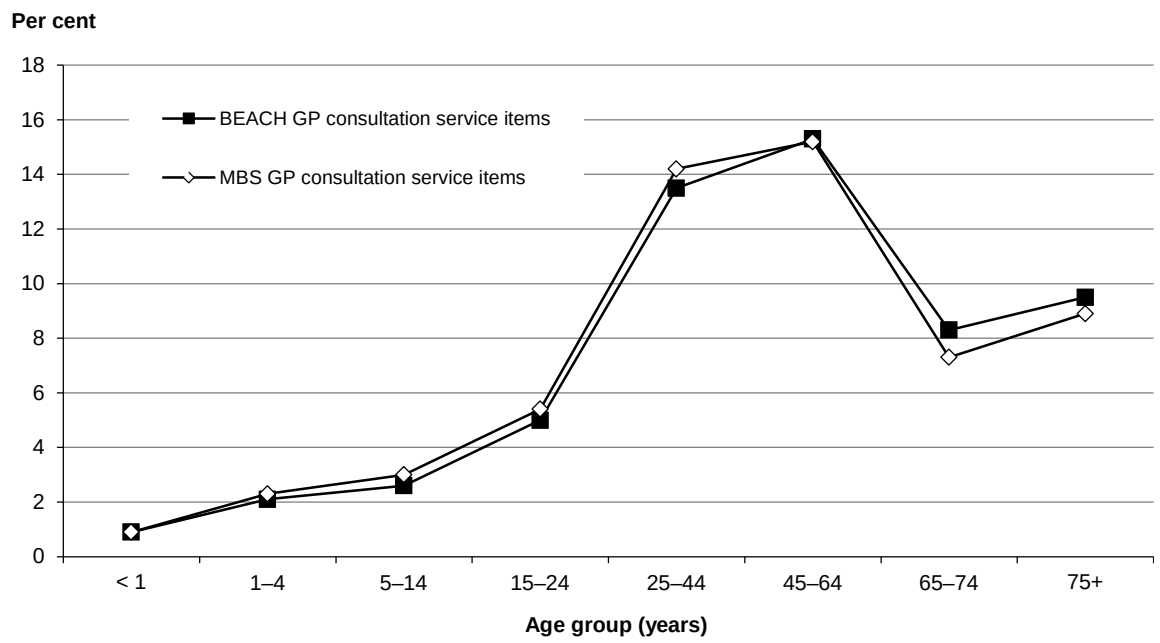


Figure 3.3: Age distribution of female patients at BEACH and MBS GP consultation services, 2013–14

3.5 The weighted data set

The final unweighted data set from the 16th year of collection contained encounters, reasons for encounters, problems and management/treatments. The apparent number of encounters and number of medications increased after weighting, and the number of reasons for encounter, 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. The weighted data set is used for all analyses in the remainder of this report.

Table 3.5: The BEACH data set, 2013–14

Variable	Raw	Weighted
General practitioners	959	959
Encounters	95,900	95,879
Reasons for encounter	150,368	148,880
Problems managed	156,546	151,675
Medications	98,959	98,394
Other treatments[(a)]	56,513	54,104
Referrals and admissions	16,176	15,012
Pathology	50,925	47,035
Imaging	10,907	10,460
Other investigations	841	753

(a) Other treatments excludes injections for immunisations/vaccinations (raw *n* = 4,591, weighted *n* = 4,245) (see Chapter 10).

4 The participating GPs

This chapter reports data collected between April 2013 and March 2014 (the 16th year of the BEACH program) about the participating GPs and their practices. Details of GP and practice characteristics are reported for each year from 2004–05 to 2013–14 in the 10-year summary report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1]

4.1 Characteristics of the GP participants

All participants returned a GP profile questionnaire, although some were incomplete. The results are provided in Tables 4.1 and 4.2 (median results not tabulated). Of the 959 participants:

- 57.0% were male, and 47.5% were aged 55 years and over (mean age 53.0 years; median age 54.0 years)
- 63.7% had been in general practice for more than 20 years
- 71.0% had graduated in Australia and 9.7% in Asia
- 30.6% spent more than 40 hours on average per week on direct patient care services (mean hours worked was 36.8; median was 37.0 hours)
- 36.1% expected to decrease their hours spent on direct patient care in the next 5 years
- 56.0% were Fellows of the RACGP, and 6.3% were Fellows of the ACRRM
- 54.0% had provided care in a residential aged care facility in the previous month
- 68.9% practised in Major cities (using Australian Standard Geographical Classification[63])
- 74.4% worked at only one practice location in a regular week, and 21.0% worked in two
- 31.8% were in practices of fewer than five individual GPs, and 25.6% were in practices of 10 or more individual GPs. On average, there were 7.2 individual GPs per practice, with a median of 6 per practice
- 51.9% were in practices of fewer than five full-time-equivalent (FTE) GPs. On average, there were 5.2 FTE GPs per practice, with a median of 4.5 FTE GPs per practice
- 83.3% of the GPs worked in a practice that employed practice nursing staff—for more than one-third of these (39.4%) the practice employed less than two FTEs (35–45 hours per week). On average, there were 0.4 FTE practice nurses per FTE GP
- nearly three-quarters (73.8%) had a co-located pathology laboratory or collection centre in, or within 50 metres of the practice, and more than half (55.8%) a co-located psychologist
- 43.0% worked in a practice that provided their own or cooperative after-hours care, and 56.4% in a practice that used a deputising service for after-hours patient care (multiple responses allowed).

Those interested in the clinical activity of overseas trained doctors will find more information in Bayram et al. (2007) *Clinical activity of overseas trained doctors practising in general practice in Australia*.[64] Readers interested in the effects of GP age on clinical practice will find more information in Charles et al. (2006) *The independent effect of age of general practitioner on clinical practice*.[65] For more information about the effect of the sex of the GP on clinical practice see Harrison et al. (2011) *Sex of the GP*.[66]

Table 4.1: Characteristics of participating GPs and their practices

GP characteristic	Number[(a)]	Per cent of GPs[(a)] (*n* = 959)
Sex (missing *n* = 0)		
Male	547	57.0
Female	412	43.0
Age (missing *n* = 5)		
< 35 years	59	6.2
35–44 years	171	17.9
45–54 years	271	28.4
55+ years	453	47.5
Years in general practice (missing *n* = 10)		
< 2 years	9	0.9
2–5 years	100	10.5
6–10 years	86	9.1
11–19 years	150	15.8
20+ years	604	63.7
Place of graduation (missing *n* = 4)		
Australia	678	71.0
Overseas	277	29.0
Asia	93	9.7
United Kingdom/Ireland	81	8.5
Africa and Middle East	48	5.0
Europe	22	2.3
New Zealand	18	1.9
Other	15	1.6
Direct patient care hours (worked) per week (missing *n* = 14)		
≤ 10 hours	10	1.1
11–20 hours	96	10.2
21–40 hours	550	58.2
41–60 hours	274	29.0
61+ hours	15	1.6
Expectations for providing direct patient care in 5 yrs time (missing *n* = 8)		
Increase number of working hours	87	9.1
No change to number of working hours	392	41.2
Decrease number of working hours	343	36.1
Stop working as a GP	88	9.3
Unsure about future work as a GP	41	4.3
Currently in general practice training program (missing *n* = 14)	44	4.7
Fellow of RACGP (missing *n* = 7)	533	56.0
Fellow of ACRRM (missing *n* = 37)	58	6.3

(continued)

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

GP characteristic	Number[(a)]	Per cent of GPs[(a)] (*n* = 959)
Patient care provided in previous month[(b)]		
In a residential aged care facility (missing *n* = 5)	515	54.0
As a salaried/sessional hospital medical officer (missing *n* = 5)	116	12.2
Practice location by ASGC remoteness structure (missing *n* = 6)		
Major cities	657	68.9
Inner regional	205	21.5
Outer regional	80	8.4
Remote	9	0.9
Very remote	2	0.2
Number of practice locations worked at in a regular week (missing *n* = 17)		
1	701	74.4
2	198	21.0
3	34	3.6
4+	9	1.0
Size of practice – number of individual GPs (missing *n* = 27)		
Solo	81	8.7
2–4	215	23.1
5–9	397	42.6
10–14	166	17.8
15+	73	7.8
Size of practice – full-time equivalent GPs (missing *n* = 128)		
< 1	4	0.5
1.0– <2	82	9.8
2.0– <3	101	12.2
3.0– <4	116	14.0
4.0– <5	128	15.4
5.0– <10	311	37.4
10.0– <15	67	8.1
15+	22	2.6
Practice nurse at major practice address (missing *n* = 12)	789	83.3
Number of individual practice nurses (missing *n* = 29)		
0	158	17.0
1	126	13.5
2	215	23.1
3	171	18.4
4–5	158	17.0
6+	102	11.0

(continued)

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

GP characteristic	Number[(a)]	Per cent of GPs[(a)] (*n* = 959)
Number of full-time equivalent practice nurses (missing *n* = 164)		
0	158	19.9
< 1	47	5.9
1.0– <2	266	33.5
2.0– <3	168	21.1
3.0– <4	83	10.4
4.0+	73	9.2
Co-located services[(c)] (missing *n* = 18)		
Pathology laboratory/collection centre	694	73.8
Psychologist	525	55.8
Physiotherapist	474	40.4
Medical specialist	209	22.2
Imaging/radiology services	214	22.7
Dietitian	410	43.6
Podiatrist	386	41.0
Other service	199	21.2
None	64	6.8
After-hours arrangements[(b)] (missing *n* = 8)		
Practice does own and/or cooperative with other practices	409	43.0
Practice does its own	292	30.7
Cooperative with other practices	135	14.2
Deputising service	536	56.4
Other arrangement	87	9.2

(a) Missing data removed.

(b) Multiple responses allowed.

(c) Services located/available in the practice, in the same building or within 50 metres, available on a daily or regular basis.

Note: ASGC – Australian Standard Geographical Classification; RACGP – Royal Australian College of General Practitioners; ACRRM – Australian College of Rural and Remote Medicine.

Table 4.2: Means of selected characteristics of participating GPs and their practices

Characteristic	Mean (*n* = 959)	95% LCL	95% UCL
Mean age of participating GPs (missing *n* = 5)	53.0	52.3	53.7
Mean hours worked per week on direct patient care (missing *n* = 14)	36.8	36.0	37.6
Mean number of individual GPs at major practice address (missing *n* = 27)	7.2	6.9	7.5
Mean number of FTE GPs at major practice address (missing *n* = 128)	5.2	5.0	5.5
FTE Practice nurse: FTE GP (missing *n* = 220)	0.4	0.3	0.4

Note: LCL – lower confidence limit; UCL – upper confidence limit; FTE – full-time equivalent.

4.2 Computer use at GP practices

As computers are increasingly being used by GPs in their clinical activity, the GP profile questionnaire was redesigned in 2013–14 to gain more comprehensive information about the uses to which computers are put in a general practice clinical environment (see Appendix 2). In particular, more specific information was collected about electronic and other prescribing, and whether the medical records used were paper only, a mix of paper and electronic medical records, or whether the records were completely paperless.

Table 4.3 shows the proportion of individual participating GPs who used computers for each of the listed activities.

- Only 2.4% of GPs did not use a computer at all for clinical purposes.
- 96.3% of GPs were producing prescriptions electronically (either ePrescribing or printing scripts).
- More than two-thirds (69.9%) reported they used electronic medical records exclusively (that is, were paperless).
- More than one-quarter (27.4%) reported maintaining a hybrid record where some patient information is kept electronically and some on paper records.

Table 4.3: Computer applications available/used at major practice address

Computer use	Number	Per cent of GPs (*n* = 959)
Computer not used for any clinical purposes (missing *n* = 5)	23	2.4
Not available	14	1.5
Available, not used	5	0.5
Internet/email only	4	0.4
Clinical use		
Prescribing[(a)] (missing *n* = 40)		
Electronic (ePrescribing online)	291	31.7
*(*Electronic + print scripts)*	*(84)*	*(9.1)*
Print scripts only	589	64.1
Paper only (handwritten)	34	3.7
Both print scripts and handwritten	5	0.5
Internet (missing *n* = 5)	735	77.0
Email (missing *n* = 5)	582	61.0
Medical records (missing *n* = 11)		
Complete (paperless)	663	69.9
Partial/hybrid records	260	27.4
Paper records only	25	2.6

(a) Multiple responses allowed.

* Subset of ePrescribing.

Those interested in the effect of computerisation on quality of care in general practice will find more detailed information in Henderson (2007) *The effect of computerisation on the quality of care in Australian general practice*.[67]

4.3 Changes in characteristics of the GPs over the decade 2004–05 to 2013–14

Changes over the decade 2004–05 to 2013–14 are described in detail in Chapter 4 of the accompanying report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1] Briefly, the major changes in the characteristics of the participating GPs were:

- the proportion of GP participants who were female increased over time
- the proportion of GPs who were younger than 45 years decreased, whereas the proportion aged 55 years or more increased over the decade
- reflecting the increase in the age of GP participants, the proportion who had worked in general practice for more than 20 years also increased significantly over time
- the proportion of GPs working 21–40 hours per week on direct patient care significantly increased, and the proportion working 41–60 hours, and the proportion working more than 60 hours, significantly decreased
- the mean number of hours spent on direct patient care significantly decreased
- the proportion of participants holding the Fellowship of the RACGP increased over the decade
- the proportion of GPs in solo practice decreased over time, and the proportion in practices with 10 or more individual GPs almost doubled
- fewer practices are providing after-hours care on their own, or in cooperation with other practices, but more practices are using deputising services for after-hours care than a decade ago
- computers have become increasingly available at practices, as has their use for clinical activity.

5 The encounters

This chapter describes the content and types of encounters recorded in the 2013–14 BEACH year. Data about the encounters are reported for each year from 2004–05 to 2013–14 in the 10-year report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1]

5.1 Content of the encounters

In 2013–14, details of 95,879 encounters (weighted data) were available for 959 GPs. A summary of these encounters is provided 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 gave 155 RFEs, and GPs managed about 158 problems per 100 encounters.
- Chronic problems accounted for 35.6% of all problems managed, and an average of 56.3 chronic problems were managed per 100 encounters.
- New problems accounted for 37.0% of all problems, and on average 58.5 new problems were managed per 100 encounters.
- Work-related problems were managed at a rate of 2.4 per 100 encounters.
- Medications were the most common treatment choice (102.6 per 100 encounters), most of these being prescribed (83.5 per 100), rather than supplied by the GP (10.2 per 100) or advised for over-the-counter purchase (8.9 per 100).
- For an 'average' 100 GP–patient encounters, GPs provided 103 medications and 38 clinical treatments (such as advice and counselling), undertook 19 procedures, made 10 referrals to medical specialists and 5 to allied health services, and placed 49 pathology test orders and 11 imaging test orders (Table 5.1).

Table 5.1: Summary of morbidity and management at GP–patient encounters

Variable	Number	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Rate per 100 problems (*n* = 151,675)	95% LCL	95% UCL
General practitioners	959	—	—	—	—	—	—
Encounters	95,879	—	—	—	—	—	—
Reasons for encounter	148,880	155.3	153.3	157.3	—	—	—
Problems managed	151,675	158.2	155.7	160.7	—	—	—
New problems	56,126	58.5	57.0	60.1	37.0	36.0	38.0
Chronic problems	54,027	56.3	54.4	58.3	35.6	34.7	36.6
Work-related	2,268	2.4	2.2	2.5	1.5	1.4	1.6
Medications	98,394	102.6	100.1	105.2	64.9	63.5	66.2
Prescribed	80,046	83.5	81.2	85.8	52.8	51.5	54.1
GP-supplied	9,797	10.2	9.4	11.0	6.5	6.0	6.9
Advised OTC	8,550	8.9	8.2	9.6	5.6	5.2	6.1
Other treatments[(a)]	54,104	56.4	53.8	59.0	35.7	34.2	37.2
Clinical*	36,024	37.6	35.3	39.8	23.8	22.4	25.1
Procedural*	18,081	18.9	18.0	19.7	11.9	11.4	12.4
Referrals	15,012	15.7	15.1	16.3	9.9	9.6	10.2
Medical specialist*	9,139	9.5	9.1	9.9	6.0	5.8	6.3
Allied health services*	4,728	4.9	4.6	5.2	3.1	2.9	3.3
Hospital*	382	0.4	0.3	0.5	0.3	0.2	0.3
Emergency department*	272	0.3	0.2	0.3	0.2	0.2	0.2
Other referrals*	491	0.5	0.4	0.6	0.3	0.3	0.4
Pathology	47,035	49.1	47.1	51.0	31.0	30.0	32.1
Imaging	10,460	10.9	10.5	11.4	6.9	6.6	7.2
Other investigations[(b)]	753	0.8	0.7	0.9	0.5	0.4	0.5

(a) Other treatments includes treatment given by practice nurses in the context of the GP–patient encounter and treatment given by GPs.

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

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, <hdl.handle.net/2123/11882>).

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) Medicare Benefits Schedule/Department of Veterans' Affairs (MBS/DVA) item number was claimable for the encounter, GP participants were asked to record only one item number. Where multiple item numbers (e.g. an A1 item such as 'standard surgery consultation' and a procedural item number) were claimable for an encounter, GPs were instructed to record the lower of the item numbers (usually an A1 item number).

Changes to the BEACH form were made in the 2005–06 BEACH year to capture practice nurse activity associated with GP–patient consultations. One of these changes was to allow GPs to record up to three Medicare item numbers per encounter. For comparability with earlier years, in Tables 5.3 and 5.4 only one item number per MBS/DVA-claimable encounter has been counted. Selection of one item number was undertaken on a priority basis: consultation item numbers overrode incentive item numbers, which overrode procedural item numbers, which overrode other Medicare item numbers.

Table 5.2 provides an overview of the MBS/DVA item numbers recorded in BEACH in 2013–14. At least one MBS/DVA item number was recorded at 84,153 encounters (87.8% of all BEACH encounters). A single item number was recorded at 95.6% of BEACH encounters said to be claimable from the MBS/DVA.

Table 5.2: Overview of MBS items recorded

Variable	Number	Per cent of MBS/DVA encounters (*n* = 84,153)
Encounters at which one MBS item was recorded	80,464	95.6
Encounters at which two MBS items were recorded	3,217	3.8
Encounters at which three MBS items were recorded	472	0.6
Total encounters at which at least one item was recorded	**84,153**	**100.0**

Note: MBS – Medicare Benefits Schedule; DVA – Department of Veterans' Affairs.

Of the 88,151 encounters where a payment source was recorded (counting only one item number per encounter), 95.5% related to MBS/DVA GP items of service. Items with other health professionals not accompanied by a GP item of service were recorded infrequently.

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 1.7%, and direct encounters for 98.2% of encounters at which a payment source was recorded.
- The vast majority of all direct encounters (97.1%) were claimable through Medicare or the DVA.
- Direct encounters where the GP indicated that no charge was made were rare, accounting for 0.4% of encounters.
- Encounters claimable through workers compensation accounted for 1.7%.
- Encounters claimable through other sources (e.g. hospital-paid encounters) accounted for 0.7%.

Table 5.3: Type of encounter at which a source of payment was recorded for the encounter (counting one item number per encounter)

Type of encounter	Number	Per cent of encounters[a] (*n* = 88,151)	95% LCL	95% UCL	Per cent of direct encounters (*n* = 86,607)
Indirect encounters[b]	1,542	1.7	1.5	2.0	
Direct encounters	86,607	98.2	98.0	98.5	100.0
MBS/DVA items of service (direct encounters only)[c]	84,136	95.4	95.1	95.8	97.1
Workers compensation	1,537	1.7	1.6	1.9	1.8
Other paid (hospital, state, etc.)	603	0.7	0.5	0.8	0.7
No charge	332	0.4	0.3	0.5	0.4
Other health professional only items (unspecified as direct or indirect)	2	0.0Ŧ	0.0	0.0	—
Total	**88,151**	**100.0**	**—**	**—**	**—**

(a) Missing data removed from analysis (*n* = 7,728).

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

(c) Includes direct encounters at which either a GP or an item with an other health professional (or both) was recorded.

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

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

Table 5.4 provides a summary of the MBS items recorded in BEACH, counting one item number per encounter. This provides comparable results about item numbers recorded to those reported in previous years.

- Standard surgery consultations accounted for 78.8% of MBS/DVA-claimable GP consultations, and for 75.2% of all encounters for which a payment source was recorded.
- 11.5% of MBS/DVA-claimable encounters were claimable as long or prolonged surgery consultations.
- Home or institution visits, and visits at residential aged care facilities were all relatively rare, together accounting for 2.8% of MBS/DVA-claimable encounters.
- About 1.4% of encounters were claimable as GP mental health care items, 1.4% as chronic disease management items, and 0.4% as health assessments.
- There was a decrease in home visits in the decade to 2010[68] and this has important implications for ageing patients wishing to be managed at home rather than in institutional care. The changes to the Medicare schedule in May 2010 mean that it is no longer possible to separate home visits from institutional visits using Medicare item numbers. The BEACH collection form was altered from the 2012–13 BEACH data year onwards to include a tick box to identify home visits. In 2013–14, there were 633 encounters identified as home visits at a rate of 0.7 per 100 encounters (95% CI: 0.4–1.0). An MBS/DVA GP item was recorded at 628 home visit encounters, or 0.7% (95% CI: 0.4–1.1) of encounters at which an MBS/DVA item was recorded (results not tabled).

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

MBS/DVA item	Number	Rate per 100 encounters[(a)] (*n* = 88,151)	95% LCL	95% UCL	Per cent of MBS/DVA GP items (*n* = 84,142)
Short surgery consultations	1,654	1.9	1.6	2.2	2.0
Standard surgery consultations	66,304	75.2	74.0	76.5	78.8
Long surgery consultations	8,983	10.2	9.5	10.9	10.7
Prolonged surgery consultations	707	0.8	0.6	1.0	0.8
Residential aged care facility (RACF) visits	1,558	1.8	1.2	2.3	1.9
Home or institution visits (excluding RACF)	755	0.9	0.7	1.1	0.9
GP mental health care	1,205	1.4	1.2	1.5	1.4
Chronic disease management items	1,255	1.4	1.2	1.6	1.5
Health assessments	355	0.4	0.3	0.5	0.4
Case conferences	6	0.0[Ŧ]	0.0	0.0	0.0
Attendances associated with Practice Incentives Program payments	159	0.2	0.1	0.2	0.2
Other items	1,201	1.4	1.0	1.7	1.4
Therapeutic procedures	311	0.4	0.3	0.4	0.4
Surgical operations	366	0.4	0.3	0.5	0.4
Acupuncture	144	0.2	0.1	0.3	0.2
Other items	381	0.4	0.1	0.7	0.5
Total MBS/DVA items of service (GPs only)	**84,142**	**95,5**	**95.1**	**95.8**	**100.0**

(a) Encounters with missing payment source were removed from analysis (*n* = 7,728). Denominator used for analysis *n* = 88,151.

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

Note: LCL – lower confidence limit; UCL – upper confidence limit; MBS – Medicare Benefits Schedule; DVA – Australian Government Department of Veterans' Affairs; GP – general practitioner; RACF – residential aged care facility.

Table 5.5 provides the distribution of all MBS/DVA item numbers recorded across Medicare item number groups and the number of encounters at which at least one of each type of item number was recorded. Overall, there were 88,314 MBS item numbers recorded at 84,153 MBS/DVA-claimable encounters in 2013–14, an average of 1.0 item per encounter claimable through MBS/DVA.

Surgery consultations (including short, standard, long and prolonged) were the most commonly recorded type of item number, accounting for 87.9% of all MBS items, one of these items being recorded at 92.3% of MBS claimable encounters.

Items for hospital, residential aged care and home visits together accounted for 2.6% of all MBS items. Items for other practice nurse, Aboriginal health worker and allied health services accounted for 0.4% of all MBS items, and were recorded at 0.6% of claimable encounters at which at least one MBS item was recorded.

Table 5.5: Distribution of MBS/DVA service item numbers recorded, across item number groups and encounters

	All MBS/ DVA items[a] (*n* = 88,314)		Encounters with at least one item recorded[b] (*n* = 84,153)			
Items/encounters	**Number**	**Per cent**	**Number**	**Per cent**	**95% LCL**	**95% UCL**
Surgery consultations	77,649	87.9	77,648	92.3`	91.4	93.1
Home, institution and residential aged care visits	2,313	2.6	2,313	2.7	2.1	3.4
Chronic disease management items (including case conferences)	2,609	3.0	1,910	2.3	2	2.6
Other practice nurse/Aboriginal health worker/allied health worker services	387	0.4	387	0.5	0.3	0.6
GP mental health care items	1,580	1.8	1,580	1.9	1.7	2.1
Surgical operations	1,268	1.4	1,205	1.4	1.2	1.6
Diagnostic procedures and investigations	601	0.7	577	0.7	0.6	0.8
Health assessments	504	0.6	504	0.6	0.5	0.7
Therapeutic procedures	424	0.5	419	0.5	0.4	0.6
Acupuncture	146	0.2	146	0.2	0.1	0.3
Pathology services	176	0.2	173	0.2	0.2	0.3
Attendances associated with Practice Incentives Program payments	200	0.2	199	0.2	0.2	0.3
Other items	448	0.5	447	0.5	0.2	0.8
Total items	**88,314**	**100.0**	**—**	**—**	**—**	**—**

(a) Up to three MBS/DVA items could be recorded at each encounter.

(b) Identifies encounters where at least one item from the MBS group was recorded.

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

5.3 Consultation length

In a subsample of 31,816 BEACH MBS/DVA-claimable encounters at which start and finish times had been recorded by the GP, the mean length of consultation in 2013–14 was 14.8 minutes (95% CI: 14.6–15.7). The median length was 13.0 minutes (results not tabled).

For A1 MBS/DVA-claimable encounters, the mean length of consultation in 2013–14 was 14.4 minutes (95% CI: 14.1–14.7), and the median length was 13.0 minutes (results not tabled).

Methods describing the substudy from which data on consultation length are collected are described in Section 2.6. In all our previous reports of consultation length, we have relied on the raw data from those 'timed' consultations for which a Medicare/DVA item was recorded as claimable. In this analysis, for the first time we weighted the timed encounters by GP age–sex and by activity level (the number of consultations they claimed in a year through Medicare or DVA). This ensured that the distribution of length of consultations reflected the distribution for length of all Medicare claimed GP encounters, rather than being a description of time spent by the sampled GPs.

The determinants of consultation length were investigated by Britt et al. (2004) in *Determinants of GP billing in Australia: content and time*[69] and Britt et al. (2005) in *Determinants of consultation length in Australian general practice*.[70] Length of GP consultations is also discussed in a 'Byte from BEACH' published on the FMRC website (2014): Britt H, Valenti L, Miller G. *Debunking the myth of general practice as '6 minute medicine'*.[71]

5.4 Changes in the encounters over the decade 2004–05 to 2013–14

Chapter 5 of the companion report, *A decade of Australian general practice activity 2004–05 to 2013–14*,[1] provides an overview of changes in general practice encounters over the past decade. The major changes between 2004–05 and 2013–14 are summarised below.

- There was an increase in the average number of problems managed at encounter, from 146 per 100 encounters in 2004–05 to 158 in 2013–14. This change was reflected in an increase in the number of new and chronic problems managed per 100 encounters.
- The number of work-related problems managed significantly decreased over the 10 years, from 3.1 to 2.4 per 100 encounters.

Of the encounters claimable from Medicare/DVA:

- short surgery consultations as a proportion of all Medicare/DVA-claimed consultations increased over the study period
- the proportion claimable as: chronic disease management items; health assessments; and GP mental health care, all increased significantly
- the mean length A1 Medicare/DVA-claimable GP–patient encounters in 2013–14 was significantly longer than in many years in the previous decade. The mean length of all Medicare/DVA-claimable encounters increased significantly over the decade from 14.1 minutes to 14.8 minutes. The median length of both groups of Medicare/DVA-claimable GP–patient encounters increased from 12 to 13 minutes from 2012–13 to 2013–14..

The changes in management actions are reported in terms of rates per 100 encounters. As there was a significant increase in the number of problems managed at encounters, it may therefore be more informative to consider changes in management actions in terms of rates per 100 problems managed.

- The number of procedures undertaken per 100 encounters rose significantly from 15.5 to 18.9 per 100 encounters.
- There was an increased rate of referrals, which was reflected in referrals to allied health services and to medical specialists.
- Pathology test/battery order rates increased by 34%. Orders for imaging tests also increased.

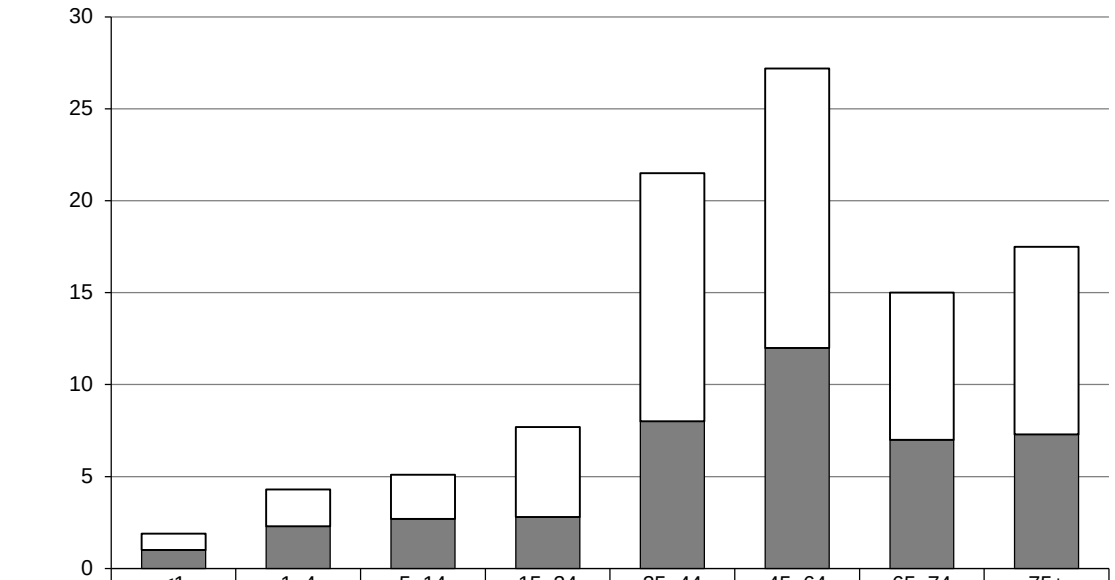
6 The patients

This chapter reports data collected between April 2013 and March 2014 about the characteristics of patients at GP encounters and their reasons for encounter, from the 16th year of the BEACH program. Data on patient characteristics and reasons for encounter are reported for each year from 2004–05 to 2013–14 in the 10-year report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1]

6.1 Age–sex distribution of patients at encounter

The age–sex distribution of patients at encounters is shown in Figure 6.1. Females accounted for the greater proportion (56.6%) of encounters (Table 6.1). This was reflected across all age groups except among children aged less than 15 years (Figure 6.1).

Patients aged less than 25 years accounted for 18.9% of encounters; those aged 25–44 years for 21.5%; those aged 45–64 years accounted for 27.2 and those aged 65 years and over for 32.5% of encounters (Table 6.1).



	<1	1–4	5–14	15–24	25–44	45–64	65–74	75+
Female	0.9	2.0	2.4	4.9	13.5	15.2	8.0	10.2
Male	1.0	2.3	2.7	2.8	8.0	12.0	7.0	7.3

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.

Figure 6.1: Age–sex distribution of patients at encounter, 2013–14

6.2 Other patient characteristics

Table 6.1 presents other characteristics of the patients at GP encounters. In summary:

- the patient was new to the practice at 6.6% of encounters
- nearly half of the encounters were with patients who held a Commonwealth concession card (43.5%) and/or a Repatriation health card (2.2%)
- at 1 in 10 encounters the patient was from a non-English-speaking background
- at 1.7% of encounters the patient identified themselves as an Aboriginal and/or Torres Strait Islander person.

Table 6.1: Characteristics of the patients at encounters

Patient characteristics	Number	Per cent of encounters (*n* = 95,879)	95% LCL	95% UCL
Sex (missing)[(a)]	(927)			
Males	40,904	43.1	42.2	44.0
Females	54,048	56.9	56.0	57.8
Age group (missing)[(a)]	(814)			
< 1 year	1,779	1.9	1.7	2.0
1–4 years	4,017	4.2	3.9	4.5
5–14 years	4,851	5.1	4.8	5.4
15–24 years	7,299	7.7	7.3	8.1
25–44 years	20,428	21.5	20.7	22.3
45–64 years	25,795	27.1	26.6	27.7
65–74 years	14,203	14.9	14.4	15.5
75+ years	16,692	17.6	16.6	18.5
New patient to practice (missing)[(a)]	(2,017)			
New patient to practice	6,168	6.6	6.0	7.1
Patient seen previously	87,694	93.4	92.9	94.0
Commonwealth concession card status (missing)[(a)]	(8,623)			
Has a Commonwealth concession card	40,560	43.5	41.9	45.1
No Commonwealth concession card	52,663	56.5	54.9	58.1
Repatriation health card status (missing)[(a)]	(9,961)			
Has a Repatriation health card	2,080	2.2	2.0	2.4
No Repatriation health card	90,688	97.8	97.6	98.0
Language status (missing)[(a)]	(9,859)			
Non-English-speaking background[(b)]	8,615	10.0	8.2	11.8
English-speaking background	77,405	90.0	88.2	91.8
Indigenous status (missing)[(a)]	(9,998)			
Aboriginal and/or Torres Strait Islander[(c)]	1,429	1.7	1.3	2.1
Non-Indigenous	84,451	98.3	97.9	98.7

(a) Missing data removed.
(b) Speaks a language other than English as their primary language at home.
(c) Self-identified.
Note: LCL – lower confidence limit; UCL – upper confidence limit.

6.3 Patient reasons for encounter

Patient reasons for encounter (RFEs) reflect the patient's demand for care and can provide an indication of service use patterns, which may benefit from intervention at a population level.[72]

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 or 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, a single RFE that relates to multiple problems, multiple RFEs that relate to a single problem managed, or multiple RFEs that relate to multiple problems managed at the encounter. GPs may also manage a problem that was unrelated to the patient's RFE (e.g. a patient presents about their diabetes but while they are there the GP also provides a vaccination and performs a Pap smear).

Number of reasons for encounter

There were 148,880 RFEs recorded at 95,879 encounters in 2013–14 (Table 6.3). At 57.7% of encounters only one RFE was recorded, at 29.4% two RFEs were recorded and at 12.9% of encounters three RFEs were recorded (Table 6.2). On average, patients presented with 155.3 RFEs per 100 encounters, or about one-and-a-half RFEs per encounter (Table 6.3).

Table 6.2: Number of patient reasons for encounter

Number of RFEs at encounter	Number of encounters (*n* = 95,879)	Per cent of encounters	95% LCL	95% UCL
One RFE	55,276	57.7	56.4	59.0
Two RFEs	28,204	29.4	28.7	30.1
Three RFEs	12,399	12.9	12.1	13.7
Total	**95,879**	**100.0**	**—**	**—**

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

Reasons for encounter by ICPC-2 component

The distribution of patient RFEs by ICPC-2 component is presented in Table 6.3, expressed as a percentage of all RFEs and as a rate per 100 encounters with 95% confidence limits. In the 'diagnosis, diseases' group we provide data about infections, injuries, neoplasms, congenital anomalies and 'other' diagnoses.

Approximately 4 out of 10 (40.2%) patient RFEs were expressed in terms of a symptom or complaint (for example, 'tired', 'fever'). RFEs described in diagnostic terms (for example, 'about my diabetes', 'for my depression') accounted for 19.1% of RFEs. The remaining 40.7% of RFEs were described in terms of processes of care, such as requests for a health check, requests for prescriptions, referrals, test results or medical certificates.

On average at 100 encounters, patients described 62.5 'symptom or complaint' RFEs and 29.7 diagnosis/disease RFEs, made 26.4 presentations for a procedure and made 16.2 requests for treatment.

Table 6.3: Patient reasons for encounter by ICPC-2 component

ICPC-2 component	Number	Per cent of total RFEs (*n* = 148,880)	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL
Symptoms and complaints	59,905	40.2	62.5	60.6	64.4
Diagnosis, diseases	28,431	19.1	29.7	28.1	31.2
Infections	6,507	4.4	6.8	6.3	7.3
Injuries	4,342	2.9	4.5	4.3	4.8
Neoplasms	967	0.6	1.0	0.9	1.1
Congenital anomalies	223	0.1	0.2	0.2	0.3
Other diagnoses, diseases	16,392	11.0	17.1	15.9	18.2
Diagnostic and preventive procedures	25,309	17.0	26.4	25.4	27.4
Medications, treatments and therapeutics	15,550	10.4	16.2	15.5	17.0
Results	9,000	6.0	9.4	8.9	9.9
Referrals and other RFEs	7,572	5.1	7.9	7.4	8.4
Administrative	3,114	2.1	3.2	3.0	6.5
Total RFEs	**148,880**	**100.0**	**155.3**	**153.3**	**157.3**

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 6.4. 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 45.1 per 100 encounters, with requests for prescriptions, general check-ups and test results the most frequently recorded of these. RFEs related to the respiratory system occurred at a rate of 19.1 per 100 encounters, those related to skin at a rate of 15.9 per 100, and those relating to the musculoskeletal system at a rate of 15.6 per 100 encounters (Table 6.4).

The far right column of Table 6.4 shows the proportion of patient encounters where there is at least one RFE within an ICPC-2 chapter (representing body systems). Patients may describe multiple RFEs that would be classified within the same ICPC-2 chapter (e.g. depression and anxiety; rheumatoid arthritis and osteoporosis), however this column will only report only one instance per chapter.

RFEs classified as 'General and unspecified' were described at least once at 39.2% of encounters in 2013–14, equating to approximately 52.3 million encounters nationally in 2013–14. At least one respiratory RFEs was recorded at 16.5% of encounters, while one or more skin RFEs were recorded at 14.9% of encounters.

You can use these two results together and extrapolate both. Using respiratory related RFEs as an example, we estimate that nationally in 2013–14, patients described 25.5 million RFEs related to the respiratory system, at least 22 million GP–patient encounters.

Table 6.4: 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* = 148,880)	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Per cent of encounters[b] (*n* = 95,879) (95% CI)
General and unspecified	**43,288**	**29.1**	**45.1**	**43.8**	**46.5**	**39.2 (38.2–40.2)**
Prescription NOS	9,436	6.3	9.8	9.2	10.5	—
General check-up*	4,595	3.1	4.8	4.5	5.1	—
Results tests/procedures NOS	7,665	5.1	8.0	7.6	8.4	—
Administrative procedure NOS	2,818	1.9	2.9	2.7	3.1	—
Immunisation/vaccination NOS	2,122	1.4	2.2	1.9	2.5	—
Fever	1,722	1.2	1.8	1.5	2.1	—
Other referrals NEC	1,347	0.9	1.4	1.3	1.5	—
Weakness/tiredness	1,311	0.9	1.4	1.2	1.5	—
Observation/health education/advice/ diet NOS	1,078	0.7	1.1	1.0	1.2	—
Blood test NOS	1,045	0.7	1.1	1.0	1.2	—
Clarify or discuss patient's RFE	850	0.6	0.9	0.8	1.0	—
Follow-up encounter unspecified	818	0.5	0.9	0.7	1.0	—
Chest pain NOS	815	0.5	0.9	0.8	0.9	—
Other reason for encounter NEC	755	0.5	0.8	0.7	0.9	—
Trauma/injury NOS	711	0.5	0.7	0.7	0.8	—
Respiratory	**18,269**	**12.3**	**19.1**	**18.2**	**19.9**	**16.5 (15.8–17.1)**
Cough	5,245	3.5	5.5	5.1	5.9	—
Immunisation/vaccination – respiratory	2,713	1.8	2.8	2.3	3.3	—
Throat symptom/complaint	2,392	1.6	2.5	2.3	2.7	—
Upper respiratory tract infection	1,616	1.1	1.7	1.5	1.9	—
Sneezing/nasal congestion	1,146	0.8	1.2	1.0	1.4	—
Shortness of breath/dyspnoea	705	0.5	0.7	0.6	0.8	—
Skin	**15,233**	**10.2**	**15.9**	**15.2**	**16.5**	**14.9 (14.3–15.5)**
Rash*	2,481	1.7	2.6	2.4	2.8	—
Skin symptom/complaint, other	1,756	1.2	1.8	1.7	2.0	—
Skin check-up*	1,466	1.0	1.5	1.3	1.8	—
Swelling (skin)*	984	0.7	1.0	0.9	1.1	—
Laceration/cut	755	0.5	0.8	0.7	0.9	—

(continued)

Table 6.4 (continued): 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* = 148,880)	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Per cent of encounters[b] (*n* = 95,879) (95% CI)
Musculoskeletal	**14,969**	**10.1**	**15.6**	**15.1**	**16.1**	**14.4 (14.0–14.9)**
Back complaint*	3,110	2.1	3.2	3.0	3.5	—
Knee symptom/complaint	1,259	0.8	1.3	1.2	1.4	—
Shoulder symptom/complaint	1,128	0.8	1.2	1.1	1.3	—
Foot/toe symptom/complaint	1,056	0.7	1.1	1.0	1.2	—
Leg/thigh symptom/complaint	919	0.6	1.0	0.9	1.0	—
Musculoskeletal injury NOS	783	0.5	0.8	0.7	0.9	—
Neck symptom/complaint	769	0.5	0.8	0.7	0.9	—
Circulatory	**9,607**	**6.5**	**10.0**	**9.4**	**10.6**	**9.6 (9.0–10.1)**
Cardiovascular check-up*	4,156	2.8	4.3	3.9	4.7	—
Hypertension/high blood pressure*	1,840	1.2	1.9	1.6	2.3	—
Prescription – cardiovascular	680	0.5	0.7	0.6	0.8	—
Digestive	**9,331**	**6.3**	**9.7**	**9.4**	**10.6**	**8.7 (8.4–8.9)**
Abdominal pain*	1,970	1.3	2.1	1.9	2.2	—
Diarrhoea	1,157	0.8	1.2	1.1	1.3	—
Vomiting	814	0.5	0.8	0.8	0.9	—
Psychological	**8,876**	**6.0**	**9.3**	**8.8**	**9.7**	**8.4 (8.0–8.8)**
Depression*	2,034	1.4	2.1	1.9	2.3	—
Anxiety*	1,372	0.9	1.4	1.3	1.6	—
Sleep disturbance	942	0.6	1.0	0.9	1.1	—
Endocrine and metabolic	**6,043**	**4.1**	**6.3**	**5.9**	**6.7**	**6.0 (5.7–6.4)**
Diabetes (non-gestational)*	1,299	0.9	1.4	1.2	1.5	—
Prescription – endocrine/metabolic	912	0.6	1.0	0.8	1.1	—
Female genital system	**4,532**	**3.0**	**4.7**	**4.4**	**5.0**	**4.4 (4.1–4.7)**
Female genital check-up/Pap smear*	1,664	1.1	1.7	1.6	1.9	—
Neurological	**4,141**	**2.8**	**4.3**	**4.1**	**4.5**	**4.1 (3.9–4.7)**
Headache*	1,444	1.0	1.5	1.4	1.6	—
Vertigo/dizziness	993	0.7	1.0	1.0	1.1	—
Ear	**3,219**	**2.2**	**3.4**	**3.2**	**3.5**	**3.2 (3.1–3.4)**
Ear pain/earache	1,159	0.8	1.2	1.1	1.3	—
Pregnancy and family planning	**2,885**	**1.9**	**3.0**	**2.8**	**3.2**	**2.9 (2.7–3.1)**

(continued)

Table 6.4 (continued): 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* = 148,880)	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Per cent of encounters[(b)] (*n* = 95,879) (95% CI)
Urology	**2,662**	**1.8**	**2.8**	**2.6**	**2.9**	**2.5 (2.4–2.7)**
Eye	**1,954**	**1.3**	**2.0**	**1.9**	**2.2**	**1.9 (1.8–2.1)**
Blood and blood-forming organs	**1,660**	**1.1**	**1.7**	**1.6**	**1.9**	**1.7 (1.6–1.9)**
Blood test – blood and blood forming organs	1,064	0.7	1.1	1.0	1.3	—
Male genital system	**1,151**	**0.8**	**1.2**	**1.1**	**1.3**	**1.2 (1.1–1.3)**
Social	**1,060**	**0.7**	**1.1**	**1.0**	**1.2**	**1.1 (1.0–1.2)**
Total RFEs	**148,880**	**100.0**	**155.3**	**153.3**	**157.3**	**—**

(a) Only individual RFEs accounting for ≥ 0.5% of total RFEs are included.

(b) The proportion of all encounters at which the patient described at least one reason for encounter that was classified in the chapter.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1 <hdl.handle.net/2123/11882>).

Note: RFEs – reasons for encounter; LCL – lower confidence limit; UCL – upper confidence limit; CI – confidence interval; NEC – not elsewhere classified; NOS – not otherwise specified.

Most frequent patient reasons for encounter

The 30 most commonly recorded RFEs (Table 6.5), accounted for more than half (58.7%) of all RFEs. In this analysis, the specific ICPC-2 chapter to which an across-chapter concept belongs is disregarded, so that, for example, 'check-up – all' includes all check-ups from all ICPC-2 chapters, irrespective of whether or not the body system was specified.

Of the top 30 RFEs (Table 6.5), most were either symptom or disease descriptions such as cough, throat complaint, back complaint and rash. However, four of the top five RFEs reflected requests for a process of care (that is, requests for check-up, prescription, test result and immunisation), and together accounted for about one-quarter of all RFEs (27.0%).

Table 6.5: Thirty most frequent patient reasons for encounter

Patient reason for encounter	Number	Per cent of total RFEs (*n* = 148,880)	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL
Check-up – all*	13,601	9.1	14.2	13.5	14.8
Prescription – all*	12,671	8.5	13.2	12.5	13.9
Test results*	9,000	6.0	9.4	8.9	9.9
Cough	5,245	3.5	5.5	5.1	5.9
Immunisation/vaccination – all*	4,968	3.3	5.2	4.6	5.8
Administrative procedure – all*	3,114	2.1	3.2	3.0	3.5
Back complaint*	3,110	2.1	3.2	3.0	3.5
Blood test – all*	2,544	1.7	2.7	2.4	2.9
Rash*	2,481	1.7	2.6	2.4	2.8
Throat symptom/complaint	2,392	1.6	2.5	2.3	2.7
Depression*	2,034	1.4	2.1	1.9	2.3
Abdominal pain*	1,970	1.3	2.1	1.9	2.2
Hypertension/high blood pressure*	1,840	1.2	1.9	1.6	2.3
Skin symptom/complaint, other	1,756	1.2	1.8	1.7	2.0
Fever	1,722	1.2	1.8	1.5	2.1
Observation/health education/advice/diet – all*	1,660	1.1	1.7	1.6	1.9
Upper respiratory tract infection	1,616	1.1	1.7	1.5	1.9
Headache*	1,444	1.0	1.5	1.4	1.6
Anxiety*	1,372	0.9	1.4	1.3	1.6
Other referrals NEC	1,347	0.9	1.4	1.3	1.5
Diabetes – all*	1,311	0.9	1.4	1.2	1.5
Weakness/tiredness	1,311	0.9	1.4	1.2	1.5
Knee symptom/complaint	1,259	0.8	1.3	1.2	1.4
Ear pain/earache	1,159	0.8	1.2	1.1	1.3
Diarrhoea	1,157	0.8	1.2	1.1	1.3
Sneezing/nasal congestion	1,146	0.8	1.2	1.0	1.4
Shoulder symptom/complaint	1,128	0.8	1.2	1.1	1.3
Foot/toe symptom/complaint	1,056	0.7	1.1	1.0	1.2
Vertigo/dizziness	993	0.7	1.0	1.0	1.1
Swelling (skin)*	984	0.7	1.0	0.9	1.1
Subtotal	*87,392*	*58.7*	—	—	—
Total RFEs	**148,880**	**100.0**	**155.3**	**153.3**	**157.3**

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1, <hdl.handle.net/2123/11882>).

Note: RFEs – reasons for encounter; LCL – lower confidence limit; UCL – upper confidence limit; NEC – not elsewhere classified.

6.4 Changes in patients and their reasons for encounter over the decade 2004–05 to 2013–14

An overview of changes in the characteristics of patients at encounters and their reasons for encounter over the decade 2004–05 to 2013–14, can be found in Chapter 6 of the companion report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1] Major changes are summarised below.

With the ageing of the Australian population, the proportion of the Australian population that was aged 65 years and over increased from 12.8% in 2004 to 14.4% in 2013.[2] Over the same period, the proportion of BEACH encounters with patients aged 65 years and over increased from 26.5% to 32.5%. When extrapolated, this change (in combination with the increased number of encounters nationally) means that in 2013–14 there were 17.3 million more encounters with older patients nationally than a decade earlier.

The increase in the proportion of encounters with older patients was greater than the population increase in this age group, because older patients attend general practice more often than do younger patients.[73] This change in the age distribution of patients at GP encounters will affect all aspects of general practice as older patients are more likely to have more problems managed at encounters, more chronic conditions managed and are more likely to have multimorbidity.[74]

There was a significant decrease in the proportion of encounters with patients who were new to the practice (from 9.1% in 2004–05 to 6.6% in 2013–14). This may be due to the need for continuity of care for chronic conditions. The proportion of encounters with patients holding a Commonwealth concession card decreased from 47.5% to 43.5% over the decade. The proportion of patients holding a Repatriation health card decreased by one-third, from 3.6% in 2004–05 to 2.2% in 2013–14. This is probably due to a decline in the number of World War 2 veterans and their partners in the population.

Over the decade, there was a significant increase in the number of reasons for encounter recorded per 100 encounters, from 149.6 in 2004–05 to 155.3 in 2013–14, with fewer patients giving a single RFE and more giving two or three RFEs. This increase in RFEs is also probably related to the increasing proportion of encounters with older people, who are more likely to visit for multiple chronic disease management. There was a significant decrease in the rate of RFEs described as symptoms and complaints, and increases in rates of patient presentations for tests and test results. This is also probably due to the increased proportion of encounters that are with older patients and the increase in chronic condition management which require regular attendance and monitoring. The increase in patients' requests for tests and test results ties in with the increased use of pathology and imaging testing over the decade. One increase unrelated to the ageing of the population was a large increase in requests for administrative procedures such as sickness certificates. This is probably due to an increasing number of policies forcing workers to provide such documentation to claim sick days.

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. GPs were instructed to record each problem at the most specific level possible from the information available. As a result, 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 include those that involved management by a practice nurse at the recorded encounter, which are also reported separately in Chapter 10.

There are two ways to describe the frequency of problems managed: as a percentage of all problems managed in the study or as a rate at which problems are managed per 100 encounters. Where groups of problems are reported (for example, circulatory 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. We therefore report these data in a variety of ways to aid interpretation and reporting.

The reader must be mindful that although a rate per 100 encounters for a single ungrouped problem that can only be managed once per encounter, (for example, 'asthma, 2.0 per 100 encounters'), can be regarded as equivalent to 'asthma is managed at 2.0% of encounters', such a statement cannot be made for grouped concepts (ICPC-2 chapters and those marked with asterisks in the tables). A new column has been added to Table 7.3 in this year's report describing the proportion of encounters during which at least one problem within each ICPC-2 chapter was managed. This allows users to make the following types of statements: 'at least one psychological problem was managed at 12.8% of encounters'; or (using the extrapolation methods described in Chapter 2) 'at least one digestive problem was managed at 14.3 million general practice encounters in 2013–14.'

Changes in the problems managed in Australian general practice from the BEACH study are reported for each year from 2004–05 to 2013–14 in the 10-year report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1]

7.1 Number of problems managed at encounter

In 2013–14, there were 151,675 problems managed, at a rate of 158.2 per 100 encounters (Table 7.2, total row). Up to four problems managed can be recorded at each BEACH encounter, (see Chapter 2). Table 7.1 shows that one problem was managed at 59.6% of encounters and two problems managed at more than one-quarter of encounters (26.3%). Approximately 10% of encounters involved the management of three problems (10.4%), and four problems were managed at only 3.7% of encounters.

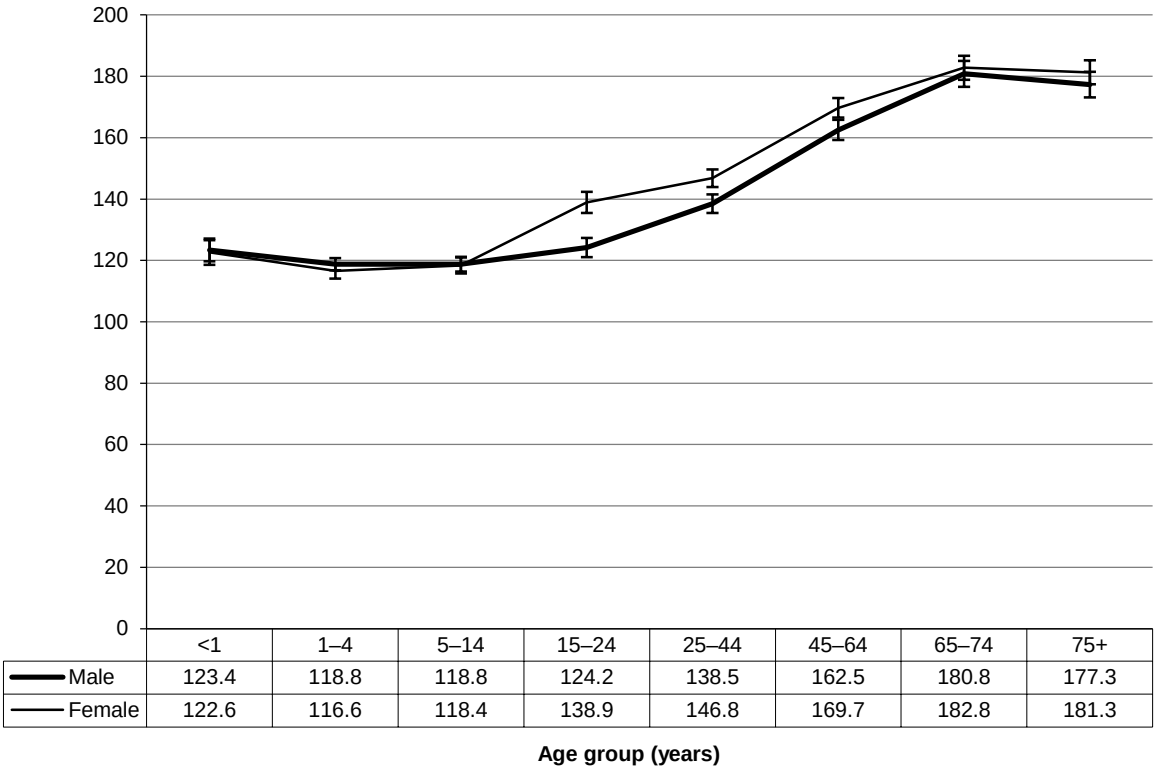
Table 7.1: Number of problems managed at an encounter

Number of problems managed at encounter	Number of encounters	Per cent	95% LCL	95% UCL
One problem	57,156	59.6	58.2	61.0
Two problems	25,195	26.3	25.5	27.1
Three problems	9,985	10.4	9.8	11.0
Four problems	3,544	3.7	3.3	4.1
Total	**95,879**	**100.0**	**—**	**—**

Note: LCL – lower confidence limit; UCL – upper confidence limit.

Figure 7.1 shows the age–sex-specific rates of problems managed. The number of problems managed increased steadily with the age of the patient from young adulthood up to those aged 65–74 years.

Significantly more problems were managed overall at encounters with female patients (160.8 per 100 encounters, 95% CI: 158.1–163.4) than at those with male patients (155.0 per 100 encounters, 95% CI: 152.4–157.6) (results not tabled). Figure 7.1 demonstrates that this difference was evident in the 15–24, 25–44 and 45–64 year age groups. For both sexes, the number of problems managed at encounters significantly increased with each step in adult age up to those aged 45–64. There was no difference in the average number of problems managed between males and females for those aged 65–74 and 75 years and over.



Note: Missing data removed.

Figure 7.1: Age–sex-specific rates of problems managed per 100 encounters, 2013–14 (95% confidence intervals)

7.2 Problems managed by ICPC-2 component

A broader view of the types of problems managed in general practice can be seen by examining problems managed from the perspective of the component structure of the ICPC-2 classification (as described in Section 2.8). Table 7.2 lists the distribution of problems managed by ICPC-2 component.

Nearly two-thirds (65.1%) of problems were described as diagnoses or diseases. Of these, the majority were 'other diagnoses' (accounting for 42.9% of all problems managed), followed by infections (13.9%), injuries (4.6%) and neoplasms (3.2%).

Nearly 1 in 5 problems (19.1%) were undiagnosed, and managed as a symptom or complaint. In some situations, rather than providing clinical descriptions of the problem under management, processes of care were recorded. The processes recorded most often were diagnostic and preventive procedures (e.g. check-ups), accounting for 9.9% of problems managed.

At an 'average' 100 encounters GPs managed 103 diagnoses/diseases: 22 infections; 7 injuries; and 5 neoplasms. They also managed an average of 30 symptoms and complaints, and 16 problems described as a diagnostic and preventive procedure.

Table 7.2: Problems managed by ICPC-2 component

ICPC-2 component	Number	Per cent of total problems (*n* = 151,675)	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL
Diagnosis, diseases	98,669	65.1	102.9	100.8	105.0
Infections	21,018	13.9	21.9	21.1	22.7
Injuries	7,006	4.6	7.3	7.0	7.6
Neoplasms	4,836	3.2	5.0	4.7	5.4
Congenital anomalies	697	0.5	0.7	0.6	0.8
Other diagnoses	65,112	42.9	67.9	65.9	69.9
Symptoms and complaints	29,034	19.1	30.3	29.3	31.2
Diagnostic and preventive procedures	15,076	9.9	15.7	14.9	16.6
Medications, treatments and therapeutics	4,257	2.8	4.4	4.1	4.8
Results	2,083	1.4	2.2	1.9	2.4
Administrative	1,339	0.9	1.4	1.2	1.6
Referrals and other RFEs	1,216	0.8	1.3	1.1	1.4
Total problems	**151,675**	**100.0**	**158.2**	**155.7**	**160.7**

Note: LCL – lower confidence limit; UCL – upper confidence limit; RFE – reason for encounter.

7.3 Problems managed by ICPC-2 chapter

The frequency and the distribution of problems managed are presented in Table 7.3 by ICPC-2 chapter (equivalent to body systems, as described in Chapter 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. Individual problems accounting for at least 0.5% of all problems managed are listed in the table, in decreasing order of frequency within chapter.

The most common problems managed were:

- problems of a general and unspecified nature (20.3 per 100 encounters and 12.8% of all problems), particularly general check-ups, prescriptions and general immunisations
- respiratory problems (19.0 per 100 encounters), in particular upper respiratory tract infections, respiratory immunisations, asthma and acute bronchitis/bronchiolitis
- those classified to the musculoskeletal system (18.4 per 100 encounters), such as arthritis and back complaints
- skin problems (17.9 per 100 encounters), contact dermatitis and malignant skin neoplasms being the most common
- circulatory problems (17.3 per 100), led by hypertension and atrial fibrillation
- psychological problems (13.7 per 100), with depression and anxiety being the most common (Table 7.3).

The last column in Table 7.3, a new addition this year, describes the proportion of encounters at which at least one problem within an ICPC-2 chapter was managed. GPs may manage more than one problem within an ICPC-2 chapter (e.g. depression and anxiety; rheumatoid arthritis and osteoporosis), but this table reports only one instance per chapter.

At least one general and unspecified problem was managed at 18.7% of encounters in 2013–14, equating to approximately 24.9 million encounters at which at least one general and unspecified problem was managed in 2013–14. At least one respiratory problem was managed at 18.2% of encounters, which extrapolates to 24.3 million encounters at which at least one respiratory problem was managed nationally in 2013–14 (Table 7.3).

Table 7.3: Problems managed by ICPC-2 chapter and frequent individual problems within chapter

Problem managed	Number	Per cent total problems[a] (*n* = 151,675)	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Per cent of encounters[b] (*n* = 95,879) (95% CI)
General and unspecified	**19,462**	**12.8**	**20.3**	**19.4**	**21.2**	**18.7 (18.0–19.4)**
General check-up*	2,925	1.9	3.1	2.8	3.3	—
Prescription NOS	1,897	1.3	2.0	1.8	2.2	—
Immunisation/vaccination NOS	1,821	1.2	1.9	1.7	2.1	—
Results tests/procedures NOS	1,624	1.1	1.7	1.5	1.9	—
Administrative procedure NOS	1,221	0.8	1.3	1.1	1.4	—
Viral disease, other/NOS	1,050	0.7	1.1	0.9	1.2	—
Abnormal result/investigation NOS	997	0.7	1.0	0.9	1.1	—
Weakness/tiredness, general	714	0.5	0.7	0.7	0.8	—
Respiratory	**18,251**	**12.0**	**19.0**	**18.3**	**19.8**	**18.2 (17.5–18.9)**
Upper respiratory tract infection	4,705	3.1	4.9	4.5	5.3	—
Immunisation/vaccination – respiratory	3,460	2.3	3.6	3.0	4.2	—
Asthma	1,874	1.2	2.0	1.8	2.1	—
Acute bronchitis/bronchiolitis	1,781	1.2	1.9	1.7	2.0	—
Sinusitis acute/chronic	1,036	0.7	1.1	1.0	1.2	—
Chronic obstructive pulmonary disease	941	0.6	1.0	0.9	1.1	—
Musculoskeletal	**17,607**	**11.6**	**18.4**	**17.8**	**18.9**	**17.4 (16.9–17.9)**
Arthritis – all*	3,781	2.5	3.9	3.7	4.2	—
Osteoarthritis*	2,761	1.8	2.9	2.7	3.1	—
Back complaint*	3,016	2.0	3.1	2.9	3.4	—
Sprain/strain*	1,228	0.8	1.3	1.2	1.4	—
Bursitis/tendonitis/synovitis NOS	1,206	0.8	1.3	1.2	1.4	—
Fracture*	991	0.7	1.0	0.9	1.1	—
Injury musculoskeletal NOS	861	0.6	0.9	0.8	1.0	—
Osteoporosis	837	0.6	0.9	0.8	1.0	—
Skin	**17,150**	**11.3**	**17.9**	**17.2**	**18.6**	**16.8 (16.2–17.4)**
Contact dermatitis	1,630	1.1	1.7	1.6	1.8	—
Malignant neoplasm, skin	1,348	0.9	1.4	1.2	1.6	—
Solar keratosis/sunburn	1,214	0.8	1.3	1.1	1.4	—
Skin disease, other	1,103	0.7	1.2	1.0	1.3	—
Laceration/cut	998	0.7	1.0	0.9	1.1	—
Skin symptom/complaint, other	782	0.5	0.8	0.7	0.9	—
Chronic skin ulcer (including varicose ulcer)	686	0.5	0.7	0.6	0.8	—

(continued)

Table 7.3 (continued): Problems managed by ICPC-2 chapter and frequent individual problems within chapter

Problem managed	Number	Per cent total problems[a] (*n* = 151,675)	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Per cent of encounters[b] (*n* = 95,879) (95% CI)
Circulatory	**16,572**	**10.9**	**17.3**	**16.5**	**18.1**	**16.1 (15.3–16.8)**
Hypertension*	8,297	5.5	8.7	8.1	9.2	—
Atrial fibrillation/flutter	1,450	1.0	1.5	1.4	1.7	—
Cardiovascular check-up*	1,117	0.7	1.2	0.9	1.4	—
Ischaemic heart disease*	1,096	0.7	1.1	1.0	1.3	—
Psychological	**13,091**	**8.6**	**13.7**	**13.0**	**14.3**	**12.8 (12.3–13.4)**
Depression*	4,123	2.7	4.3	4.1	4.5	—
Anxiety*	2,155	1.4	2.2	2.1	2.4	—
Sleep disturbance	1,480	1.0	1.5	1.4	1.7	—
Acute stress reaction	737	0.5	0.8	0.7	0.9	—
Endocrine and metabolic	**13,001**	**8.6**	**13.6**	**13.0**	**14.1**	**12.4 (11.9–12.8)**
Diabetes (non-gestational)*	4,002	2.6	4.2	3.9	4.4	—
Lipid disorder	2,953	1.9	3.1	2.8	3.3	—
Vitamin/nutritional deficiency	1,338	0.9	1.4	1.3	1.5	—
Hypothyroidism/myxoedema	818	0.5	0.9	0.8	0.9	—
Obesity (BMI > 30)	705	0.5	0.7	0.6	0.8	—
Digestive	**10,691**	**7.0**	**11.2**	**10.8**	**11.5**	**10.7 (10.4–11.0)**
Gastro-oesophageal reflux disease*	2,467	1.6	2.6	2.4	2.7	—
Gastroenteritis*	1,315	0.9	1.4	1.2	1.5	—
Constipation	697	0.5	0.7	0.7	0.8	—
Abdominal pain*	693	0.5	0.7	0.7	0.8	—
Female genital system	**5,352**	**3.5**	**5.6**	**5.2**	**5.9**	**5.2 (4.8–5.5)**
Female genital check-up/Pap smear*	1,597	1.1	1.7	1.5	1.8	—
Neurological	**3,820**	**2.5**	**4.0**	**3.8**	**4.2**	**3.9 (3.7–4.1)**
Headache*	1,025	0.7	1.1	1.0	1.2	—
Urology	**3,485**	**2.3**	**3.6**	**3.5**	**3.8**	**3.6 (3.4–3.8)**
Urinary tract infection*	1,724	1.1	1.8	1.7	1.9	—
Ear	**3,380**	**2.2**	**3.5**	**3.4**	**3.7**	**3.5 (3.3–3.6)**
Acute otitis media/myringitis	809	0.5	0.8	0.8	0.9	—
Excessive ear wax	787	0.5	0.8	0.8	0.9	—

(continued)

Table 7.3 (continued): Problems managed by ICPC-2 chapter and frequent individual problems within chapter

Problem managed	Number	Per cent total problems[(a)] (*n* = 151,675)	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Per cent of encounters (*n* = 95,879) (95% CI)
Pregnancy and family planning	**3,349**	**2.2**	**3.5**	**3.2**	**3.7**	**3.4 (3.2–3.6)**
Pregnancy*	1,084	0.7	1.1	1.0	1.3	—
Oral contraception*	931	0.6	1.0	0.9	1.1	—
Eye	**2,144**	**1.4**	**2.2**	**2.1**	**2.4**	**2.2 (2.1–2.3)**
Male genital system	**1,858**	**1.2**	**1.9**	**1.8**	**2.1**	**1.9 (1.8–2.0)**
Blood and blood-forming organs	**1,606**	**1.1**	**1.7**	**1.6**	**1.8**	**1.7 (1.5–1.8)**
Social	**856**	**0.6**	**0.9**	**0.8**	**1.0**	**0.9 (0.8–1.0)**
Total problems	**151,675**	**100.0**	**158.2**	**155.7**	**160.7**	**—**

(a) Only those individual problems accounting for ≥ 0.5% of total problems are included in the table.

(b) The proportion of all encounters at which at least one problem classified in this chapter was managed.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1 <hdl.handle.net/2123/11882>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; CI – confidence interval; NOS – not otherwise specified.

7.4 Most frequently managed problems

Table 7.4 shows the most frequently managed individual problems in general practice, in decreasing order of frequency. These 35 problems accounted for 53.7% of all problems managed, and the top 10 problems accounted for 30.3%.

In this analysis, the specific chapter to which 'across chapter concepts' (for example, 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, hepatitis and many others.

Hypertension was the most common problem managed (8.7 per 100 encounters), followed by check-up (7.0 per 100), immunisation/vaccination (5.8 per 100), upper respiratory tract infection (URTI) (4.9 per 100) and depression (4.3 per 100) (Table 7.4).

The percentage of each problem that was 'new' is listed in the far right column in Table 7.4. If a problem was new to the patient, or a new episode of a recurrent problem and the patient had not been treated for that problem or episode by any medical practitioner before the encounter, it was considered a new problem. This can provide a measure of general practice incidence. For example, only 4.5% of all contacts with hypertension were new diagnoses. In contrast, 77.3% of URTI problems were new to the patient, suggesting that the majority of people with URTIs who attend the GP do so only once per episode.

Table 7.4: Most frequently managed problems

Problem managed	Number	Per cent of total problems (*n* = 151,675)	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	New as per cent of all problems[(a)]
Hypertension*	8,297	5.5	8.7	8.1	9.2	4.5
Check-up – all*	6,670	4.4	7.0	6.5	7.4	42.6
Immunisation/vaccination – all*	5,515	3.6	5.8	5.1	6.4	64.5
Upper respiratory tract infection	4,705	3.1	4.9	4.5	5.3	77.3
Depression*	4,123	2.7	4.3	4.1	4.5	13.3
Diabetes – all*	4,038	2.7	4.2	3.9	4.5	5.2
Arthritis – all*	3,829	2.5	4.0	3.8	4.2	18.2
Back complaint*	3,016	2.0	3.1	2.9	3.4	23.7
Lipid disorder	2,953	1.9	3.1	2.8	3.3	9.6
Prescription – all*	2,950	1.9	3.1	2.7	3.4	6.3
Gastro-oesophageal reflux disease*	2,467	1.6	2.6	2.4	2.7	14.9
Anxiety*	2,155	1.4	2.2	2.1	2.4	20.4
Test results*	2,083	1.4	2.2	1.9	2.4	31.8
Asthma	1,874	1.2	2.0	1.8	2.1	20.7
Acute bronchitis/bronchiolitis	1,781	1.2	1.9	1.7	2.0	69.9
Urinary tract infection*	1,724	1.1	1.8	1.7	1.9	64.1
Contact dermatitis	1,630	1.1	1.7	1.6	1.8	44.6
Sleep disturbance	1,480	1.0	1.5	1.4	1.7	21.0
Atrial fibrillation/flutter	1,450	1.0	1.5	1.4	1.7	6.1
Malignant neoplasm, skin	1,348	0.9	1.4	1.2	1.6	57.4
Administrative procedure – all*	1,339	0.9	1.4	1.2	1.6	42.0
Vitamin/nutritional deficiency	1,338	0.9	1.4	1.3	1.5	28.6
Gastroenteritis*	1,315	0.9	1.4	1.2	1.5	77.4
Abnormal test results*	1,241	0.8	1.3	1.2	1.4	45.8
Sprain/strain*	1,228	0.8	1.3	1.2	1.4	63.0
Solar keratosis/sunburn	1,214	0.8	1.3	1.1	1.4	50.6
Bursitis/tendonitis/synovitis NOS	1,206	0.8	1.3	1.2	1.4	55.6
Skin disease, other	1,103	0.7	1.2	1.0	1.3	59.0
Ischaemic heart disease*	1,096	0.7	1.1	1.0	1.3	8.8
Pregnancy*	1,084	0.7	1.1	1.0	1.3	39.0
Viral disease, other/NOS	1,050	0.7	1.1	0.9	1.2	74.8
Sinusitis acute/chronic	1,036	0.7	1.1	1.0	1.2	61.4
Headache*	1,025	0.7	1.1	1.0	1.2	32.0
Laceration/cut	998	0.7	1.0	0.9	1.1	41.4
Fracture*	991	0.7	1.0	0.9	1.1	44.0
Subtotal	*81,352*	*53.7*	—	—	—	—
Total problems	**151,675**	**100.0**	**158.2**	**155.7**	**160.7**	**37.0**

(a) 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, Table A4.1 <hdl.handle.net/2123/11882>).

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 was a new problem for the patient (see definition in Section 7.4). Table 7.5 lists the most common new problems managed in general practice, in decreasing order of frequency. Overall, 56,126 problems (37.0% of all problems) were specified as being new, being managed at a rate of 58.5 per 100 encounters.

New problems were often acute in nature, such as URTI (3.8 per 100 encounters), acute bronchitis/bronchiolitis (1.3 per 100) and urinary tract infection (1.2 per 100). Preventive activities were also frequently recorded, including immunisation/ vaccination (3.7 per 100 encounters) and check-ups (3.0 per 100) (Table 7.5).

The far right column of this table shows the new cases of this problem as a proportion of total contacts with this problem. This provides an indication of the incidence of each problem. For example, the 549 new cases of depression represented only 13% of all GP contacts with diagnosed depression, suggesting that by far the majority of contacts for depression were for ongoing management. In contrast, 77% of gastroenteritis contacts were first consultations with a medical practitioner for this episode, the balance (23%) being follow-up consultations for this episode. This indicates that most patients only require one visit to a GP for the management of an episode of gastroenteritis.

Table 7.5: Most frequently managed new problems

New problem managed	Number	Per cent of total new problems (*n* = 56,126)	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	New as per cent of all problems[(a)]
Upper respiratory tract infection	3,639	6.5	3.8	3.5	4.1	77.3
Immunisation/vaccination – all*	3,557	6.3	3.7	3.2	4.2	64.5
Check-up – all*	2,842	5.1	3.0	2.7	3.2	42.6
Acute bronchitis/bronchiolitis	1,245	2.2	1.3	1.2	1.4	69.9
Urinary tract infection*	1,105	2.0	1.2	1.1	1.3	64.1
Gastroenteritis*	1,018	1.8	1.1	1.0	1.2	77.4
Viral disease, other/NOS	785	1.4	0.8	0.7	1.0	74.8
Sprain/strain*	774	1.4	0.8	0.7	0.9	63.0
Malignant neoplasm, skin	774	1.4	0.8	0.7	0.9	57.4
Contact dermatitis	726	1.3	0.8	0.7	0.8	44.6
Back complaint*	715	1.3	0.7	0.7	0.8	23.7
Arthritis – all*	698	1.2	0.7	0.7	0.8	18.2
Bursitis/tendonitis/synovitis NOS	671	1.2	0.7	0.6	0.8	55.6
Test results*	662	1.2	0.7	0.6	0.8	31.8
Skin disease, other	651	1.2	0.7	0.6	0.8	59.0
Sinusitis acute/chronic	637	1.1	0.7	0.6	0.7	61.4
Solar keratosis/sunburn	615	1.1	0.6	0.5	0.7	50.6
Acute otitis media/myringitis	578	1.0	0.6	0.5	0.7	71.5
Abnormal test results*	569	1.0	0.6	0.5	0.7	45.8
Administrative procedure – all*	563	1.0	0.6	0.5	0.7	42.0
Depression*	549	1.0	0.6	0.5	0.6	13.3

(continued)

Table 7.5 (continued): Most frequently managed new problems

New problem managed	Number	Per cent of total new problems (*n* = 56,126)	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	New as per cent of all problems[(a)]
Excessive ear wax	500	0.9	0.5	0.5	0.6	63.6
Tonsillitis*	483	0.9	0.5	0.4	0.6	73.3
Skin symptom/complaint	476	0.8	0.5	0.4	0.6	60.8
Observation/health education/ advice/diet – all*	456	0.8	0.5	0.4	0.5	54.8
Musculoskeletal injury NOS	450	0.8	0.5	0.4	0.5	52.2
Anxiety*	439	0.8	0.5	0.4	0.5	20.4
Fracture*	436	0.8	0.5	0.4	0.5	44.0
Pregnancy*	422	0.8	0.4	0.4	0.5	39.0
Subtotal	*27,035*	*48.3*	—	—	—	—
Total new problems	**56,126**	**100.0**	**58.5**	**57.0**	**60.1**	**—**

(a) 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, Table A4.1 <hdl.handle.net/2123/11882>).

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 list classified according to ICPC-2, based on work undertaken by O'Halloran et al. in 2004[42] and regularly updated (see 'Chronic conditions' grouper G84 in the 'Analysis and reporting' section of the ICPC-2 PLUS Demonstrator[75]), was applied to the BEACH data set. More than one-third (35.6%) of the problems managed in general practice were chronic. At least one chronic problem was managed at 42.4% of encounters (95% CI: 41.2–43.5) (results not tabled), and chronic problems were managed at an average rate of 56.3 per 100 encounters (Table 7.6).

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, the labels are marked with a double asterisk (for example, Diabetes [non-gestational]**). Codes included (asterisked concepts) can be found in Appendix 4, Table A4.2.

Table 7.6 shows the most frequently managed chronic problems in descending order of frequency. Together, these 30 chronic problems accounted for 79.6% of all chronic problems managed, and for 28.3% of all problems managed. Half of all chronic problems managed (51.0%) were accounted for by the top seven chronic problems: non-gestational hypertension (15.3% of chronic conditions), depressive disorder (7.6%), non-gestational diabetes (7.4%), chronic arthritis (7.1%), lipid disorder (5.5%), oesophageal disease (4.6%) and asthma (3.5%) (Table 7.6).

Extrapolation of these results suggests that, across Australia in 2013–14, there were 11.5 million encounters involving non-gestational hypertension, 5.7 million involving depression and 5.6 million involving non-gestational diabetes.

Table 7.6: Most frequently managed chronic problems

Chronic problem managed	Number	Per cent of total chronic problems (*n* = 54,027)	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL
Hypertension (non-gestational)**	8,284	15.3	8.6	8.1	9.2
Depressive disorder**	4,092	7.6	4.3	4.0	4.5
Diabetes (non-gestational)**	4,002	7.4	4.2	3.9	4.4
Chronic arthritis**	3,815	7.1	4.0	3.8	4.2
Lipid disorder	2,953	5.5	3.1	2.8	3.3
Oesophageal disease	2,510	4.6	2.6	2.5	2.8
Asthma	1,874	3.5	2.0	1.8	2.1
Atrial fibrillation/flutter	1,450	2.7	1.5	1.4	1.7
Malignant neoplasm, skin	1,348	2.5	1.4	1.2	1.6
Ischaemic heart disease**	1,096	2.0	1.1	1.0	1.3
Chronic obstructive pulmonary disease	941	1.7	1.0	0.9	1.1
Back syndrome with radiating pain**	938	1.7	1.0	0.9	1.1
Osteoporosis	837	1.5	0.9	0.8	1.0
Hypothyroidism/myxoedema	818	1.5	0.9	0.8	0.9
Obesity (BMI > 30)	705	1.3	0.7	0.6	0.8
Chronic skin ulcer (including varicose ulcer)	686	1.3	0.7	0.6	0.8
Shoulder syndrome (excluding arthritis)**	614	1.1	0.6	0.6	0.7
Migraine	581	1.1	0.6	0.5	0.7
Heart failure	572	1.1	0.6	0.5	0.7
Dementia (including senile, Alzheimer's)	546	1.0	0.6	0.4	0.7
Gout	544	1.0	0.6	0.5	0.6
Chronic pain NOS	520	1.0	0.5	0.5	0.6
Anxiety disorder**	493	0.9	0.5	0.4	0.6
Chronic back pain**	475	0.9	0.5	0.4	0.6
Schizophrenia	457	0.8	0.5	0.4	0.5
Chronic kidney disease**	423	0.8	0.4	0.4	0.5
Chronic acne**	400	0.7	0.4	0.4	0.5
Back syndrome without radiating pain (excluding arthritis, sprains and strains)**	351	0.6	0.4	0.3	0.4
Malignant neoplasm prostate	334	0.6	0.3	0.3	0.4
Affective psychosis	334	0.6	0.3	0.3	0.4
Subtotal	*42,993*	*79.6*	—	—	—
Total chronic problems	**54,027**	**100.0**	**56.3**	**54.3**	**58.3**

** Includes multiple ICPC-2 or ICPC-2 PLUS codes and 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 4, Table A4.2 <hdl.handle.net/2123/11882>).

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

7.7 Work-related problems managed

The work-related status of a problem under management was determined by the GP, and is defined as any problem that is (in the GP's view) likely to have resulted from work-related activity or workplace exposure, or that has been significantly exacerbated by work activity or workplace exposure. Work-related problems accounted for 1.5% of problems and were managed at a rate of 2.4 per 100 encounters in 2013–14 (Table 7.7). This suggests that nationally 3.2 million problems managed in general practice were likely to be work-related.

The most common work-related problems were musculoskeletal problems, accounting for 56.9% of work-related problems and managed at a rate of 1.3 per 100 general practice encounters. Of all musculoskeletal problems managed in general practice, 7.3% were work-related. The most common musculoskeletal work-related problems were back complaint (14.6% of work-related problems), sprain and strain (8.2%), unspecified musculoskeletal injury (8.1%), and shoulder syndrome (3.3%).

Work-related psychological problems accounted for 13.2% of total work-related problems, and were managed at a rate of 0.3 per 100 encounters. The most common were depression (3.7% of work-related problems), acute stress reaction (3.0%), post-traumatic stress disorder (2.9%) and anxiety (2.7%). Psychological work-related problems accounted for only 2.3% of all psychological problems managed in general practice.

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

Work-related problem managed	Number	Per cent of total WR problems (*n* = 2,268)	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	WR as per cent of all problems[(a)]
Musculoskeletal problems	1,291	56.9	1.3	1.2	1.5	7.3
Back complaint*	331	14.6	0.3	0.3	0.4	11.0
Sprain/strain*	185	8.2	0.2	0.2	0.2	15.1
Injury musculoskeletal NOS	185	8.1	0.2	0.2	0.2	21.4
Shoulder syndrome	75	3.3	0.1	0.1	0.1	12.2
Bursitis/tendonitis/synovitis NOS	70	3.1	0.1	0.0	0.1	5.8
Fracture*	68	3.0	0.1	0.0	0.1	6.8
Acute internal knee damage	55	2.4	0.1	0.0	0.1	16.5
Psychological problems	299	13.2	0.3	0.3	0.4	2.3
Depression*	83	3.7	0.1	0.1	0.1	2.0
Acute stress reaction	69	3.0	0.1	0.0	0.1	9.3
Post-traumatic stress disorder	66	2.9	0.1	0.0	0.1	38.4
Anxiety*	61	2.7	0.1	0.0	0.1	2.8
Other work-related problems	678	29.9	0.7	0.6	0.8	0.6
General check-up*	79	3.5	0.1	0.1	0.1	1.2
Administrative procedure – all*	70	3.1	0.1	0.0	0.1	5.2
Injury skin, other	56	2.4	0.1	0.0	0.1	11.7
Laceration/cut	56	2.4	0.1	0.0	0.1	5.6
Total work-related problems	**2,268**	**100.0**	**2.4**	**2.2**	**2.5**	**1.5**

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

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1 <hdl.handle.net/2123/11882>).

Note: WR – work-related; LCL – lower confidence limit; UCL – upper confidence limit; NOS – not otherwise specified. Only the most frequent individual work-related problems accounting for ≥ 1.4% of total work-related problems are reported.

7.8 Changes in problems managed over the decade 2004–05 to 2013–14

Data about the problems managed in general practice from each of the past 10 years of the BEACH study, 2004–05 to 2013–14 are reported in Chapter 7 of the companion report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1] Major changes that occurred over the decade are summarised below.

Overall, the number of problems managed at general practice encounters increased from 145.5 per 100 encounters in 2004–05, to 158.2 per 100 encounters in 2013–14. When this result is extrapolated to estimate national figures this represents an additional 68.2 million problems managed at general practice encounters in 2013–14 than in 2004–05. A rise in GP attendances over the decade also contributed to this increase. This was reflected in significant increases over the decade in the management of both chronic conditions (from 51.7 to 56.3 per 100 encounters) and new problems (55.2 to 58.5 per 100 encounters).

Changes in some of the most common individual problems managed in general practice are summarised below.

- General check-ups were managed more often in 2013–14 than in 2004–05, increasing from 2.1 to 3.1 per 100 encounters. This represents an additional 2.1 million more occasions where general check-ups were managed in 2013–14 than in 2004–05.
- The management rate of depression increased from 3.7 per 100 encounters to 4.3 per 100 between 2004–05 and 2013–14, suggesting about 2.1 million more occasions where depression was managed in 2013–14 than in 2004–05.
- The management rate of diabetes increased significantly from 3.2 per 100 encounters in 2004–05 to 4.2 per 100 encounters in 2013–14, an estimated 2.5 million more occasions of diabetes management in 2013–14 than in 2004–05.
- The management of asthma decreased from 2.3 per 100 encounters in 2004–05 to 2.0 per 100 encounters in 2013–14. However, due to a rise in the number of general practice attendances nationally, there was an estimated national increase of 410,000 occasions of asthma management in 2013–14 compared with 2004–05. Similarly, the management rate of acute bronchitis/bronchiolitis decreased from 2.4 to 1.9 per 100 encounters over the decade, but there were an additional 180,000 more occasions where acute bronchitis/bronchiolitis was managed in 2013–14 compared with 2004–05.

8 Overview of management

The BEACH survey form allows 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. The form allows for referrals, hospital admissions, pathology and imaging test orders to be related to a single problem or to multiple problems (see Appendix 1).

A summary of management at general practice encounters from 2004–05 to 2013–14 is reported for each year in the 10-year report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1]

At the 95,879 encounters, GPs undertook 225,758 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 more frequent than procedural treatments (Table 8.1).

For an 'average' 100 patient problems managed, GPs provided 53 prescriptions and 24 clinical treatments, undertook 12 procedures, made 6 referrals to medical specialists and 3 to allied health services, and placed 31 pathology test/battery orders and 7 imaging test orders.

Table 8.1: Summary of management

Management type	Number	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Rate per 100 problems (*n* = 151,675)	95% LCL	95% UCL
Medications	98,394	102.6	100.1	105.2	64.9	63.5	66.2
Prescribed	80,046	83.5	81.2	85.8	52.8	51.5	54.1
GP-supplied	9,797	10.2	9.4	11.0	6.5	6.0	6.9
Advised OTC	8,550	8.9	8.2	9.6	5.6	5.2	6.1
Other treatments	54,104	56.4	53.8	59.0	35.7	34.2	37.2
Clinical*	36,024	37.6	35.3	39.8	23.8	22.4	25.1
Procedural*	18,081	18.9	18.0	19.7	11.9	11.4	12.4
Referrals and admissions	15,012	15.7	15.1	16.3	9.9	9.6	10.2
Medical specialist*	9,139	9.5	9.1	9.9	6.0	5.8	6.3
Allied health services*	4,728	4.9	4.6	5.2	3.1	2.9	3.3
Hospital*	382	0.4	0.3	0.5	0.3	0.2	0.3
Emergency department*	272	0.3	0.2	0.3	0.2	0.2	0.2
Other referrals*	491	0.5	0.4	0.6	0.3	0.3	0.4
Pathology	47,035	49.1	47.1	51.0	31.0	30.0	32.1
Imaging	10,460	10.9	10.5	11.4	6.9	6.6	7.2
Other investigations[(a)]	753	0.8	0.7	0.9	0.5	0.4	0.5
Total management activities	**225,758**	**235.5**	**—**	**—**	**148.8**	**—**	**—**

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

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, <hdl.handle.net/2123/11882>).

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

The number of encounters or problems for which at least one form of management was recorded by the GPs gives us another perspective (Table 8.2). At least one management action was recorded at 91.3% of encounters, for 85.1% of problems managed.

- At least one medication or other treatment was given for 70.9% of the problems managed.
- At least one medication (most commonly prescribed) was prescribed, supplied or advised for more than half (50.7%) of the problems managed.
- At least one other treatment (most commonly clinical) was provided for nearly one-third (31.6%) of problems managed.
- At least one referral (most commonly to a medical specialist) was made for 9.8% of problems managed.
- At least one investigation (most commonly pathology) was requested for 19.1% of problems managed (Table 8.2).

When extrapolated nationally based on the total number of MBS claims for GP items of service (see Section 2.11), which in 2013–14 was 133,400,000:

- at least one medication was prescribed, advised for over-the-counter purchase, or supplied by the GP at approximately 82.8 million (95% CI: 81.6–84.0 million) GP–patient encounters across the country in 2013–14
- at least one procedure was undertaken at 22.4 million (95% CI: 21.5–23.3 million) encounters nationally
- at least one referral to a specialist, allied health professional, hospital or emergency department was provided by GPs at 19.2 million (95% CI: 18.5–19.9 million) encounters nationally
- at least one pathology, imaging or other investigation was ordered at 34.8 million (95% CI: 33.8–35.8 million) encounters across Australia in 2013–14.

Table 8.2: Encounters and problems for which management was recorded

Management type	Number of encounters	Per cent of all encounters (*n* = 95,879)	95% LCL	95% UCL	Number of problems	Per cent of all problems (*n* = 151,675)	95% LCL	95% UCL
At least one management type	87,580	91.3	90.7	92.0	129,110	85.1	84.4	85.8
At least one medication or other treatment	77,610	80.9	80.1	81.8	107,478	70.9	70.0	71.7
At least one medication	59,554	62.1	61.2	63.0	76,878	50.7	49.8	51.6
At least one prescription	49,998	52.1	51.2	53.1	63,373	41.8	40.8	42.7
At least one GP-supplied	7,947	8.3	7.6	9.0	8,191	5.4	5.0	5.8
At least one OTC advised	7,483	7.8	7.2	8.4	7,687	5.1	4.7	5.4
At least one other treatment	40,853	42.6	41.0	44.2	47,910	31.6	30.4	32.8
At least one clinical treatment	28,098	29.3	27.8	30.8	32,386	21.4	20.2	22.5
At least one procedural treatment	16,117	16.8	16.1	17.5	16,962	11.2	10.7	11.6
At least one referral or admission	13,788	14.4	13.9	14.9	14,905	9.8	9.5	10.2
At least one referral to a medical specialist	8,679	9.1	8.7	9.4	9,231	6.1	5.9	6.3
At least one referral to allied health services	4,434	4.6	4.4	4.9	4,712	3.1	2.9	3.3
At least one referral to hospital	382	0.4	0.3	0.5	389	0.3	0.2	0.3
At least one referral to emergency department	272	0.3	0.2	0.3	275	0.2	0.2	0.2
At least one other referral	490	0.5	0.4	0.6	516	0.3	0.3	0.4
At least one investigation	24,983	26.1	25.3	26.8	28,972	19.1	18.6	19.6
At least one pathology order	18,282	19.1	18.4	19.7	21,064	13.9	13.5	14.3
At least one imaging order	8,939	9.3	9.0	9.7	9,322	6.1	5.9	6.4
At least one other investigation[(a)]	718	0.7	0.7	0.8	735	0.5	0.4	0.5

(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 by the GP or practice staff.

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

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

- as a single component for almost two-thirds (60.7%) of the problems managed
- as a double component for 20.8% of problems managed (Table 8.3)
- less often (3.6%) with more than two components (results not tabled).

Table 8.3 lists the most common management combinations, where management action(s) was recorded. Medication alone was the most common management, followed by a clinical treatment alone, and the combination of a medication and a clinical treatment. When a problem was referred it was most likely that no other treatments were given for that problem at the encounter.

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* = 151,675)	Per cent of total encounters (*n* = 95,879)
No recorded management						14.9	8.7
1+ management recorded							
1✓						33.2	26.8
	✓					10.1	7.2
✓	✓					6.2	10.1
					✓	5.2	3.0
			✓			5.1	3.6
		✓				4.6	3.9
✓					✓	3.0	4.6
✓		✓				2.9	4.6
				✓		2.5	1.8
		✓			✓	1.4	1.4
✓			✓			1.4	3.0
	✓				✓	1.2	1.3
✓				✓		1.1	2.0
	✓		✓			1.1	1.4
✓	✓				✓	0.6	1.9
				✓	✓	0.6	0.7
	✓	✓				0.4	0.7
✓	✓		✓			0.4	1.3
			✓		✓	0.4	0.5
✓		✓			✓	0.3	1.1

Note: 1+ – at least one specified management type.

8.1 Changes in management over the decade 2004–05 to 2013–14

Changes in management over the decade 2004–05 to 2013–14 are described in detail in Chapter 8 of the accompanying report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1] In that publication, changes over time are largely reported in terms of changes in management actions as a rate per 100 problems. This reflects change in how GPs are managing problems after accounting for the significant increase in the number of problems managed per encounter over the decade.

The major changes over the 10 years to 2013–14 are summarised below.

- There was a significant decrease in the rate of medications being prescribed/supplied by the GP or advised for over-the-counter purchase, from 69.8 per 100 problems in 2004–05 to 64.9 per 100 problems in 2013–14.
- The major contributor to the above change was a significant decrease in the rate of prescribed medications over the time period, from 57.3 to 52.8 per 100 problems. GP supplied medications had significantly increased in 2008–09 and 2009–10, but decreased again in 2011–12 to a rate not significantly different from the 2004–05 result.
- The introduction of MBS item numbers for practice nurse activity in 2005–06 led to a significant decrease in the rate of clinical treatments given by GPs, from a peak of 27.0 in 2004–05 to a low point of 19.9 per 100 problems managed in 2006–07. However, the rate of GP-provided clinical treatments then gradually increased such that, while there appears to be a significant difference between the start and end of the decade, the 2013–14 rate is similar to the rate prior to the 2004–05 peak. The original impact of practice nurses on this area of GP workload was no longer observed, suggesting that by 2013–14, GPs were again performing clinical treatments at a similar rate to that prior to the introduction of practice nurse item numbers.
- There was a significant increase in the rate at which procedural treatments were undertaken, from 10.6 per 100 problems managed in 2004–05 to 11.9 per 100 problems in 2013–14.
- The rate of referrals to other health providers significantly increased, from 7.9 to 9.9 per 100 problems between 2004–05 and 2013–14, influenced by a 63% increase in referrals to allied health services over the period (1.9 to 3.1 per 100 problems managed).
  It was further influenced by an increase in referrals to emergency departments (0.1 to 0.2 per 100 problems managed).
- The rate at which pathology tests/batteries were ordered significantly increased by 23%, from 25.2 tests/batteries per 100 problems managed in 2004–05 to 31.0 in 2013–14.
- The rate at which imaging was ordered increased significantly, from 5.7 imaging orders per 100 problems managed in 2004–05 to 6.9 per 100 in 2013–14.

9 Medications

GPs could record up to four medications for each of four problems managed — 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. The generic name of a medication is its non-proprietary name, which describes the pharmaceutical substance(s) or active pharmaceutical ingredient(s).

- GPs were asked to:
  - record 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 in the database in the manner recorded by the GP.
- Medications were coded using the Coding Atlas of Pharmaceutical Substances (CAPS) system developed by the FMRC, a hierarchical classification system which is able to capture details of products down to the generic and brand level. Every medication in the CAPS coding system is mapped to the international Anatomical Therapeutic Chemical (ATC) classification index.[76]
- The reporting of results at drug group, subgroup and generic level uses ATC levels 1, 3 and 5. The most frequently prescribed, supplied or advised individual medications are reported at the CAPS generic level (equivalent to ATC level 5) because ATC does not include many of the over-the-counter medications that arise in BEACH. Further, some ATC level 5 labels are not sufficiently specific for clarity.

Data on medications are reported for each year from 2004–05 to 2013–14 in the 10-year summary report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1]

Readers interested in adverse drug events will find more detailed information from the BEACH program in *Drugs causing adverse events in patients aged 45 or older: a randomised survey of general practice patients*.[77]

9.1 Source of medications

As reported in Chapter 8, a total of 98,394 medications were recorded, at rates of 103 per 100 encounters and 65 per 100 problems managed. We can derive from Table 8.1 that:

- 4 out of 5 medications (81.4%) were prescribed
- 10.0% of medications were supplied to the patient by the GP
- 8.7% of medications were recommended by the GP for over-the-counter purchase.

When medication rates per 100 encounters are extrapolated to the 133.4 million general practice Medicare-claimed encounters in Australia from April 2013 to March 2014, we estimate that GPs in Australia:

- prescribed, supplied or advised at least one medication at 82.8 million encounters (62.1% of encounters, Table 8.2)
- wrote a prescription (with/without repeats) for more than 111.4 million medications
- supplied 13.6 million medications directly to the patient
- recommended medications for OTC purchase 11.9 million times.

9.2 Prescribed medications

There were 80,046 prescriptions recorded, at rates of 84 per 100 encounters and 53 per 100 problems managed (Table 8.1). GPs recorded 80.1% of prescribed medications by brand (proprietary) name and 19.9% by their generic (non-proprietary) name. Some of the medications most likely to be recorded by generic name were amoxycillin, warfarin and prednisolone (results not tabled).

As shown in Table 8.2, at least one prescription was given at 52.1% of encounters. Extrapolated to the 133.4 million general practice Medicare-claimed encounters, we estimate that GPs prescribed at least one medication at 69.5 million encounters.

At least one prescription was given for 41.8% of problems managed.

- No prescription was given for 58.2% of problems managed
- One prescription was given for 33.6% of problems managed
- Two prescriptions were given for 6.0% of problems managed
- Three or four prescriptions were given for 2.2% of problems managed (Figure 9.1).

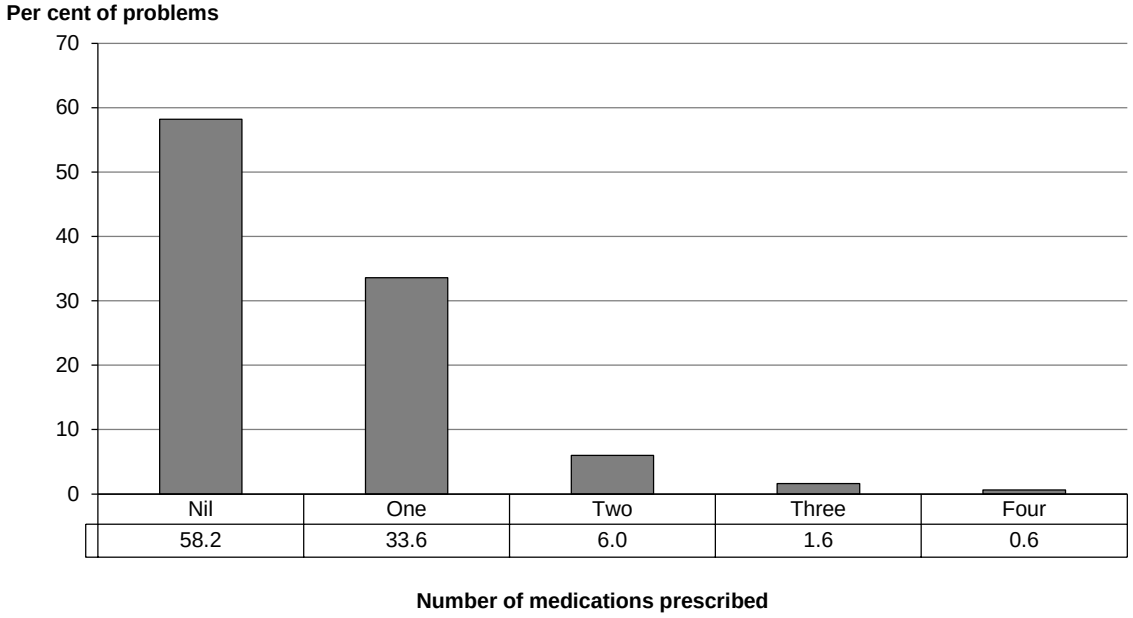


Figure 9.1: Number of medications prescribed per problem, 2013–14

Number of repeats

For 62,567 prescriptions (78.2% 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 34.0% of these prescriptions, the GP specified that no repeats had been prescribed, and for 37.8% five repeats were ordered. The latter proportion reflects the Pharmaceutical Benefits Scheme (PBS) provision of one month's supply and five repeats for many medications used for chronic conditions such as hypertension. The ordering of one repeat was also quite common (14.9%).

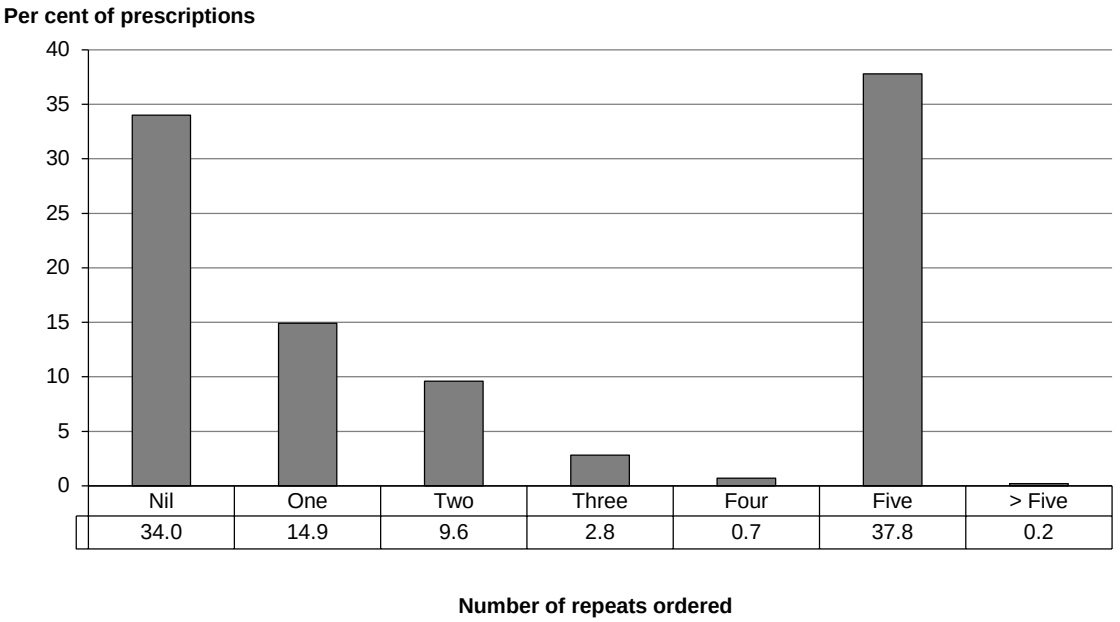


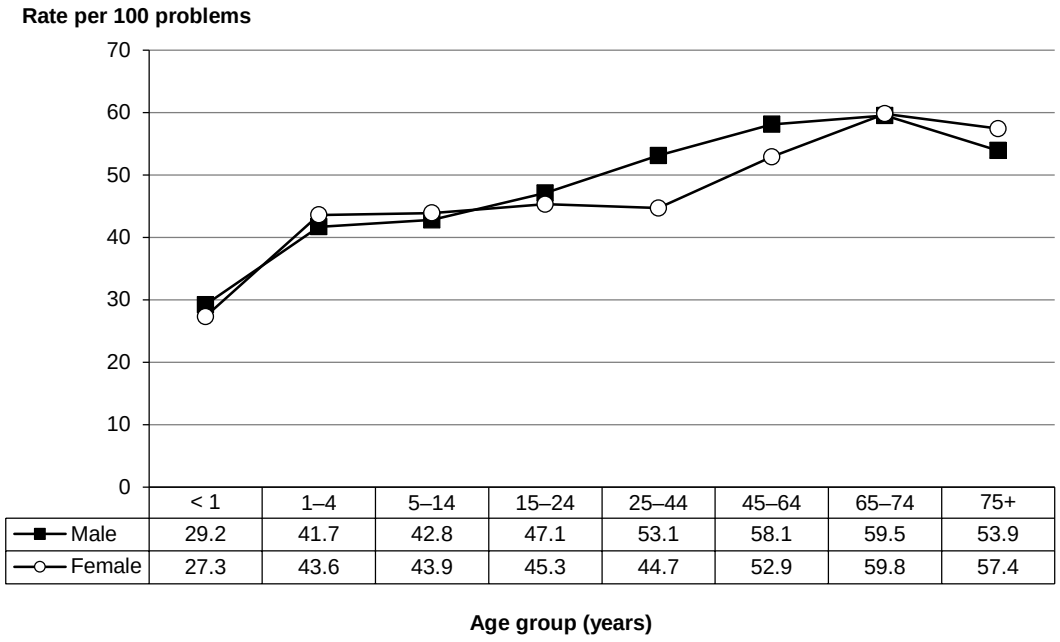
Figure 9.2: Number of repeats ordered per prescription, 2013–14

Age–sex-specific rates of prescribed medications

Age–sex-specific analysis found similar prescription rates for male (84 per 100 encounters) and female patients (83 per 100). 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.

The rate of prescribing almost doubled from 54 per 100 encounters for patients aged less than 25 years to 104 per 100 encounters for patients aged 65 years and over (results not tabled).

However, Figure 9.3 demonstrates that this age-based increase lessens if the prescription rate is considered in terms of the number of problems being managed in each age group. This suggests that a substantial part of the higher prescription rate for older patients is due to the increased number of health problems they have managed at an encounter. The remaining increase in prescription rate associated with patient age is probably a reflection of the problems under management, as the rate of chronic problem management increases with patient age.[78]



	< 1	1–4	5–14	15–24	25–44	45–64	65–74	75+
Male	29.2	41.7	42.8	47.1	53.1	58.1	59.5	53.9
Female	27.3	43.6	43.9	45.3	44.7	52.9	59.8	57.4

Figure 9.3: Age–sex-specific prescription rates per 100 problems managed, 2013–14

Types of medications prescribed

Table 9.1 shows the distribution of prescribed medications using the WHO ATC classification.[76] This allows comparison with other data sources such as those produced from 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, as a rate per 100 encounters, and as a rate per 100 problems managed, each with 95% confidence intervals.

The high number of opioids shown in this table (compared with BEACH data published before 2010) is due to our reclassification of some medications in 2010. We re-coded codeine combinations which contained 30 mg of codeine as opioids in the ATC index, whereas pre-2010 they were coded as 'other analgesics and antipyretics'. In the ATC classification, either grouping is correct. We decided to place high-dose codeine products in the opioid group in accordance with MIMS grouping[79] and following the Poisons Regulations of the Therapeutic Goods Administration,[80] which stipulates that high-dose codeine combinations are Schedule 4 (prescription only) medications. However, a few combination analgesics containing less than 30 mg of codeine but classified as Schedule 4, will not be counted in this group because there are other criteria that form part of the scheduling of prescription-only codeine. One of them is pack-size, which is not recorded in BEACH.

Similarly, before 2010 all aspirin (acetylsalicylic acid) was classified in the analgesic group of neurological medications. In 2010, we split aspirin into two different codes depending on dosage. We reclassified low-dose (100 mg) plain aspirin as an antithrombotic medication in the blood medications group, while higher doses and combinations with other analgesic/antipyretics remain in the neurological group.

If readers are making comparisons with previous BEACH publications, they should note that this change has caused the opioid and antithrombotic groups to increase, and 'other analgesics and antipyretics' to decrease. In the companion report to this publication, *A decade of Australian general practice activity 2004–05 to 2013–14*,[1] medications have been re-analysed across all 10 years, and the results incorporate these adjustments.

Table 9.1: Prescribed medications by ATC levels 1, 3 and 5

ATC Classification level			Number	Per cent of prescribed medications (*n* = 80,046)	Rate per 100 encounters (95% CI) (*n* = 95,879)	Rate per 100 problems (95% CI) (*n* = 151,675)
1	3	5				
Nervous system			**19,400**	**24.2**	**20.2 (19.3–21.1)**	**12.8 (12.3–13.3)**
	Opioids		5,825	7.3	6.1 (5.7–6.4)	3.8 (3.6–4.1)
		Oxycodone	1,657	2.1	1.7 (1.6–1.9)	1.1 (1.0–1.2)
		Codeine, combinations excluding psycholeptics	1,482	1.9	1.5 (1.4–1.7)	1.0 (0.9–1.1)
		Tramadol	855	1.1	0.9 (0.8–1.0)	0.6 (0.5–0.6)
		Buprenorphine	644	0.8	0.7 (0.6–0.8)	0.4 (0.4–0.5)
	Antidepressants		3,987	5.0	4.2 (3.9–4.4)	2.6 (2.5–2.8)
		Escitalopram	574	0.7	0.6 (0.5–0.7)	0.4 (0.3–0.4)
		Sertraline	499	0.6	0.5 (0.5–0.6)	0.3 (0.3–0.4)
		Amitriptyline	470	0.6	0.5 (0.4–0.6)	0.3 (0.3–0.3)
	Other analgesics and antipyretics		2,517	3.1	2.6 (2.4–2.9)	1.7 (1.5–1.8)
		Paracetamol, plain	2,407	3.0	2.5 (2.3–2.7)	1.6 (1.4–1.7)
	Anxiolytics		1,803	2.3	1.9 (1.7–2.1)	1.2 (1.1–1.3)
		Diazepam	1,164	1.5	1.2 (1.1–1.3)	0.8 (0.7–0.8)
		Oxazepam	443	0.6	0.5 (0.4–0.5)	0.3 (0.3–0.3)
	Hypnotics and sedatives		1,422	1.8	1.5 (1.4–1.6)	0.9 (0.9–1.0)
		Temazepam	939	1.2	1.0 (0.9–1.1)	0.6 (0.6–0.7)
	Antipsychotics		1,225	1.5	1.3 (1.2–1.4)	0.8 (0.7–0.9)
	Antiepileptics		1,094	1.4	1.1 (1.0–1.2)	0.7 (0.7–0.8)
		Pregabalin	539	0.7	0.6 (0.5–0.6)	0.4 (0.3–0.4)
	Drugs used in addictive disorders		894	1.1	0.9 (0.6–1.3)	0.6 (0.4–0.8)
Cardiovascular system			**15,184**	**19.0**	**15.8 (15.0–16.7)**	**10.0 (9.5–10.5)**
	Lipid modifying agents, plain		3,474	4.3	3.6 (3.4–3.8)	2.3 (2.2–2.4)
		Atorvastatin	1,364	1.7	1.4 (1.3–1.5)	0.9 (0.8–1.0)
		Rosuvastatin	1,225	1.5	1.3 (1.2–1.4)	0.8 (0.7–0.9)
	Angiotensin II antagonists, plain		2,150	2.7	2.2 (2.1–2.4)	1.4 (1.3–1.5)
		Irbesartan	788	1.0	0.8 (0.7–0.9)	0.5 (0.5–0.6)
		Candesartan	586	0.7	0.6 (0.5–0.7)	0.4 (0.3–0.4)
		Telmisartan	557	0.7	0.6 (0.5–0.7)	0.4 (0.3–0.4)
	ACE inhibitors, plain		1,907	2.4	2.0 (1.8–2.1)	1.3 (1.2–1.4)
		Perindopril	1,105	1.4	1.2 (1.0–1.3)	0.7 (0.7–0.8)
		Ramipril	536	0.7	0.6 (0.5–0.6)	0.4 (0.3–0.4)
	Beta blocking agents		1,554	1.9	1.6 (1.5–1.8)	1.0 (0.9–1.1)
		Atenolol	616	0.8	0.6 (0.6–0.7)	0.4 (0.4–0.5)
		Metoprolol	496	0.6	0.5 (0.5–0.6)	0.3 (0.3–0.4)
	Angiotensin II antagonists, combinations		1,514	1.9	1.6 (1.4–1.7)	1.0 (0.9–1.1)
		Irbesartan and diuretics	530	0.7	0.6 (0.5–0.6)	0.3 (0.3–0.4)

(continued)

Table 9.1 (continued): Prescribed medications by ATC levels 1, 3 and 5

ATC Classification level 1 3 5	Number	Per cent of prescribed medications (*n* = 80,046)	Rate per 100 encounters (95% CI) (*n* = 95,879)	Rate per 100 problems (95% CI) (*n* = 151,675)
Selective calcium channel blockers with mainly vascular effects	1,205	1.5	1.3 (1.1–1.4)	0.8 (0.7–0.9)
Amlodipine	568	0.7	0.6 (0.5–0.7)	0.4 (0.3–0.4)
High-ceiling diuretics	611	0.8	0.6 (0.6–0.7)	0.4 (0.4–0.4)
Frusemide	608	0.8	0.6 (0.6–0.7)	0.4 (0.4–0.4)
ACE inhibitors, combinations	607	0.8	0.6 (0.6–0.7)	0.4 (0.4–0.4)
Anti-infective for systemic use	**13,778**	**17.2**	**14.4 (13.7–15.0)**	**9.1 (8.6–9.5)**
Beta-lactam antibacterials, penicillins	4,938	6.2	5.2 (4.8–5.5)	3.3 (3.0–3.5)
Amoxycillin	2,423	3.0	2.5 (2.3–2.7)	1.6 (1.5–1.7)
Amoxycillin and enzyme inhibitor	1,655	2.1	1.7 (1.6–1.9)	1.1 (1.0–1.2)
Other beta-lactam antibacterials	2,888	3.6	3.0 (2.8–3.2)	1.9 (1.8–2.0)
Cephalexin	2,460	3.1	2.6 (2.4–2.7)	1.6 (1.5–1.7)
Macrolides, lincosamides and streptogramins	1,929	2.4	2.0 (1.8–2.2)	1.3 (1.2–1.4)
Roxithromycin	763	1.0	0.8 (0.7–0.9)	0.5 (0.4–0.6)
Clarithromycin	513	0.6	0.5 (0.4–0.6)	0.3 (0.3–0.4)
Tetracyclines	854	1.1	0.9 (0.8–1.0)	0.6 (0.5–0.6)
Doxycycline	738	0.9	0.8 (0.7–0.8)	0.5 (0.4–0.5)
Sulfonamides and trimethoprim	708	0.9	0.7 (0.7–0.8)	0.5 (0.4–0.5)
Trimethoprim	542	0.7	0.6 (0.5–0.6)	0.4 (0.3–0.4)
Viral vaccines	683	0.9	0.7 (0.6–0.9)	0.5 (0.4–0.5)
Alimentary tract and metabolism	**8,317**	**10.4**	**8.7 (8.3–9.1**	**5.5 (5.3–5.7)**
Drugs for peptic ulcer and gastro-oesophageal reflux	3,363	4.2	3.5 (3.3–3.7)	2.2 (2.1–2.3)
Esomeprazole	1,645	2.1	1.7 (1.6–1.8)	1.1 (1.0–1.2)
Pantoprazole	683	0.9	0.7 (0.6–0.8)	0.5 (0.4–0.5)
Blood glucose lowering drugs, excluding insulins	2,060	2.6	2.1 (1.9–2.4)	1.4 (1.2–1.5)
Metformin	1,164	1.5	1.2 (1.1–1.3)	0.8 (0.7–0.8)
Gliclazide	406	0.5	0.4 (0.4–0.5)	0.3 (0.2–0.3)
Propulsives	601	0.8	0.6 (0.6–0.7)	0.4 (0.4–0.4)
Metoclopramide	483	0.6	0.5 (0.4–0.6)	0.3 (0.3–0.4)
Insulins and analogues	520	0.6	0.5 (0.5–0.6)	0.3 (0.3–0.4)
Drugs for constipation	509	0.6	0.5 (0.5–0.6)	0.3 (0.3–0.4)
Respiratory system	**4,670**	**5.8**	**4.9 (4.6–5.2)**	**3.1 (2.9–3.3)**
Adrenergics, inhalants	2,509	3.1	2.6 (2.4–2.8)	1.7 (1.5–1.8)
Salbutamol	1,171	1.5	1.2 (1.1–1.3)	0.8 (0.7–0.8)
Salmeterol and fluticasone	743	0.9	0.8 (0.7–0.9)	0.5 (0.4–0.5)
Formoterol and budesonide	466	0.6	0.5 (0.4–0.5)	0.3 (0.3–0.3)

(continued)

Table 9.1 (continued): Prescribed medications by ATC levels 1, 3 and 5

ATC Classification level			Number	Per cent of prescribed medications (*n* = 80,046)	Rate per 100 encounters (95% CI) (*n* = 95,879)	Rate per 100 problems (95% CI) (*n* = 151,675)
1	3	5				
	Other drugs for obstructive airway diseases, inhalants		796	1.0	0.8 (0.7–0.9)	0.5 (0.5–0.6)
Musculoskeletal system			**4,093**	**5.1**	**4.3 (4.0–4.5)**	**2.7 (2.5–2.9)**
	Anti-inflammatory and antirheumatic products, non-steroid		2,801	3.5	2.9 (2.7–3.1)	1.8 (1.7–2.0)
		Meloxicam	850	1.1	0.9 (0.8–1.0)	0.6 (0.5–0.6)
		Diclofenac	524	0.7	0.5 (0.5–0.6)	0.3 (0.3–0.4)
		Celecoxib	478	0.6	0.5 (0.4–0.6)	0.3 (0.3–0.4)
	Drugs affecting bone structure and mineralization		526	0.7	0.5 (0.5–0.6)	0.3 (0.3–0.4)
	Antigout preparations		488	0.6	0.5 (0.4–0.6)	0.3 (0.3–0.4)
Dermatologicals			**3,615**	**4.5**	**3.8 (3.6–4.0)**	**2.4 (2.3–2.5)**
	Corticosteroids, plain		2,033	2.5	2.1 (2.0–2.3)	1.3 (1.3–1.4)
		Betamethasone	667	0.8	0.7 (0.6–0.8)	0.4 (0.4–0.5)
		Mometasone	576	0.7	0.6 (0.5–0.7)	0.4 (0.3–0.4)
Genitourinary system and sex hormones			**3,002**	**3.8**	**3.1 (3.0–3.3)**	**2.0 (1.9–2.1)**
	Hormonal contraceptives for systemic use		1,186	1.5	1.2 (1.1–1.3)	0.8 (0.7–0.8)
		Levonorgestrel and ethinyloestradiol	717	0.9	0.7 (0.7–0.8)	0.5 (0.4–0.5)
	Estrogens		500	0.6	0.5 (0.5–0.6)	0.3 (0.3–0.4)
	Urologicals		445	0.6	0.5 (0.4–0.5)	0.3 (0.3–0.3)
Blood and blood-forming organs			**2,685**	**3.4**	**2.8 (2.6–3.0)**	**1.8 (1.6–1.9)**
	Antithrombotic agents		2,053	2.6	2.1 (2.0–2.3)	1.4 (1.2–1.5)
		Warfarin	1,082	1.4	1.1 (1.0–1.3)	0.7 (0.6–0.8)
Systemic hormonal preparations, excluding sex hormones			**2,507**	**3.1**	**2.6 (2.5–2.8)**	**1.7 (1.6–1.7)**
	Corticosteroids for systemic use, plain		1,480	1.8	1.5 (1.4–1.7)	1.0 (0.9–1.1)
		Prednisolone	906	1.1	0.9 (0.9–1.0)	0.6 (0.5–0.7)
	Thyroid preparations		786	1.0	0.8 (0.7–0.9)	0.5 (0.5–0.6)
		Levothyroxine sodium	761	1.0	0.8 (0.7–0.9)	0.5 (0.5–0.6)
Sensory organs			**1,906**	**2.4**	**2.0 (1.9–2.1)**	**1.3 (1.2–1.3)**
	Anti-infectives ophthalmological		631	0.8	0.7 (0.6–0.7)	0.4 (0.4–0.5)
		Chloramphenicol ophthalmological	564	0.7	0.6 (0.5–0.7)	0.4 (0.3–0.4)
	Corticosteroids and anti-infective in combination otological		578	0.7	0.6 (0.6–0.7)	0.4 (0.3–0.4)
Antineoplastic and immunomodulating agents			**421**	**0.5**	**0.4 (0.4–0.5)**	**0.3 (0.2–0.3)**
Antiparasitic products, insecticides and repellent			**262**	**0.3**	**0.3 (0.2–0.4)**	**0.2 (0.1–0.2)**
Various			**206**	**0.3**	**0.2 (0.2–0.3)**	**0.1 (0.1–0.2)**
Total prescribed medications			**80,046**	**100.0**	**83.5 (81.2–85.8)**	**52.8 (51.5–54.1)**

Note: ATC – Anatomical Therapeutic Chemical classification; CI – confidence interval; 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 made up 43.7% of all prescribed medications.

Table 9.2: Most frequently prescribed medications

Generic medication	Number	Per cent of prescribed medications (*n* = 80,046)	Rate per 100 encounters (95% CI) (*n* = 95,879)	Rate per 100 problems (95% CI) (*n* = 151,675)
Cephalexin	2,460	3.1	2.6 (2.4–2.7)	1.6 (1.5–1.7)
Amoxycillin	2,423	3.0	2.5 (2.3–2.7)	1.6 (1.5–1.7)
Paracetamol [plain]	2,407	3.0	2.5 (2.3–2.7)	1.6 (1.4–1.7)
Oxycodone	1,657	2.1	1.7 (1.6–1.9)	1.1 (1.0–1.2)
Amoxycillin/potassium clavulanate	1,655	2.1	1.7 (1.6–1.9)	1.1 (1.0–1.2)
Esomeprazole	1,645	2.1	1.7 (1.6–1.8)	1.1 (1.0–1.2)
Paracetamol/codeine	1,448	1.8	1.5 (1.4–1.6)	1.0 (0.9–1.0)
Atorvastatin	1,364	1.7	1.4 (1.3–1.5)	0.9 (0.8–1.0)
Rosuvastatin	1,225	1.5	1.3 (1.2–1.4)	0.8 (0.7–0.9)
Salbutamol	1,179	1.5	1.2 (1.1–1.4)	0.8 (0.7–0.9)
Metformin	1,164	1.5	1.2 (1.1–1.3)	0.8 (0.7–0.8)
Diazepam	1,164	1.5	1.2 (1.1–1.3)	0.8 (0.7–0.8)
Perindopril	1,105	1.4	1.2 (1.0–1.3)	0.7 (0.7–0.8)
Warfarin sodium	1,082	1.4	1.1 (1.0–1.3)	0.7 (0.6–0.8)
Temazepam	939	1.2	1.0 (0.9–1.1)	0.6 (0.6–0.7)
Tramadol	855	1.1	0.9 (0.8–1.0)	0.6 (0.5–0.6)
Meloxicam	850	1.1	0.9 (0.8–1.0)	0.5 (0.5–0.6)
Irbesartan	788	1.0	0.8 (0.7–0.9)	0.5 (0.4–0.6)
Roxithromycin	763	1.0	0.8 (0.7–0.9)	0.5 (0.4–0.6)
Thyroxine	761	1.0	0.8 (0.7–0.9)	0.5 (0.5–0.6)
Fluticasone/salmeterol	743	0.9	0.8 (0.7–0.9)	0.5 (0.4–0.5)
Doxycycline	738	0.9	0.8 (0.7–0.8)	0.5 (0.4–0.5)
Levonorgestrel/ethinyloestradiol	717	0.9	0.7 (0.7–0.8)	0.5 (0.4–0.5)
Pantoprazole	683	0.9	0.7 (0.6–0.8)	0.5 (0.4–0.5)
Betamethasone topical	667	0.8	0.7 (0.6–0.8)	0.4 (0.4–0.5)
Buprenorphine	644	0.8	0.7 (0.6–0.8)	0.4 (0.4–0.5)
Atenolol	616	0.8	0.6 (0.6–0.7)	0.4 (0.4–0.5)
Frusemide	608	0.8	0.6 (0.6–0.7)	0.4 (0.4–0.4)
Prednisolone	589	0.7	0.6 (0.5–0.7)	0.4 (0.3–0.4)
Candesartan cilexetil	586	0.7	0.6 (0.5–0.7)	0.4 (0.3–0.4)
Subtotal	*33,525*	*43.7*	—	—
Total prescribed medications	**80,046**	**100.0**	**83.5 (81.2–85.8)**	**52.8 (51.5–54.1)**

Note: CI – confidence interval.

9.3 Medications supplied by GPs

GPs supplied 9,797 medications in 2013–14, at a rate of 10.2 medications per 100 encounters, and 6.5 per 100 problems managed. At least one medication was supplied at 8.3% of encounters, for 5.4% of all problems managed, an estimated 11.1 million encounters nationally where GPs supplied at least one medication. Table 9.3 shows the top supplied medications. At least one medication was supplied for 5.4% of all problems managed. The most frequently supplied medications are listed in Table 9.3.

Table 9.3: Medications most frequently supplied by GPs

Generic medication	Number	Per cent of GP supplied medications (*n* = 9,797)	Rate per 100 encounters (95% CI) (*n* = 95,879)	Rate per 100 problems (95% CI) (*n* = 151,675)
Influenza virus vaccine	3,174	32.4	3.3 (2.7–3.9)	2.1 (1.7–2.5)
Pneumococcal vaccine	583	5.9	0.6 (0.5–0.7)	0.4 (0.3–0.4)
Vitamin B12 (cobalamin)	441	4.5	0.5 (0.4–0.5)	0.3 (0.2–0.3)
Diphtheria/pertussis/tetanus/hepatitis B/polio/ Haemophilus influenzae B vaccine	420	4.3	0.4 (0.4–0.5)	0.3 (0.2–0.3)
Measles/mumps/rubella vaccine	297	3.0	0.3 (0.3–0.4)	0.2 (0.2–0.2)
Rotavirus vaccine	279	2.8	0.3 (0.3–0.3)	0.2 (0.2–0.2)
Triple antigen (diphtheria/pertussis/tetanus)	183	1.9	0.2 (0.2–0.2)	0.1 (0.1–0.1)
ADT/CDT (diphtheria/tetanus) vaccine	180	1.8	0.2 (0.2–0.2)	0.1 (0.1–0.1)
Allergen treatment	123	1.3	0.1 (0.1–0.2)	0.1 (0.1–0.1)
Hepatitis A vaccine	112	1.1	0.1 (0.1–0.3)	0.1 (0.1–0.1)
Metoclopramide	112	1.1	0.1 (0.1–0.2)	0.1 (0.0–0.1)
Hepatitis B vaccine	100	1.0	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Diphtheria/pertussis/tetanus/polio vaccine	95	1.0	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Hepatitis A/typhoid (*Salmonella typhi*) vaccine	94	1.0	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Meningitis vaccine	89	0.9	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Chickenpox (varicella zoster)	84	0.9	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Methylprednisolone	83	0.8	0.1 (0.0–0.2)	0.1 (0.0–0.1)
Local anaesthetic injection	82	0.8	0.1 (0.0–0.2)	0.1 (0.0–0.1)
Typhoid vaccine (*Salmonella typhi*)	82	0.8	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Haemophilus influenzae B vaccine	75	0.8	0.1 (0.1–0.1)	0.0 (0.0–0.1)
Testosterone	71	0.7	0.1 (0.1–0.1)	0.0 (0.0–0.1)
Medroxyprogesterone	65	0.7	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Mometasone nasal	64	0.7	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Betamethasone systemic	58	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Salbutamol	56	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Immunisation	56	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Hepatitis A and B vaccine	55	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.0)
Steroid injection NEC	52	0.5	0.1 (0.0–0.1)	0.0 (0.0–0.0)
Measles/mumps/rubella/varicella zoster vaccine	51	0.5	0.1 (0.0–0.1)	0.0 (0.0–0.0)
Subtotal	*7,265*	*74.1*	—	—
Total supplied medications	**9,797**	**100.00**	**10.2 (9.4–11.0)**	**6.5 (6.0–6.9)**

Note: CI – confidence interval; ADT – adult diphtheria tetanus; CDT – child diphtheria tetanus; NEC – not elsewhere classified; HPV – human papillomavirus.

9.4 Medications advised for over-the-counter purchase

The GPs recorded 8,550 medications as recommended for OTC purchase, at rates of 8.9 per 100 encounters and 5.6 per 100 problems managed. At least one OTC medication was advised at 7.8% of encounters, an estimated 10.4 million encounters nationally where GPs recommended at least one OTC medication. At least one OTC medication was advised for 5.1% of problems (Table 8.2). Table 9.4 shows the top 30 advised medications at the CAPS generic level (ATC level 5 equivalent). A wide range of medications was recorded in this group, the most common being paracetamol, which accounted for 25.3% of these medications. The re-classification of aspirin described in Section 9.2 also affected rates of advised OTC medications, as higher-dose analgesic aspirin and low-dose aspirin for antithrombotic purposes are presented separately here.

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

Generic medication	Number	Per cent of OTC medications (*n* = 8,550)	Rate per 100 encounters (95% CI) (*n* = 95,879)	Rate per 100 problems (95% CI) (*n* = 151,675)
Paracetamol [plain]	2,164	25.3	2.3 (1.9–2.6)	1.4 (1.2–1.6)
Ibuprofen	597	7.0	0.6 (0.5–0.7)	0.4 (0.3–0.5)
Vitamin D3 (cholecalciferol)	238	2.8	0.2 (0.2–0.3)	0.2 (0.1–0.2)
Loratadine	223	2.6	0.2 (0.2–0.3)	0.1 (0.1–0.2)
Sodium/potassium/citric acid/glucose	202	2.4	0.2 (0.2–0.3)	0.1 (0.1–0.2)
Sodium chloride topical nasal	182	2.1	0.2 (0.1–0.2)	0.1 (0.1–0.1)
Diclofenac topical	156	1.8	0.2 (0.1–0.2)	0.1 (0.1–0.1)
Saline bath/solution/gargle	153	1.8	0.2 (0.1–0.2)	0.1 (0.1–0.1)
Simple analgesics	147	1.7	0.2 (0.1–0.2)	0.1 (0.1–0.1)
Hydrocortisone/clotrimazole	111	1.3	0.1 (0.1–0.1)	0.1 (0.1–0.1)
Cream/ointment/lotion NEC	109	1.3	0.1 (0.1–0.2)	0.1 (0.0–0.1)
Cetirizine	102	1.2	0.1 (0.1–0.1)	0.1 (0.1–0.1)
Clotrimazole topical	100	1.2	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Fexofenadine	97	1.1	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Paracetamol/codeine	89	1.0	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Hydrocortisone topical	87	1.0	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Docusate otic	86	1.0	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Ferrous sulfate/sodium ascorbate	84	1.0	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Hyoscine butylbromide	78	0.9	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Aspirin analgesic	73	0.9	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Cinchocaine/hydrocortisone topical rectal	71	0.8	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Bromhexine	68	0.8	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Vitamin D	66	0.8	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Loperamide	66	0.8	0.1 (0.0–0.1)	0.0 (0.0–0.1)

(continued)

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

Generic medication	Number	Per cent of OTC medications (*n* = 8,550)	Rate per 100 encounters (95% CI) (*n* = 95,879)	Rate per 100 problems (95% CI) (*n* = 151,675)
Aspirin cardiovascular	65	0.8	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Sodium chloride/potassium chloride/sodium bicarbonate	62	0.7	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Sorbolene/glycerol/cetomacrogol	57	0.7	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Fish oil	57	0.7	0.1 (0.0–0.1)	0.0 (0.0–0.0)
Supplemental/enteral nutrition	54	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.0)
Multivitamins with minerals	54	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Subtotal	*5,701*	*66.7*	—	—
Total advised medications	**8,550**	**100.0**	**8.9 (8.2–9.6)**	**5.6 (5.2–6.1)**

Note: OTC – over-the-counter; CI – confidence interval; NEC – not elsewhere classified.

9.5 Changes in medications over the decade 2004–05 to 2013–14

Data on medications are reported for each year from 2004–05 to 2013–14 in Chapter 9 of the companion report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1] In that report, changes over time are measured as change in the management of problems (that is, as a rate per 100 problems). This reflects change in how GPs are managing problems, and takes into account the significant increase in the number of problems managed per encounter over the decade to 2013–14.

The rate at which medications were prescribed decreased significantly from 2004–05 (58.8 per 100 problems, 95% CI: 57.3–60.3) to 2013–14 (53.8 per 100, 95% CI: 52.5–55.1). Among the prescribed drug groups that decreased significantly were antibacterials for systemic use, drugs for obstructive airway diseases, systemic anti-inflammatory medications, corticosteroid dermatological preparations and sex hormones. At the same time, prescribing rates of several drug groups increased significantly, including psychoanaleptics, lipid modifying agents, digestive drugs for acid-related disorders, corticosteroids for systemic use, and antiepileptic drugs.

At the individual generic level, significant increases were found in the prescribing rates of a number of medications. Among them were oxycodone, esomeprazole, rosuvastatin, perindopril and pantoprazole. On the other hand, amoxycillin, paracetamol/codeine combination products, roxithromycin, levonorgoestrel/ethinyloestradiol, diclofenac sodium systemic and simvastatin were among the medications for which significant decreases in prescribing rates occurred over time.

Other changes that occurred over the 10-year period were a steady rise in the proportion of prescriptions for which five repeats were recorded, and a corresponding decrease in those for which no repeats, one, three or four repeats were recorded. There was a significant increase in the rate of influenza vaccine supplied to the patient by GPs, and an increase in the rate of vitamin D3 advised for over-the-counter purchase.

10 Other treatments

The BEACH survey form allows GPs to record up to two other (non-pharmacological) treatments for each problem managed at the encounter. Other treatments include all clinical and procedural treatments provided. These groups are defined in Appendix 4, Tables A4.4 and A4.5.

Routine clinical measurements or observations, such as measurements of blood pressure and physical examinations, were not recorded if they were undertaken by the GP. However GPs were instructed to record clinical measurements or observations if these were undertaken by the practice nurse (PN) or Aboriginal health worker (AHW) in conjunction with the GP at the encounter.

In Sections 10.1–10.3 inclusive, 'other treatments' have been counted irrespective of whether they were done by the GP or by the PN/AHW. That is, the non-pharmacological management provided at general practice patient encounters is described, rather than management provided specifically by the GP. However in the analysis of procedural treatments, injections given in provision of vaccines were removed, as this action has already been counted and reported in Section 9.3 Medications supplied by the GPs.

In Section 10.4, treatments provided by the PN/AHW (including the injections given for vaccination) are reported separately, to provide a picture of the work they undertake in association with GP–patient encounters.

Data on other treatments are reported for each year from 2004–05 to 2013–14 in the 10-year report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1]

10.1 Number of other treatments

In 2013–14, a total of 54,104 other treatments were recorded, at a rate of 56.4 per 100 encounters. Two-thirds (66.6%) of these were clinical treatments. At least one other treatment was provided at 42.6% of all encounters, and for 31.6% of all problems managed. For every 100 problems managed, 24 clinical treatments and 12 procedures were provided by a GP or PN/AHW (Table 10.1).

Table 10.1: Summary of other treatments

Variable	Number	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Rate per 100 problems (*n* = 151,675)	95% LCL	95% UCL
At least one other treatment	40,853	42.6	41.0	44.2	31.6	30.4	32.8
Other treatments	54,104	56.4	53.8	59.0	35.7	34.2	37.2
Clinical treatments	36,024	37.6	35.3	39.8	23.8	22.4	25.1
Procedural treatments[(a)]	18,081	18.9	18.0	19.7	11.9	11.4	12.4

(a) Excludes all local injection/infiltrations performed for immunisations/vaccinations (*n* = 4,245).

Note: LCL – lower confidence limit; UCL – upper confidence limit.

Table 10.2 shows the relationship between other treatments and pharmacological treatments given for problems managed.

- For 63.9% of the problems that were managed with an 'other treatment', no medication was prescribed, supplied or advised for that problem at that encounter.
- Around 1 in 5 problems (21.4%) were managed with at least one clinical treatment. For 63.3% of these problems, no concurrent pharmacological treatment was provided.
- Around 1 in 10 problems (11.2%) were managed with at least one procedural treatment, with no pharmacological management given for 64.4% 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* = 151,675)	95% LCL	95% UCL
At least one other treatment	47,910	100.0	31.6	30.4	32.8
Without pharmacological treatment	30,600	63.9	20.2	19.4	21.0
At least one clinical treatment	32,386	100.0	21.4	20.2	22.5
Without pharmacological treatment	20,507	63.3	13.5	12.8	14.2
At least one procedural treatment	16,962	100.0	11.2	10.7	11.6
Without pharmacological treatment	10,925	64.4	7.2	6.9	7.5

Note: LCL – lower confidence limit; UCL – upper confidence limit.

10.2 Clinical treatments

Clinical treatments include general and specific advice, counselling or education, and administrative processes. During 2013–14, there were 36,024 clinical treatments recorded, at a rate of 37.6 per 100 encounters, or 23.8 per 100 problems managed (Table 10.1).

Most frequent clinical treatments

Table 10.3 lists the most common clinical treatments provided. Each clinical treatment is expressed as a percentage of all clinical treatments, as a rate per 100 encounters with 95% confidence limits, and as a rate per 100 problems managed with 95% confidence limits.

The 10 clinical treatments most often provided accounted for 85.4% of all clinical treatments. General advice and education was the most frequently recorded in 2013–14 (6.2 per 100 encounters), accounting for 16.5% of all clinical treatments, followed by counselling about the problem under management (4.6 per 100 encounters).

Several groups of clinical treatments related to preventive activities. The most common was counselling and advice about nutrition and weight (3.9 per 100 encounters), followed by counselling/advice for: exercise; smoking; lifestyle; prevention; and alcohol. Together, these preventive treatments accounted for 19.0% of clinical treatments, provided at a rate of 7.1 per 100 encounters.

Table 10.3: Most frequent clinical treatments

Clinical treatment	Number	Per cent of clinical treatments (*n* = 36,024)	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Rate per 100 problems (*n* = 151,675)	95% LCL	95% UCL
Advice/education NEC*	5,962	16.5	6.2	5.3	7.1	3.9	3.4	4.5
Counselling – problem*	4,404	12.2	4.6	4.0	5.2	2.9	2.5	3.3
Counselling/advice – nutrition/weight*	3,742	10.4	3.9	3.5	4.3	2.5	2.2	2.7
Advice/education – treatment*	3,691	10.2	3.8	3.4	4.3	2.4	2.2	2.7
Counselling – psychological*	3,275	9.1	3.4	3.1	3.7	2.2	2.0	2.3
Advice/education – medication*	3,250	9.0	3.4	3.1	3.7	2.1	1.9	2.3
Other administrative procedure/ document (excluding sickness certificate)*	2,618	7.3	2.8	2.5	3.0	1.8	1.6	1.9
Sickness certificate*	1,459	4.1	1.5	1.3	1.7	1.0	0.8	1.1
Reassurance, support*	1,239	3.4	1.3	1.1	1.5	0.8	0.7	1.0
Counselling/advice – exercise*	1,130	3.1	1.2	1.0	1.4	0.7	0.6	0.9
Counselling/advice – smoking*	632	1.8	0.7	0.6	0.8	0.4	0.4	0.5
Counselling/advice – lifestyle*	599	1.7	0.6	0.5	0.8	0.4	0.3	0.5
Counselling/advice – health/body*	470	1.3	0.5	0.4	0.6	0.3	0.3	0.4
Counselling/advice – prevention*	383	1.1	0.4	0.3	0.5	0.3	0.2	0.3
Counselling/advice – alcohol*	368	1.0	0.4	0.3	0.4	0.2	0.2	0.3
Observe/wait*	341	0.9	0.4	0.3	0.4	0.2	0.2	0.3
Consultation with primary care provider*	289	0.8	0.3	0.2	0.4	0.2	0.1	0.2
Family planning*	274	0.8	0.3	0.2	0.3	0.2	0.1	0.2
Counselling/advice – relaxation*	262	0.7	0.3	0.2	0.3	0.2	0.1	0.2
Counselling/advice – pregnancy*	249	0.7	0.3	0.2	0.3	0.2	0.1	0.2
Subtotal	*35,060*	*97.3*	—	—	—	—	—	—
Total clinical treatments	**36,024**	**100.0**	**37.6**	**35.3**	**39.8**	**23.8**	**22.4**	**25.1**

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.4 <hdl.handle.net/2123/11882>).

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

Problems managed with a clinical treatment

Table 10.4 lists the top 10 problems managed with a clinical treatment. It also shows the extent to which clinical treatments were used for each problem, and the relationship between the use of a clinical treatment and the provision of medication for individual problems at that encounter.

- A total of 36,024 problems (23.8% of all problems) involved one or more clinical treatments in their management (Table 10.1).
- There was a very broad range of problems managed with clinical treatments. However, the 10 most common problems managed with a clinical treatment accounted for 30% of all problems for which clinical treatments were provided.
- Depression represented the largest proportion of problems managed with a clinical treatment (5.5%), followed by upper respiratory tract infection (4.7%).

- A clinical treatment was provided at 43.4% of contacts with depression, with no concurrent pharmacological treatment provided for half (50.9%) of these contacts where a clinical treatment was provided.
- Of the top 10 problems, acute stress reaction was the problem most likely to be managed with a clinical treatment (at 73.9% of contacts). Of the contacts with acute stress reaction where a clinical treatment was provided, 90.9% did not result in concurrent medication prescribed/supplied or advised for that problem.

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

Problem managed	Number	Per cent of problems with clinical treatment (*n* = 32,386)	Rate per 100 encounters[(a)] (*n* = 95,879)	95% LCL	95% UCL	Per cent of this problem[(b)]	Per cent of treated problems no medications[(c)]
Depression*	1,787	5.5	1.9	1.7	2.1	43.4	50.9
Upper respiratory tract infection	1,507	4.7	1.6	1.4	1.8	32.0	59.2
Diabetes – all*	1,193	3.7	1.2	1.1	1.4	29.5	62.9
Anxiety*	1,021	3.2	1.1	1.0	1.2	47.4	64.7
Hypertension*	1,009	3.1	1.1	0.9	1.2	12.2	42.8
Lipid disorder	790	2.4	0.8	0.7	0.9	26.7	70.8
Gastroenteritis*	632	2.0	0.7	0.6	0.8	48.1	57.7
Back complaint*	618	1.9	0.6	0.6	0.7	20.5	48.9
Acute stress reaction	545	1.7	0.6	0.5	0.6	73.9	90.9
Administrative procedure NOS	500	1.5	0.5	0.4	0.6	41.0	99.6
Subtotal	*9,602*	*29.6*	—	—	—	—	—
Total problems with clinical treatments	**32,386**	**100.0**	**33.8**	**31.8**	**35.7**	**—**	**—**

(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 contacts with 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, Table A4.1, <hdl.handle.net/2123/11882>).

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

10.3 Procedural treatments

Procedural treatments include therapeutic actions and diagnostic procedures undertaken at the encounter. Injections for immunisations/vaccinations (*n* = 4,246) are not counted here as these were already counted as a GP-supplied medication in Section 9.3. There were 18,081 procedures recorded at a rate of 18.9 per 100 encounters, and 11.9 per 100 problems managed (Table 10.1).

Most frequent procedures

Table 10.5 lists the most common procedural treatments recorded. Each procedural treatment is expressed as a percentage of all procedural treatments, as a rate per 100 encounters and as a rate per 100 problems, both with 95% confidence limits. Some of the procedures (for example, international normalised ratio [INR] test, electrical tracings, physical function test) are investigations undertaken at the encounter. Results presented in Table 10.5 do not include investigations that were ordered by the GP to be performed by an

external provider. A summary of all investigations (both undertaken and ordered) is provided in Chapter 12 (Table 12.6).

The most frequently recorded group of procedures was excision/removal tissue/biopsy/destruction/debridement/cauterisation (3.2 per 100 encounters), accounting for 17.1% of recorded procedures; followed by dressing/pressure/compression/tamponade (2.9 per 100 encounters). The top five procedural treatments, accounting for almost 60% of all procedural treatments, were provided at a rate of 11.2 per 100 encounters.

Table 10.5: Most frequent procedural treatments

Procedural treatment	Number	Per cent of procedural treatments (*n* = 18,081)	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Rate per 100 problems (*n* = 151,675)	95% LCL	95% UCL
Excision/removal tissue/biopsy/ destruction/debridement/cauterisation*	3,083	17.1	3.2	2.9	3.5	2.0	1.8	2.2
Dressing/pressure/compression/ tamponade*	2,740	15.2	2.9	2.6	3.1	1.8	1.7	1.9
Local injection/infiltration*[(a)]	2,463	13.6	2.6	2.3	2.8	1.6	1.5	1.8
Physical medicine/rehabilitation – all*	1,317	7.3	1.4	1.2	1.6	0.9	0.7	1.0
Incision/drainage/flushing/aspiration/ removal body fluid*	1,137	6.3	1.2	1.1	1.3	0.7	0.7	0.8
Repair/fixation – suture/cast/prosthetic device (apply/remove)*	936	5.2	1.0	0.9	1.1	0.6	0.5	0.7
Pap smear*	931	5.1	1.0	0.8	1.1	0.6	0.5	0.7
INR test*	806	4.5	0.8	0.7	1.0	0.5	0.4	0.6
Other preventive procedures/high-risk medication*	753	4.2	0.8	0.7	0.9	0.5	0.4	0.6
Other therapeutic procedures/minor surgery*	750	4.1	0.8	0.6	0.9	0.5	0.4	0.6
Electrical tracings*	746	4.1	0.8	0.7	0.9	0.5	0.4	0.6
Check-up – PN/AHW*	630	3.5	0.7	0.5	0.8	0.4	0.3	0.5
Physical function test*	522	2.9	0.5	0.5	0.6	0.3	0.3	0.4
Other diagnostic procedures*	332	1.8	0.3	0.3	0.4	0.2	0.2	0.3
Urine test*	292	1.6	0.3	0.2	0.4	0.2	0.2	0.2
Pregnancy test*	183	1.0	0.2	0.1	0.2	0.1	0.1	0.1
Glucose test*	149	0.8	0.2	0.1	0.2	0.1	0.1	0.1
Hormone implant*	117	0.6	0.1	0.1	0.1	0.1	0.1	0.1
Subtotal	*17,887*	*98.9*	—	—	—	—	—	—
Total procedural treatments	**18,081**	**100.0**	**18.9**	**18.0**	**19.7**	**11.9**	**11.4**	**12.4**

(a) Excludes all local injection/infiltrations performed for immunisations/vaccinations (*n* = 4,246).

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Tables A4.5 and A4.6, <hdl.handle.net/2123/11882>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; NEC – not elsewhere classified; INR – international normalised ratio; PN – practice nurse; AHW – Aboriginal health worker.

Problems managed with a procedural treatment

Table 10.6 lists the top 10 problems managed with a procedural treatment. It also shows the proportion of contacts with each problem that were managed with a procedure, and the proportion of these contacts where medication was not given concurrently.

- One or more procedural treatments were provided in the management of 16,962 problems (11.2% of all problems) (Table 10.2).
- The top 10 problems accounted for more than one-third (34.9%) of all problems managed with a procedure.
- Solar keratosis/sunburn accounted for the largest proportion of problems managed with a procedure, followed by female genital check-up/Pap smear.
- Of the top 10 problems, warts were the most likely to be managed with a procedure, undertaken at 4 out of 5 (79.9%) wart problem contacts. Of these contacts where warts were managed with a procedural treatment, no medication was prescribed/supplied or advised for that problem at 96.0% of contacts.

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

Problem managed	Number	Per cent of problems with procedure (*n* = 16,962)	Rate per 100 encounters[a] (*n* = 95,879)	95% LCL	95% UCL	Per cent of this problem[b]	Per cent of treated problems no medications[c]
Solar keratosis/sunburn	828	4.9	0.9	0.7	1.0	68.1	96.7
Female genital check-up/ Pap smear*	814	4.8	0.8	0.7	1.0	51.0	97.4
Laceration/cut	777	4.6	0.8	0.7	0.9	77.9	81.8
Malignant neoplasm, skin	642	3.8	0.7	0.5	0.8	47.6	95.1
Excessive ear wax	565	3.3	0.6	0.5	0.7	71.8	93.8
Warts	499	2.9	0.5	0.5	0.6	79.9	96.0
General check-up*	494	2.9	0.5	0.4	0.6	16.9	78.0
Chronic ulcer skin (including varicose ulcer)	487	2.9	0.5	0.4	0.6	71.0	75.6
Atrial fibrillation/flutter	462	2.7	0.5	0.4	0.6	31.9	65.1
Back complaint*	349	2.1	0.4	0.3	0.5	11.6	41.3
Subtotal	*5,917*	*34.9*	—	—	—	—	—
Total problems with procedural treatments	**16,962**	**100.0**	**17.7**	**16.9**	**18.5**	**—**	**—**

(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 contacts with 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, Table A4.1, <hdl.handle.net/2123/11882>).

Note: LCL – lower confidence limit; UCL – upper confidence limit.

10.4 Practice nurse/Aboriginal health worker activity

This section describes the activities of practice nurses (PNs) and Aboriginal health workers (AHWs) recorded in association with the GP–patient encounters detailed by the GP BEACH participants.

In 2004, four Medicare item numbers were introduced into the MBS that allowed GPs to claim for specified tasks done by a PN under the direction of the GP.[81] In 2005–06, the BEACH recording form was amended to capture specific information about the actions practice nurses undertook in association with the GP recorded encounter. 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 PN rather than by the GP. If the box was not ticked it was assumed the GP gave the treatment.

The survey form allows GPs to record up to two other treatments for each problem managed at the encounter (i.e. up to eight per encounter). Other treatments include all clinical and procedural treatments provided at the encounters. These groups are defined in Appendix 4, Tables A4.4 and A4.5.

Over time, new PN item numbers were added to the MBS, and some items were broadened, to cover work done by AHWs. In January 2012, the Australian Government significantly altered the payment structure for PN and AHW activities in general practice, such that the range of claimable MBS item numbers was reduced and the Practice Nurse Incentive Program (PNIP) introduced. The PNIP "provides incentive payments to practices…by consolidating funding arrangements under the Practice Incentive Program (PIP) Practice Nurse Incentive".

The following section investigates: the proportion of encounters involving the PN/AHW; the proportion of these claimable with a Medicare item number; treatments provided by PNs/AHWs in association with the GP–patient encounters; and the problems for which these treatments were provided.

Remember that these results will not include PN/AHW activities undertaken during the GP's BEACH recording period that were not associated with the recorded encounter. Such activities could include Medicare-claimable activities (for example, chronic disease management) provided under instruction from the GP but not at the time of the encounter recorded in BEACH, or provision of other services not claimable from Medicare.

Practice nurse/Aboriginal health worker Medicare claims

There were 7,690 GP–patient encounters (8.0% of all encounters) at which at least one PN/AHW activity was recorded. However, for 75 of these, their activity was not described. At the remaining 7,615 encounters a PN/AHW was involved in the management of 8,041 problems (5.3% of all problems managed at all encounters) (Table 10.7). Extrapolation of these results suggests that during 2013–14 practice nurses were involved in about 10.7 million GP–patient consultations across Australia.

A PN/AHW Medicare item was recorded at only 386 encounters: 0.4% of the 84,153 with one or more MBS item number(s) (Table 5.2) and 5.0% of the 7,690 encounters involving a PN/AHW (Table 10.7).

Table 10.7: Summary of PN or AHW involvement at encounters

Variable	Number
Total encounters	95,879
Encounters involving PN/AHW	7,690
Encounters at which PN/AHW activity described	7,615
Encounters with PN/AHW item number(s) recorded but activity not described	75
Encounters at which one or more MBS PN/AHW item numbers were recorded as claimable	386
Total problems managed	151,675
Problems managed with PN/AHW-involvement	8,041
	Per cent (95% CI)
Encounters involving the PN/AHW as a proportion of total encounters	8.0 (7.3–8.7)
PN/AHW-claimable encounters as a proportion of total encounters	0.4 (0.3–0.5)
Proportion of PN/AHW-involved encounters for which one or more PN/AHW item numbers were claimed from Medicare	5.0 (3.4–6.7)
Problems involving the PN/AHW as a proportion of total problems (95% CI)	5.3 (4.9–5.8)

Note: PN/AHW – practice nurse/Aboriginal health worker; MBS – Medicare Benefits Schedule; CI – confidence interval.

Treatments provided by practice nurses or Aboriginal health worker at GP–patient encounters

As shown in Section 10.1, GPs reported 54,104 other treatments. A further 1,683 local injections in administration of vaccine were given by a PN/AHW and 2,562 by the recording GP (these were not reported in Section 10.2). So, in total 58,349 other treatments were recorded, PNs/AHWs accounting for 8,568 of these (representing 14.7% of all other treatments recorded at BEACH encounters) (Table 10.8) at a rate of 8.9 per 100 recorded encounters.

The vast majority (87.5%) of the PN/AHW recorded activity was procedural, and these procedures represented 33.6% of all procedures recorded. In contrast, clinical treatments accounted for 12.5% of PN/AHW recorded activity at encounters, but PNs/AHWs provided only 3.0% of all recorded clinical treatments. PNs/AHWs did 39.7% of the recorded immunisation injections at GPs encounters (Table 10.8).

Table 10.8: Summary of treatments given by GPs, and by PN or AHW at GP–patient encounters

	Performed/assisted by PN/AHW		Performed by the GP		
Treatment	**Number**	**Row per cent of total**	**Number**	**Row per cent of total**	**Total number recorded[(a)]**
Procedures[(a)]	7,500	33.6	14,826	66.4	22,326
(Immunisation injections)	(1,683)	(39.7)	(2,562)	(60.3)	(4,245)
Clinical treatments	1,068	3.0	34,956	97.0	36,023
All other treatments	8,568	14.7	49,782	85.3	58,349

(a) Procedural treatments here include all injections given by a PN/AHW or the GP for immunisations/vaccinations (*n* = 4,245). 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.

Note: PN/AHW – practice nurse/Aboriginal health worker; columns may not add to total, due to rounding.

Of the 7,500 procedures performed by a PN/AHW, 34.6% were injections (Table 10.9), 65.0% of these were for immunisations (Table 10.8). A further 19.9% were dressing/pressure/compression/tamponade. Together these accounted for 54.5% of all procedures undertaken by PNs/AHWs in association with the recorded GP–patient encounters. Check-ups made up 8.4%, followed by INR tests (7.6%), and electrical tracings (5.9%) (Table 10.9).

Other administrative procedure (including administrative/documentation work but excluding provision of sickness certificates) was the most frequently recorded clinical activity, accounting for 33.0% of the 1,068 clinical treatments provided by PNs/AHWs, followed by counselling/advice about nutrition/weight (10.0%), counselling about a health problem (8.6%), and advice/education about medication (8.1%) (Table 10.9).

Table 10.9: Most frequent activities done by a PN or AHW at GP encounters

Activity	Number	Per cent of group[(a)]	Rate per 100 encs where PN/AHW activity described[(a)] (*n* = 7,615)	95% LCL	95% UCL
Procedural treatments	7,500	100	98.5	96.1	100.9
Local injection/infiltration*	2,591	34.6	34	31	37.1
Dressing/pressure/compression/tamponade*	1,495	19.9	19.6	17.8	21.5
Check-up – PN/AHW*	629	8.4	8.3	6.2	10.3
INR test*	571	7.6	7.5	6.2	8.8
Electrical tracings*	443	5.9	5.8	4.8	6.9
Incision/drainage/flushing/aspiration/removal body fluid*	416	5.5	5.5	4.6	6.3
Repair/fixation – suture/cast/prosthetic device (apply/remove)*	335	4.5	4.4	3.7	5.2
Excision/removal tissue/biopsy/destruction/ debridement/cauterisation*	271	3.6	3.6	2.8	4.3
Physical function test*	223	3	2.9	2.3	3.6
Urine test*	115	1.5	1.5	1	2
Other diagnostic procedures*	77	1.0	1.0	0.6	1.4
Other therapeutic procedures/surgery NEC*	74	1.0	1.0	0.7	1.3
Glucose test*	54	0.7	0.7	0.4	1
Pap smear*	48	0.6	0.6	0.3	1
Assist at operation	37	0.5	0.5	0.2	0.8
Clinical treatments	1,068	100	14.0	11.6	16.4
Other administrative procedure/document (excluding sickness certificate)*	353	33.0	4.6	3.5	5.8
Counselling/advice – nutrition/weight*	107	10.0	1.4	0.7	2.1
Counselling – problem*	91	8.6	1.2	0.8	1.6
Advice/education – medication*	87	8.1	1.1	0.5	1.8
Advice/education NEC*	77	7.2	1.0	0.7	1.3
Advice/education – treatment*	73	6.9	1.0	0.6	1.3
Consultation with primary care provider*	56	5.3	0.7	0.4	1.1

(a) Only the most common individual treatments provided by practice nurses/Aboriginal health workers are included in this table.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Tables A4.4–A4.6 <hdl.handle.net/2123/11882>).

Note: Encs – encounters; PN/AHW – practice nurse/Aboriginal health worker; LCL – lower confidence limit; UCL – upper confidence limit; INR – international normalised ratio; NEC – not elsewhere classified.

Problems managed with practice nurse or Aboriginal health workers involvement at encounter

PNs and AHWs were involved in management of a wide range of problems in association with the GP encounters. The problems they managed most often were immunisation/vaccination (21.6% of all problems managed with the involvement of a PN or AHW), check-ups (5.9%), laceration/cut (5.6 %), atrial fibrillation (4.2%), diabetes and chronic skin ulcer (both 4.2%). Other common problems for which PNs or AHWs were involved at the GP–patient consultations are listed in Table 10.10.

Table 10.10: The 20 most common problems managed with involvement of PNs or AHWs at GP–patient encounters

Problem managed	Number	Per cent of problems involving PN/AHW (*n* = 8,041)	Rate per 100 encounters with recorded PN/AHW activity[(a)] (*n* = 7,615)	95% LCL	95% UCL
Immunisation/vaccination – all*	1733	21.6	22.8	19.8	25.7
Check-up – all*	475	5.9	6.2	5.4	7
Laceration/cut	450	5.6	5.9	5.2	6.7
Atrial fibrillation/flutter	336	4.2	4.4	3.6	5.2
Diabetes – all*	334	4.2	4.4	3.5	5.3
Chronic ulcer skin (including varicose ulcer)	321	4.0	4.2	3.5	4.9
Excessive ear wax	210	2.6	2.8	2.3	3.3
Malignant neoplasm, skin	200	2.5	2.6	1.9	3.3
Administrative procedure – all*	128	1.6	1.7	0.8	2.6
Blood test – all*	118	1.5	1.5	1.1	2
Skin infection, other	106	1.3	1.4	1	1.7
Prescription – all*	101	1.3	1.3	0.8	1.8
Asthma	100	1.2	1.3	1	1.7
Repair/fixation – suture/cast/prosthetic device (apply/remove)*	99	1.2	1.3	1	1.6
Other preventive procedures/high risk medication*	86	1.1	1.1	0.7	1.5
Burns/scalds	77	1.0	1.0	0.7	1.3
Skin symptom/complaint, other	71	0.9	0.9	0.7	1.2
Chest pain NOS	70	0.9	0.9	0.6	1.3
Arthritis – all*	68	0.8	0.9	0.6	1.2
Chronic obstructive pulmonary disease	65	0.8	0.9	0.6	1.1
Subtotal	*5,148*	*64.0*	—	—	—
Total problems involving practice nurse	**8,041**	**100.0**	**105.6**	**104.4**	**106.8**

(a) Rate of nurse provision of treatment at encounter for selected problem per 100 total encounters in which a practice nurse or Aboriginal health worker was involved.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.3, <hdl.handle.net/2123/11882>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; PN/AHW – practice nurse/Aboriginal health worker; NOS – not otherwise specified

10.5 Changes in other treatments over the decade 2004–05 to 2013–14

An overview of changes in other treatments provided in general practice over the decade can be found in Chapter 10 of the companion report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1] A summary of the results is provided below.

Clinical treatments

There was a significant decrease in the rate at which clinical treatments were provided per 100 problems managed when comparing 2004–05 and 2013–14, however the change over the decade was not linear.

Following the introduction of PN and AHW Medicare item numbers in 2004, there was a sudden and significant decrease in the rate at which clinical treatments were provided between 2004–05 and 2005–06. From 2006–07 onwards, the rate remained steady, and in 2013–14 clinical treatments were still provided at a significantly lower rate than 10 years earlier (23.8 clinical treatments per 100 problems managed in 2013–14).

This pattern of change was reflected in the rate at which counselling/advice about nutrition/weight and exercise were provided. The rates of these clinical treatments significantly decreased in 2005–06, but have since been steady, remaining significantly lower in 2013–14 than 10 years earlier. Considering the rise in the prevalence of overweight and obesity among Australian general practice patients, it is hoped that the decrease since 2005–06 reflects a shift of this role to PNs or other allied health professionals.

There was no significant change over time in the rate at which problems were managed with clinical treatments. For every 100 GP–patient encounters in 2004–05, one or more clinical treatments were provided in the management of 34.4 problems. In 2013–14, clinical treatments were provided for 33.8 problems per 100 encounters.

Procedural treatments

There was a significant increase in the rate at which procedures were performed from 2004–05 (10.6 per 100 problems) to 2013–14 (11.9 per 100 problems). The extrapolated effect of this change from 15.5 per 100 encounters in 2004–05 to 18.9 per 100 encounters in 2013–14, is that nationally in 2013–14 there were an estimated 10 million more procedures undertaken at GP–patient encounters than a decade earlier.

The overall increase was reflected in increases in the rate of dressing/pressure/compression/tamponade, local injection/infiltration, and INR tests (per 100 problems).

There was also an increase in the likelihood of a procedure being undertaken in the management of an individual problem, rising from 14.3 per 100 encounters in 2004–05 to 17.7 per 100 in 2013–14. This increase was reflected in significant increases in the rate at which one or more procedures were undertaken for the management of laceration/cut, general check-up, atrial fibrillation/flutter, vitamin/nutritional deficiency, skin symptom/complaint and depression.

Practice nurse/Aboriginal health worker activity

As a proportion of all encounters, those involving a PN/AHW doubled from 4.2% in 2005–06 to 9.0% in 2009–10, then remained steady in the 7–8% range to 2013–14. The proportion of problems managed with a PN/AHW involvement also rose from 2.8% in 2005–06 to 6.1% in 2009–10, with no further change by 2013–14 (5.3%).

In 2005–06, GPs recorded at least one PN/AHW Medicare item number at 39% of encounters with recorded PN/AHW activity. This increased to 46% by 2009–10, and then decreased to 27% in 2011–12. After the change in practice nurse funding structure, a PN/AHW item number was claimed at only 4% of PN/AHW-involved encounters in 2012–13 and 5% in 2013–14.

The rate at which procedures (including tests) were undertaken by PNs/AHWs at GP–patient encounters more than doubled from 4.0 per 100 encounters in 2005–06 to 9.2 per 100 in 2009–10, but then decreased in 2011–12 to 7.2 per 100 encounters, remaining steady thereafter.

While their provision of clinical treatments (such as advice and health education) remained infrequent at GP–patient encounters, there was a significant increase over the study period, from 0.2 clinical treatments per 100 encounters in 2005–06 to 1.1 per 100 in 2013–14.

The rate at which PNs/AHWs provided injections in association with GP–patient encounters did not change in 2013–14 when compared with the previous year, but remained at the far lower level of 34.0 per 100 PN/AHW-involved encounters, when compared with 2005–06 (when it was 41.0 per 100). Check-ups by PNs/AHWs at GP–patient encounters doubled over the study period. INR blood testing frequency quadrupled, but most of this increase had occurred by 2010–11 with no further significant increase thereafter.

In clinical treatments, PNs/AHWs carried out administrative procedures (excluding sickness certificates) at an ever increasing rate, rising from 0.7 per 100 PN/AHW-involved encounters in 2005–06 to 4.6 per 100 in 2013–14. Most of this growth occurred over the most recent 3 years. Their provision of advice/education about nutrition and weight, medication, and advice about how to treat the health problem also increased significantly over the decade.

There were significant increases in the rate at which PNs/AHWs were involved in management of check-ups, atrial fibrillation/flutter, diabetes, vitamin/nutritional deficiency, and hypertension. Many of these increases may have been stimulated by the introduction of MBS item 10997 for services provided to a person with a chronic disease, in 2007–08.

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. GPs were instructed only to record new referrals at the encounter (that is, not to record continuations). For each encounter, GPs could record up to two referrals, and each referral was linked by the GP to the problem(s) for which the patient was referred. Referrals included those to medical specialists, allied health services, hospitals for admission, emergency departments, and those to other services (including those to outpatient clinics and to other GPs).

Data on referrals and admissions are reported for each of the most recent BEACH years from 2004–05 to 2013–14 in the 10-year report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1]

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 managed. The patient was given at least one referral at 14.4% of all encounters, for 9.8% of all problems managed.

There were 15,012 referrals made at a rate of 15.7 per 100 encounters, most often to medical specialists (9.5 per 100 encounters, 6.0 per 100 problems managed), followed by referrals to allied health services (4.9 per 100 encounters, 3.1 per 100 problems). Few patients were referred/admitted to hospital, or referred to the emergency department.

Table 11.1: Summary of referrals and admissions

Variable	Number	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Rate per 100 problems (*n* = 151,675)	95% LCL	95% UCL
At least one referral[(a)]	13,788	14.4	13.9	14.9	9.8	9.5	10.2
Referrals	15,012	15.7	15.1	16.3	9.9	9.6	10.2
Medical specialist*	9,139	9.5	9.1	9.9	6.0	5.8	6.3
Allied health services*	4,744	4.9	4.7	5.2	3.1	3.0	3.3
Hospital*	382	0.4	0.3	0.5	0.3	0.2	0.3
Emergency department*	272	0.3	0.2	0.3	0.2	0.2	0.2
Other referrals*	360	0.4	0.3	0.4	0.2	0.2	0.3
Total referrals	15,012	15.7	15.1	16.3	9.9	9.6	10.2

(a) At least one referral was given in the management of 14,905 problems at the 13,788 encounters.

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, Table A4.7, <hdl.handle.net/2123/11882>).

Note: LCL – lower confidence limit; UCL – upper confidence limit.

11.2 Most frequent referrals

Table 11.2 shows the medical specialists and allied health service groups to whom GPs most often referred patients. Referrals to medical specialists were most often to orthopaedic surgeons (9.3% of specialist referrals), surgeons (8.1%), and cardiologists (7.9%). The top 10 specialists accounted for 63.9% of specialist referrals and for 42.1% of all referrals.

Referrals to allied health services were most often to physiotherapists (26.9% of allied health services referrals), psychologists (21.8%), podiatrists/chiropodists (11.1%), dietitians/nutritionists (7.9%) and dentists (2.8%). The top 10 allied health services accounted for 81.5% of allied health referrals and 27.9% of all referrals.

Table 11.2: Most frequent referrals, by type

Professional/organisation	Number	Per cent of all referrals	Per cent of referral group	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Rate per 100 problems (*n* = 151,675)	95% LCL	95% UCL
Medical specialist*	**9,139**	**65.8**	**100.0**	**9.5**	**9.1**	**9.9**	**6.0**	**5.8**	**6.3**
Orthopaedic surgeon	853	6.1	9.3	0.9	0.8	1.0	0.6	0.5	0.6
Surgeon	742	5.3	8.1	0.8	0.7	0.8	0.5	0.4	0.5
Cardiologist	718	5.2	7.9	0.7	0.7	0.8	0.5	0.4	0.5
Dermatologist	712	5.1	7.8	0.7	0.7	0.8	0.5	0.4	0.5
Ophthalmologist	667	4.8	7.3	0.7	0.6	0.8	0.4	0.4	0.5
Gastroenterologist	573	4.1	6.3	0.6	0.5	0.7	0.4	0.3	0.4
Ear, nose and throat	456	3.3	5.0	0.5	0.4	0.5	0.3	0.3	0.3
Gynaecologist	455	3.3	5.0	0.5	0.4	0.5	0.3	0.3	0.3
Urologist	381	2.7	4.2	0.4	0.3	0.4	0.3	0.2	0.3
Neurologist	284	2.0	3.1	0.3	0.3	0.3	0.2	0.2	0.2
Subtotal: top 10 medical specialist referrals	*5,842*	*42.1*	*63.9*	—	—	—	—	—	—
Allied health services*	**4,744**	**34.2**	**100.0**	**4.9**	**4.7**	**5.2**	**3.1**	**3.0**	**3.3**
Physiotherapist	1,278	9.2	26.9	1.3	1.2	1.4	0.8	0.8	0.9
Psychologist	1,036	7.5	21.8	1.1	1.0	1.2	0.7	0.6	0.7
Podiatrist/chiropodist	528	3.8	11.1	0.6	0.5	0.6	0.3	0.3	0.4
Dietitian/nutritionist	374	2.7	7.9	0.4	0.3	0.5	0.2	0.2	0.3
Dentist	132	1.0	2.8	0.1	0.1	0.2	0.1	0.1	0.1
Optometrist	127	0.9	2.7	0.1	0.1	0.2	0.1	0.1	0.1
Audiologist	123	0.9	2.6	0.1	0.1	0.2	0.1	0.1	0.1
Exercise physiologist	104	0.7	2.2	0.1	0.1	0.1	0.1	0.0	0.1
Diabetes educator	93	0.7	2.0	0.1	0.1	0.1	0.1	0.0	0.1
Counsellor	73	0.5	1.5	0.1	0.1	0.1	0.0	0.0	0.1
Subtotal: top 10 allied health referrals	*3,868*	*27.9*	*81.5*	—	—	—	—	—	—
Subtotal: all referrals listed	*9,710*	*69.9*	—	—	—	—	—	—	—
Total allied health and medical specialist referrals	**13,884**	**100.0**	**—**	**14.5**	**13.9**	**15.1**	**9.2**	**8.8**	**9.5**

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, Table A4.7, <hdl.handle.net/2123/11882>).

Note: LCL – lower confidence limit; UCL – upper confidence limit.

11.3 Problems most frequently referred to a specialist

The GP could link a single referral to multiple problems being managed at the encounter. Therefore, there are more problem–referral links than referrals. Table 11.3 shows the most common problems referred to a medical specialist, in decreasing frequency order of problem-referral links.

The 9,139 referrals to a medical specialist were provided in management of 9,350 problems. The 10 problems most often referred to a specialist accounted for only 18.7% of all problem–referral links, reflecting the breadth of problems referred to specialists. Malignant skin neoplasm accounted for 2.8% of problem-referral links, osteoarthritis 2.8%, pregnancy 2.1% and diabetes 2.0% (Table 11.3). The far right column of Table 11.3 shows the likelihood of referral to a medical specialist when each problem is managed. Malignant skin neoplasm resulted in a specialist referral at almost 1 in 5 (19.8%) GP contacts with this problem. This was followed by pregnancy (18.2%) and ischaemic heart disease (16.2%).

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

Problem managed	Problem–referral links		Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Per cent of contacts with this problem[(a)]
	Number	Per cent				
Malignant neoplasm, skin	266	2.8	0.3	0.2	0.3	19.8
Osteoarthritis*	266	2.8	0.3	0.2	0.3	9.6
Pregnancy*	197	2.1	0.2	0.2	0.2	18.2
Diabetes – all*	187	2.0	0.2	0.2	0.2	4.6
Ischaemic heart disease*	177	1.9	0.2	0.1	0.2	16.2
Sleep disturbance	161	1.7	0.2	0.1	0.2	10.9
Back complaint*	144	1.5	0.2	0.1	0.2	4.8
Skin symptom/complaint, other	124	1.3	0.1	0.1	0.2	15.9
Depression*	116	1.2	0.1	0.1	0.1	2.8
Abnormal test results*	112	1.2	0.1	0.1	0.1	9.0
Subtotal: top 10 problems referred to a medical specialist	1,752	18.7	—	—	—	—
Total problems referred to medical specialist	**9,350**	**100.0**	**9.8**	**9.3**	**10.2**	**—**

(a) The proportion of GP contacts with this problem that was referred to a medical specialist.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1 <hdl.handle.net/2123/11882>).

Note: LCL – lower confidence limit; UCL – upper confidence limit.

Table 11.4 shows the five problems accounting for the greatest proportion of referrals to each of the 10 most common medical specialty types. The top five problems may represent a small or large proportion of all problems referred to a particular specialty. For example, the top five problems accounted for 25.4% of all referrals to ear, nose, and throat (ENT) specialists (indicative of the broad range of conditions referred to them), but for 58.1% of all referrals to orthopaedic surgeons, consistent with a more defined range of clinical work.

Orthopaedic surgeon: The two problems accounting for the most referrals were osteoarthritis (26.9% of orthopaedic surgeon referrals) and acute internal knee damage (10.4%). Of the five problems most frequently referred to an orthopaedic surgeon, those most likely to be referred at each GP contact with that problem were acute internal knee damage (referred at 26.9% of contacts) and musculoskeletal injury (not otherwise specified) (8.6%).

General/unspecified surgeon: The two problems accounting for the most referrals were other (not inguinal or diaphragmatic) abdominal hernia (7.8% of referrals) and inguinal hernia (6.1%). Of the five problems most frequently referred, those most likely to be referred were other abdominal hernia (referred at 41.6% of GP contacts) and inguinal hernia (40.7%).

Cardiologist: The two problems accounting for the most referrals were ischaemic heart disease (21.4% of referrals) and atrial fibrillation/flutter (12.3%). Of the five problems most frequently referred, those most likely to be referred were ischaemic heart disease (referred at 14.8% of GP contacts) and chest pain (not otherwise specified) (13.6%).

Dermatologist: The two problems accounting for the most referrals were malignant neoplasm of skin (15.6% of referrals) and other skin symptom/complaint (11.3%). Of the five problems most frequently referred to a dermatologist, those most likely to be referred were acne (referred at 13.0% of GP contacts) and skin check-up (11.1%).

Ophthalmologist: The two problems accounting for the most referrals were cataract (13.1%) and glaucoma (10.7%). Of the five problems most frequently referred to an ophthalmologist, those most likely to be referred were cataract (referred at 55.6% of GP contacts) and other visual disturbance (44.7%).

Gastroenterologist: The two problems accounting for the most referrals were gastro-oesophageal reflux disease (10.5% of referrals) and abdominal pain (6.8%). Of the five problems most frequently referred to a gastroenterologist, those most likely to be referred were rectal bleeding (referred at 27.0% of GP contacts) and digestive neoplasm (benign or uncertain) (23.8%).

Ear, nose, and throat (ENT) specialist: The two problems accounting for the most referrals were acute/chronic sinusitis (6.3% of referrals) and tonsillitis (5.1%). Of the five problems most frequently referred to an ENT specialist, those most likely to be referred were voice symptom/complaint (referred at 62.6% of GP contacts) and nose bleed/epistaxis (20.5%).

Gynaecologist: The two problems accounting for the most referrals were menstrual problems (13.1% of referrals) and 'other' female genital disease (11.5%). Of the five problems most frequently referred to a gynaecologist, those most likely to be referred were uterovaginal prolapse (referred at 36.7% of GP contacts) and female infertility/ subfertility (28.3%).

Urologist: The two problems accounting for the most referrals were benign prostatic hypertrophy (12.6% of referrals) and abnormal test results (8.4%). Of the five problems most frequently referred, those most likely to be referred were benign prostatic hypertrophy (referred at 18.1% of GP contacts) and haematuria (16.4%).

Neurologist: The two problems accounting for the most referrals were epilepsy (10.0% of referrals) and headache (9.0%). Of the five problems most frequently referred to a neurologist, those most likely to be referred at each GP contact with that problem were epilepsy (referred at 11.2% of GP contacts) and carpal tunnel syndrome (10.3%) (Table 11.4).

Table 11.4: The top problems most frequently referred, by type of medical specialist

Specialist	Problem managed	Number	Per cent of problems referred to each specialist	Per cent of contacts with this problem[(a)]
Orthopaedic surgeon	**Total**	**870**	**100.0**	**—**
	Osteoarthritis*	234	26.9	8.5
	Acute internal knee damage	90	10.4	26.9
	Injury musculoskeletal NOS	74	8.5	8.6
	Bursitis/tendonitis/synovitis NOS	54	6.2	4.5
	Fracture*	53	6.1	5.3
	Subtotal: top five problems	*505*	*58.1*	—
General/unspecified surgeon	**Total**	**755**	**100.0**	**—**
	Abdominal hernia, other	59	7.8	41.6
	Inguinal hernia	46	6.1	40.7
	Malignant neoplasm, skin	37	4.9	2.8
	Cholecystitis/cholelithiasis	33	4.4	22.0
	Obesity (BMI > 30)	29	3.9	4.1
	Subtotal: top five problems	*204*	*27.1*	—
Cardiologist	**Total**	**757**	**100.0**	**—**
	Ischaemic Heart Disease*	162	21.4	14.8
	Atrial fibrillation/flutter	93	12.3	6.4
	Hypertension*	56	7.4	0.7
	Chest pain NOS	47	6.2	13.6
	Heart failure	37	4.9	6.5
	Subtotal: top five problems	*396*	*52.3*	—
Dermatologist	**Total**	**721**	**100.0**	**—**
	Malignant neoplasm, skin	113	15.6	8.4
	Skin symptom/complaint, other	82	11.3	10.4
	Skin check-up*	60	8.3	11.1
	Skin disease, other	59	8.1	5.3
	Acne	54	7.5	13.0
	Subtotal: top five problems	*366*	*50.8*	—
Ophthalmologist	**Total**	**677**	**100.0**	**—**
	Cataract	89	13.1	55.6
	Glaucoma	72	10.7	40.9
	Diabetes – all*	67	9.9	1.7
	Eye/adnexa disease, other	49	7.3	28.5
	Visual disturbance, other	34	5.0	44.7
	Subtotal: top five problems	*311*	*46.0*	—

(continued)

Table 11.4 (continued): The top problems most frequently referred, by type of medical specialist

Specialist	Problem managed	Number	Per cent of problems referred to each specialist	Per cent of contacts with this problem[(a)]
Gastroenterologist	**Total**	**584**	**100.0**	**—**
	Gastro-oesophageal reflux disease*	62	10.5	2.5
	Abdominal pain*	40	6.8	5.8
	Benign/uncertain neoplasm, digestive	37	6.3	23.8
	Rectal bleeding	33	5.6	27.0
	Chronic enteritis/ulcerative colitis	29	4.9	17.7
	Subtotal: top five problems	*200*	*34.2*	—
Ear, nose, and throat (ENT) specialist	**Total**	**465**	**100.0**	**—**
	Sinusitis acute/chronic	29	6.3	2.8
	Tonsillitis*	24	5.1	3.6
	Respiratory disease, other	23	4.9	10.6
	Nose bleed/epistaxis	22	4.7	20.5
	Voice symptom/complaint	21	4.5	62.6
	Subtotal: top five problems	*118*	*25.4*	—
Gynaecologist	**Total**	**464**	**100.0**	**—**
	Menstrual problems*	61	13.1	10.2
	Genital disease, other (female)	53	11.5	22.5
	Abnormal test results*	30	6.5	2.4
	Uterovaginal prolapse	28	6.1	36.7
	Infertility/subfertility (female)	21	4.5	28.3
	Subtotal: top five problems	*193*	*41.7*	—
Urologist	**Total**	**391**	**100.0**	**—**
	Benign prostatic hypertrophy	49	12.6	18.1
	Abnormal test results*	33	8.4	2.6
	Haematuria	30	7.6	16.4
	Malignant neoplasm prostate	28	7.1	8.4
	Urinary tract infection*	22	5.7	1.3
	Subtotal: top five problems	*162*	*41.4*	—
Neurologist	**Total**	**288**	**100.0**	**—**
	Epilepsy	29	10.0	11.2
	Headache*	26	9.0	2.5
	Carpal tunnel syndrome	19	6.8	10.3
	Peripheral neuritis/neuropathy	19	6.7	6.7
	Neurological disease, other	18	6.2	3.4
	Subtotal: top five problems	*111*	*38.6*	—

(a) The proportion of GP contacts with this problem that was referred to each type of medical specialist.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1 <hdl.handle.net/2123/11882>).

Note: NOS – not otherwise specified.

11.4 Problems most frequently referred to allied health services and hospitals

The 4,744 referrals to an allied health service were provided in the management of 4,943 problems. The 10 most commonly referred problems accounted for 46.6% of all problem–referral links. Depression was the problem accounting for the largest proportion of allied health referrals (11.0%), followed by diabetes (7.7%), anxiety (6.2%) and back complaints (6.1%). However, of the 10 most commonly referred problems, the most likely to be referred to an allied health service was anxiety, referred at 14.2% of all GP contacts with this problem (Table 11.5).

Table 11.5: The 10 problems most frequently referred to allied health services

	Problem–referral links		Rate per 100 encounters	95%	95%	Per cent of contacts with
Problem managed	**Number**	**Per cent**	**(*n* = 95,879)**	**LCL**	**UCL**	**this problem[(a)]**
Depression*	542	11.0	0.6	0.5	0.6	13.1
Diabetes – all*	381	7.7	0.4	0.3	0.5	9.4
Anxiety*	307	6.2	0.3	0.3	0.4	14.2
Back complaint*	303	6.1	0.3	0.3	0.4	10.0
Osteoarthritis*	196	4.0	0.2	0.2	0.2	7.1
Sprain/Strain*	151	3.1	0.2	0.1	0.2	12.3
Bursitis/tendonitis/synovitis NOS	114	2.3	0.1	0.1	0.1	9.5
Administrative procedure NOS	113	2.3	0.1	0.1	0.2	9.3
Acute stress reaction	100	2.0	0.1	0.1	0.1	13.5
Obesity (BMI > 30)	97	2.0	0.1	0.1	0.1	13.7
Subtotal: top 10 problems referred to AHS	*2,304*	*46.6*	—	—	—	—
Total problems referred to AHS	**4,943**	**100.0**	**5.2**	**4.8**	**5.5**	**—**

(a) The proportion of GP contacts with this problem that was referred to allied health services.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1, <hdl.handle.net/2123/11882>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; NOS – not otherwise specified; AHS – allied health service.

The 382 referrals to a hospital were provided in the management of 390 problems. The 10 problems most frequently referred to hospital are shown in Table 11.6. Pregnancy accounted for the highest proportion (4.5%) of these referrals, but pneumonia was the problem most likely to be referred (4.4%).

The 272 referrals to an emergency department were associated with the management of 275 problems. The 10 problems most frequently referred to an emergency department are shown in Table 11.7. Fracture and appendicitis accounted for the equal highest proportion (6.1% each) of these referrals, but appendicitis was the most likely to be referred (44.1%).

Table 11.6: The 10 problems most frequently referred to hospital

Problem managed	Problem–referral links Number	Per cent	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Per cent of contacts with this problem[(a)]
Pregnancy*	17	4.5	0.02	0.01	0.03	1.6
Fracture*	16	4.0	0.02	0.01	0.03	1.6
Pneumonia	10	2.6	0.01	0.00	0.02	4.4
Urinary tract infection*	10	2.5	0.01	0.00	0.02	0.6
Acute bronchitis/bronchiolitis	10	2.5	0.01	0.00	0.02	0.5
Chest pain NOS	9	2.3	0.01	0.00	0.02	2.5
Heart failure	8	2.1	0.01	0.00	0.01	1.5
Diabetes – all*	7	1.9	0.01	0.00	0.02	0.2
Infectious disease, other/NOS	7	1.8	0.01	0.00	0.02	1.5
Abdominal pain*	7	1.8	0.01	0.00	0.01	1.0
Subtotal: top 10 problems referred for admission	*101*	*26.0*	—	—	—	—
Total problems referred to hospital	**390**	**100.0**	**0.41**	**0.34**	**0.47**	**—**

(a) The proportion of GP contacts with this problem that was referred to hospital.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1, <hdl.handle.net/2123/11882>).

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

Table 11.7: The 10 problems most frequently referred to an emergency department

Problem managed	Problem–referral links Number	Per cent	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Per cent of contacts with this problem[(a)]
Fracture*	17	6.1	0.02	0.01	0.03	1.7
Appendicitis	17	6.1	0.02	0.01	0.03	44.1
Chest pain NOS	13	4.6	0.01	0.00	0.02	3.7
Disease digestive system, other	10	3.5	0.01	0.00	0.02	3.0
Anaemia*	8	2.8	0.01	0.00	0.02	1.3
Abdominal pain*	8	2.7	0.01	0.00	0.02	1.1
Hypertension*	7	2.4	0.01	0.00	0.01	0.1
Ischaemic heart disease*	7	2.4	0.01	0.00	0.01	0.6
Skin infection, other	6	2.1	0.01	0.00	0.01	1.6
Pneumonia	6	2.0	0.01	0.00	0.01	2.5
Subtotal: top 10 problems referred to emergency department	*96*	*34.8*	—	—	—	—
Total problems referred to emergency department	**275**	**100.0**	**0.29**	**0.24**	**0.33**	**—**

(a) The proportion of GP contacts with this problem that was referred to an emergency department.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1, <hdl.handle.net/2123/11882>).

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

11.5 Changes in referrals over the decade 2004–05 to 2013–14

An overview of changes in referrals over the decade can be found in Chapter 11 of the companion report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1] In that report, changes over time are discussed in terms of change in the management of problems (that is, as a rate per 100 problems managed). This reflects change in how GPs are managing problems, and accounts for the significant increase in the number of problems managed per encounter over the decade.

In summary, over the 10 years there was a significant increase in the proportion of problems that were referred: in 2004–05 at least one referral was made in the management of 7.9% of problems and this increased to 9.8% of problems managed in 2013–14.

The overall rate of referral per 100 problems managed increased from 7.9 in 2004–05 to 9.9 in 2013–14, and per 100 encounters from 11.5 to 15.7. This suggests that there were 9.7 million more referrals nationally in 2013–14 than a decade earlier.

Referrals to medical specialists increased from 5.3 per 100 problems managed in 2004–05 to 6.0 in 2013–14. There were marginally significant increases in the rate of referrals per 100 problems to orthopaedic surgeons, cardiologists and gastroenterologists, and marginal decreases in referrals to surgeons and ophthalmologists.

Referrals to allied health services increased from 1.9 per 100 problems managed in 2004–05 to 3.1 in 2013–14. This was reflected in significant increases in referral rates per 100 problems to psychologists and podiatrists/chiropodists, and marginally significant increases in referral rates to physiotherapists and dietitians/nutritionists.

12 Investigations

The GP participants 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 a test order 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 within the battery. 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 2004–05 to 2013–14 in the 10-year report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1]

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 pathology or imaging tests recorded at three-quarters (74.3%) of encounters.

At least one pathology test order was recorded at 19.1% of encounters (for 13.9% of problems managed), and at least one imaging test was ordered at 9.3% of encounters (for 6.1% of problems managed).

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

Pathology/imaging test ordered	Number of encounters	Per cent of encounters (*n* = 95,879)	95% LCL	95% UCL	Number of problems	Per cent of problems (*n* = 151,675)	95% LCL	95% UCL
Pathology and imaging ordered	2,577	2.7	2.5	2.9	1,831	1.2	1.1	1.3
Pathology only ordered	15,705	16.4	15.9	16.9	19,233	12.7	12.3	13.1
Imaging only ordered	6,361	6.6	6.4	6.9	7,491	4.9	4.7	5.1
No pathology or imaging tests ordered	71,236	74.3	73.6	75.0	123,120	81.2	80.7	81.7
At least one pathology ordered	18,282	19.1	18.4	19.7	21,064	13.9	13.5	14.3
At least one imaging ordered	8,939	9.3	9.0	9.7	9,322	6.1	5.9	6.4
At least one other investigation ordered	718	0.7	0.7	0.8	735	0.5	0.4	0.5
At least one other investigation performed in the practice	1,528	1.6	1.4	1.8	1,543	1.0	0.9	1.1
At least one other investigation ordered or performed	2,189	2.3	2.1	2.5	2,225	1.5	1.3	1.6

Note: LCL – lower confidence limit; UCL – upper confidence limit.

12.2 Pathology ordering

A report on changes in pathology ordering by GPs from 1998 to 2001 was produced in 2003.[82] A review of GP pathology orders in the National Health Priority Areas and other selected problems between 2000 and 2008 is reported in *General practice in Australia, health priorities and policies 1998 to 2008*.[13] A report *Evidence-practice gap in pathology test ordering: a comparison of BEACH pathology data and recommended testing* was produced by the FMRC for the Australian Government Quality Use of Pathology Program in June 2009.[16] A PhD thesis *Evaluation of pathology ordering by general practitioners in Australia* was completed in 2013.[14] Readers may wish to consider those publications in conjunction with the information presented below.

Nature of pathology orders at encounter

The GPs recorded 47,035 orders for pathology tests/batteries of tests, at a rate of 49.1 per 100 encounters or 31.0 per 100 problems managed. The pathology tests recorded were grouped according to the categories set out in Appendix 4, Table A4.8. The main pathology groups reflect those used in the Medicare Benefits Schedule (MBS).[83]

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 proportion of all pathology tests, as a proportion of the group, as a rate per 100 encounters and as a rate per 100 problems managed with 95% confidence limits.

Tests classed as chemistry accounted for more than half the pathology test orders (58.4%), the most common being: lipid tests, for which there were 4.2 orders per 100 encounters and 2.6 per 100 problems; multi-biochemical analysis (3.5; 2.2); thyroid function tests (3.1; 2.0); and electrolytes, urea and creatinine (3.0; 1.9). Haematology tests accounted for 17.4% of all pathology including the most frequently ordered individual pathology test, full blood count (FBC). FBC tests accounted for 13.8% of all pathology, there being 6.8 FBC orders per 100 encounters and 4.3 per 100 problems managed. Microbiology accounted for 13.5% of pathology orders, with urine microscopy, culture and sensitivity being the most frequent test type in the group at 2.1 orders per 100 encounters and 1.3 per 100 problems managed.

Table 12.2: Pathology orders by 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* = 95,879)	95% LCL	95% UCL	Rate per 100 problems (*n* = 151,675)	95% LCL	95% UCL
Chemistry*	**27,462**	**58.4**	**100.0**	**28.6**	**27.3**	**30.0**	**18.1**	**17.4**	**18.8**
Lipids*	4,011	8.5	14.6	4.2	3.9	4.4	2.6	2.5	2.8
Multi-biochemical analysis*	3,349	7.1	12.2	3.5	3.2	3.8	2.2	2.0	2.4
Thyroid function*	2,974	6.3	10.8	3.1	2.9	3.3	2.0	1.8	2.1
Electrolytes, urea and creatinine*	2,844	6.0	10.4	3.0	2.7	3.2	1.9	1.7	2.0
Glucose/glucose tolerance*	2,345	5.0	8.5	2.4	2.2	2.6	1.5	1.4	1.7
Liver function*	2,267	4.8	8.3	2.4	2.2	2.6	1.5	1.4	1.6
Ferritin*	1,529	3.3	5.6	1.6	1.5	1.7	1.0	0.9	1.1
HbA1c*	1,344	2.9	4.9	1.4	1.3	1.5	0.9	0.8	1.0
C reactive protein	997	2.1	3.6	1.0	0.9	1.1	0.7	0.6	0.7

(continued)

Table 12.2 (continued): Pathology orders by 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* = 95,879)	95% LCL	95% UCL	Rate per 100 problems (*n* = 151,675)	95% LCL	95% UCL
Chemistry; other*	971	2.1	3.5	1.0	0.9	1.1	0.6	0.6	0.7
Prostate specific antigen*	905	1.9	3.3	0.9	0.8	1.0	0.6	0.5	0.7
Hormone assay*	717	1.5	2.6	0.7	0.6	0.9	0.5	0.4	0.5
Vitamin D	697	1.5	2.5	0.7	0.6	0.8	0.5	0.4	0.5
Vitamin B12	667	1.4	2.4	0.7	0.6	0.8	0.4	0.4	0.5
Albumin/creatinine, urine*	547	1.2	2.0	0.6	0.5	0.6	0.4	0.3	0.4
Calcium/phosphate/magnesium*	309	0.7	1.1	0.3	0.3	0.4	0.2	0.2	0.2
Drug screen	288	0.6	1.1	0.3	0.1	0.5	0.2	0.1	0.3
Cardiac enzymes	245	0.5	0.9	0.3	0.2	0.3	0.2	0.1	0.2
Haematology*	**8,166**	**17.4**	**100.0**	**8.5**	**8.1**	**9.0**	**5.4**	**5.1**	**5.6**
Full blood count	6,477	13.8	79.3	6.8	6.4	7.1	4.3	4.1	4.5
ESR	877	1.9	10.7	0.9	0.8	1.0	0.6	0.5	0.6
Coagulation*	631	1.3	7.7	0.7	0.6	0.8	0.4	0.4	0.5
Microbiology*	**6,345**	**13.5**	**100.0**	**6.6**	**6.2**	**7.0**	**4.2**	**4.0**	**4.4**
Urine M,C&S*	2,016	4.3	31.8	2.1	2.0	2.2	1.3	1.2	1.4
Microbiology; other*	926	2.0	14.6	1.0	0.9	1.1	0.6	0.5	0.7
Hepatitis serology*	509	1.1	8.0	0.5	0.4	0.6	0.3	0.3	0.4
Faeces M,C&S*	462	1.0	7.3	0.5	0.4	0.6	0.3	0.3	0.4
Chlamydia*	375	0.8	5.9	0.4	0.3	0.5	0.2	0.2	0.3
Vaginal swab M,C&S*	326	0.7	5.1	0.3	0.3	0.4	0.2	0.2	0.2
Venereal disease*	285	0.6	4.5	0.3	0.2	0.3	0.2	0.2	0.2
HIV*	265	0.6	4.2	0.3	0.2	0.3	0.2	0.1	0.2
Skin swab M,C&S*	252	0.5	4.0	0.3	0.2	0.3	0.2	0.1	0.2
H Pylori*	226	0.5	3.6	0.2	0.2	0.3	0.1	0.1	0.2
Cytopathology*	**1,573**	**3.3**	**100.0**	**1.6**	**1.5**	**1.8**	**1.0**	**0.9**	**1.1**
Pap smear*	1,544	3.3	98.2	1.6	1.4	1.8	1.0	0.9	1.1
Immunology*	**1,018**	**2.2**	**100.0**	**1.1**	**0.9**	**1.2**	**0.7**	**0.6**	**0.7**
Immunology, other*	552	1.2	54.2	0.6	0.5	0.7	0.4	0.3	0.4
Tissue pathology*	**1,001**	**2.1**	**100.0**	**1.0**	**0.9**	**1.2**	**0.7**	**0.6**	**0.7**
Histology; skin	895	1.9	89.4	0.9	0.8	1.1	0.6	0.5	0.7
Other NEC*	**972**	**2.1**	**100.0**	**1.0**	**0.8**	**1.2**	**0.6**	**0.5**	**0.8**
Blood test	436	0.9	44.8	0.5	0.4	0.6	0.3	0.2	0.4
Other test NEC	306	0.6	31.4	0.3	0.2	0.4	0.2	0.1	0.3
Simple tests*	**252**	**0.5**	**100.0**	**0.3**	**0.2**	**0.3**	**0.2**	**0.1**	**0.2**
Infertility/pregnancy*	**246**	**0.5**	**100.0**	**0.3**	**0.2**	**0.3**	**0.2**	**0.1**	**0.2**
Total pathology tests	**47,035**	**100.0**	**—**	**49.1**	**47.1**	**51.0**	**31.0**	**30.0**	**32.1**

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, Table A4.8, <hdl.handle.net/2123/11882>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; ESR – erythrocyte sedimentation rate; M,C&S – microscopy, culture and sensitivity; HIV – human immunodeficiency virus; H Pylori – test for Helicobacter pylori infection; NEC – not elsewhere classified.

Problems for which pathology tests were ordered

Table 12.3 describes the problems for which pathology was commonly ordered, in decreasing frequency order of problem–pathology combinations. Diabetes (accounting for 7.8% of all problem–pathology combinations), general check-ups, hypertension, and weakness/tiredness were the most common problems for which pathology tests were ordered.

The two columns on the far right show the proportion of each problem that resulted in a pathology order, and the rate of pathology tests/batteries of tests per 100 specified problems when at least one test was ordered. For example, 32.6% of contacts with diabetes resulted in pathology orders, and when pathology was ordered for diabetes, the GPs ordered an average of 290 tests/batteries of tests per 100 'tested' diabetes contacts. In contrast, only 11.5% of contacts with hypertension problems resulted in a pathology test, but the resulting test orders accounted for almost as many tests (5.7%) as did diabetes (7.8%). This is because in general practice, hypertension is managed far more frequently (8.7 per 100 encounters) than diabetes (4.2 per 100 encounters) (see Section 7.4).

Table 12.3: The 10 problems for which pathology was most frequently ordered

Problem managed	Number of problems	Number of problem–pathology combinations[(a)]	Per cent of problem–pathology combinations[(a)]	Per cent of problems with test[(b)]	Rate of pathology orders per 100 problems with pathology[(c)]
Diabetes – all*	4,038	3,813	7.8	32.6	289.7
General check-up*	2,925	2,993	6.1	28.9	354.1
Hypertension*	8,297	2,778	5.7	11.5	291.1
Weakness/tiredness	714	1,881	3.8	67.2	392.2
Lipid disorder	2,953	1,869	3.8	27.1	233.3
Female genital check-up/ Pap smear*	1,597	1,505	3.1	78.2	120.6
Abnormal test results*	1,241	1,222	2.5	55.6	177.1
Urinary tract infection*	1,724	1,170	2.4	58.6	115.8
Blood test NOS	338	1,048	2.1	83.3	372.6
Pregnancy*	1,084	873	1.8	37.4	215.3
Subtotal	*24,910*	*19,154*	*39.2*	—	—
Total problems	**151,675**	**48,910**	**100.0**	**13.9**	**232.2**

(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 47,035 pathology test orders and 48,910 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 problem contacts with at least one order for pathology.

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, Table A4.1, <hdl.handle.net/2123/11882>).

Note: 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, by the FMRC using BEACH data, and published by the Australian Institute of Health and Welfare and the University of Sydney in 2001.[84] A 2014 report, *Evaluation of imaging ordering by general practitioners in Australia 2002–03 to 2011–12,* describes changes in GPs' imaging ordering over time and evaluates the alignment between guidelines and GP test ordering for selected problems.[17] This recent report was funded by a grant from the Diagnostic Imaging Quality Program, through the Australian Government Department of Health. Readers may wish to consider those reports in conjunction with the information presented below.

Nature of imaging orders at encounter

There were 10,460 imaging test orders recorded, at a rate of 10.9 per 100 encounters and 6.9 per 100 problems managed.

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, as a rate per 100 encounters, and as a rate per 100 problems with 95% confidence limits. Diagnostic radiology accounted for 41.5% of all imaging test orders, and ultrasound accounted for 41.2%.

Table 12.4: Imaging orders by MBS imaging groups and the most frequent imaging tests ordered within group

Imaging test ordered	Number	Per cent of all imaging	Per cent of group	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Rate per 100 problems (*n* = 151,675)	95% LCL	95% UCL
Diagnostic radiology*	**4,338**	**41.5**	**100.0**	**4.5**	**4.3**	**4.7**	**2.9**	**2.7**	**3.0**
X-ray; chest	863	8.3	19.9	0.9	0.8	1.0	0.6	0.5	0.6
X-ray; knee	446	4.3	10.3	0.5	0.4	0.5	0.3	0.3	0.3
Test; densitometry	309	3.0	7.1	0.3	0.3	0.4	0.2	0.2	0.2
Mammography; female	294	2.8	6.8	0.3	0.3	0.3	0.2	0.2	0.2
X-ray; shoulder	274	2.6	6.3	0.3	0.2	0.3	0.2	0.2	0.2
X-ray; foot/feet	249	2.4	5.7	0.3	0.2	0.3	0.2	0.1	0.2
X-ray; hip	246	2.3	5.7	0.3	0.2	0.3	0.2	0.1	0.2
X-ray; ankle	198	1.9	4.6	0.2	0.2	0.2	0.1	0.1	0.2
X-ray; wrist	154	1.5	3.6	0.2	0.1	0.2	0.1	0.1	0.1
X-ray; hand	150	1.4	3.5	0.2	0.1	0.2	0.1	0.1	0.1
X-ray; spine; lumbosacral	100	1.0	2.3	0.1	0.1	0.1	0.1	0.0	0.1
X-ray; spine; lumbar	98	0.9	2.3	0.1	0.1	0.1	0.1	0.0	0.1
X-ray; abdomen	96	0.9	2.2	0.1	0.1	0.1	0.1	0.0	0.1
X-ray; finger(s)/thumb	83	0.8	1.9	0.1	0.1	0.1	0.1	0.0	0.1
X-ray; spine; cervical	76	0.7	1.8	0.1	0.1	0.1	0.1	0.0	0.1
X-ray; spine; thoracic	65	0.6	1.5	0.1	0.0	0.1	0.0	0.0	0.1
X-ray; elbow	63	0.6	1.5	0.1	0.0	0.1	0.0	0.0	0.1

(continued)

Table 12.4 (continued): Imaging orders by MBS imaging groups and the most frequent imaging tests ordered within group

Imaging test ordered	Number	Per cent of all imaging	Per cent of group	Rate per 100 encounters (*n* = 95,879)	95% LCL	95% UCL	Rate per 100 problems (*n* = 151,675)	95% LCL	95% UCL
Ultrasound*	**4,308**	**41.2**	**100.0**	**4.5**	**4.3**	**4.7**	**2.8**	**2.7**	**3.0**
Ultrasound; pelvis	578	5.5	13.4	0.6	0.5	0.7	0.4	0.3	0.4
Ultrasound; shoulder	518	4.9	12.0	0.5	0.5	0.6	0.3	0.3	0.4
Ultrasound; abdomen	432	4.1	10.0	0.5	0.4	0.5	0.3	0.3	0.3
Ultrasound; breast; female	315	3.0	7.3	0.3	0.3	0.4	0.2	0.2	0.2
Ultrasound; obstetric	254	2.4	5.9	0.3	0.2	0.3	0.2	0.1	0.2
Echocardiography	182	1.7	4.2	0.2	0.2	0.2	0.1	0.1	0.1
Ultrasound; hip	142	1.4	3.3	0.1	0.1	0.2	0.1	0.1	0.1
Test; Doppler	137	1.3	3.2	0.1	0.1	0.2	0.1	0.1	0.1
Ultrasound; foot/toe(s)	126	1.2	2.9	0.1	0.1	0.2	0.1	0.1	0.1
Ultrasound; kidney	119	1.1	2.8	0.1	0.1	0.2	0.1	0.1	0.1
Ultrasound; leg	117	1.1	9.2	0.1	0.1	0.1	0.1	0.1	0.1
Ultrasound; kidney/ureter/bladder	109	1.0	8.6	0.1	0.1	0.1	0.1	0.1	0.1
Ultrasound; thyroid	97	0.9	7.6	0.1	0.1	0.1	0.1	0.0	0.1
Ultrasound; neck	96	0.9	7.5	0.1	0.1	0.1	0.1	0.0	0.1
Ultrasound; abdomen upper	96	0.9	7.5	0.1	0.1	0.1	0.1	0.0	0.1
Test; doppler carotid	89	0.8	7.0	0.1	0.1	0.1	0.1	0.0	0.1
Ultrasound; scrotum	74	0.7	5.8	0.1	0.1	0.1	0.0	0.0	0.1
Ultrasound; knee	73	0.7	5.7	0.1	0.1	0.1	0.0	0.0	0.1
Ultrasound; hand/finger(s)	70	0.7	5.5	0.1	0.1	0.1	0.0	0.0	0.1
Ultrasound; groin	65	0.6	5.1	0.1	0.0	0.1	0.0	0.0	0.1
Ultrasound; renal tract	63	0.6	5.0	0.1	0.0	0.1	0.0	0.0	0.1
Ultrasound; wrist	63	0.6	5.0	0.1	0.0	0.1	0.0	0.0	0.1
Computerised tomography*	**1,272**	**12.2**	**100.0**	**1.3**	**1.2**	**1.4**	**0.8**	**0.8**	**0.9**
CT scan; abdomen	201	1.9	15.8	0.2	0.2	0.2	0.1	0.1	0.2
CT scan; brain	170	1.6	13.4	0.2	0.1	0.2	0.1	0.1	0.1
CT scan; spine; lumbar	166	1.6	13.1	0.2	0.1	0.2	0.1	0.1	0.1
CT scan; chest	104	1.0	8.2	0.1	0.1	0.1	0.1	0.1	0.1
CT scan; head	96	0.9	7.5	0.1	0.1	0.1	0.1	0.0	0.1
CT scan; spine; lumbosacral	95	0.9	7.5	0.1	0.1	0.1	0.1	0.0	0.1
CT scan; sinus	81	0.8	6.4	0.1	0.1	0.1	0.1	0.0	0.1
Magnetic resonance imaging*	**417**	**4.0**	**100.0**	**0.4**	**0.4**	**0.5**	**0.3**	**0.2**	**0.3**
MRI; knee	131	1.3	31.4	0.1	0.1	0.2	0.1	0.1	0.1
MRI; brain	61	0.6	14.6	0.1	0.0	0.1	0.0	0.0	0.1
Nuclear medicine*	**125**	**1.2**	**100.0**	**0.1**	**0.1**	**0.2**	**0.1**	**0.1**	**0.1**
Scan; bone(s)	72	0.7	57.6	0.1	0.1	0.1	0.0	0.0	0.1
Total imaging tests	**10,460**	**100.0**	**—**	**10.9**	**10.5**	**11.4**	**6.9**	**6.6**	**7.2**

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, Table A4.9 <hdl.handle.net/2123/11882>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; CT – computerised tomography; MRI – magnetic resonance imaging.

Problems for which imaging tests were ordered

Table 12.5 lists the problems for which imaging was commonly ordered, in decreasing frequency order of problem–imaging combinations. Osteoarthritis accounted for 5.1% of all orders, as did back complaint (5.1%), followed by bursitis/tendonitis/synovitis (3.8%) and fracture (3.5%).

The two columns on the far right 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, 17.0% of contacts with osteoarthritis resulted in an imaging test, and 115.5 tests were ordered per 100 osteoarthritis tested contacts.

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)]
Osteoarthritis*	2,761	543	5.1	17.0	115.5
Back complaint*	3,016	543	5.1	16.1	111.8
Bursitis/tendonitis/synovitis NOS	1,206	403	3.8	28.9	115.8
Fracture*	991	370	3.5	34.3	109.0
Injury musculoskeletal NOS	861	338	3.2	33.4	117.4
Pregnancy*	1,084	332	3.1	30.2	101.6
Abdominal pain*	693	321	3.0	40.8	113.6
Shoulder syndrome	614	319	3.0	41.4	125.7
Sprain/strain*	1,228	304	2.9	20.4	121.4
Breast lump/mass (female)	175	176	1.7	73.2	136.9
Subtotal	*12,629*	*3,650*	*34.5*	—	—
Total problems	**151,675**	**10,572**	**100.0**	**6.1**	**113.4**

(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 10,460 imaging test orders and 10,572 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 tested problem contacts with at least one order for imaging.

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, Table A4.1 <hdl.handle.net/2123/11882>).

Note: NOS – not otherwise specified.

12.4 Other investigations

Other investigations include diagnostic procedures ordered by the GP or undertaken by the GP or practice staff at the encounter. GPs ordered 753 other investigations during the study year, and GPs or practice staff undertook 1,606 other investigations. There were, in total, 2,359 other investigations either ordered or undertaken (Table 12.6).

The first section of Table 12.6 lists the other investigations ordered by GPs. The second lists the other investigations undertaken in the practice by GPs or practice staff. The third section lists the total other investigations (either ordered or undertaken in the practice). Each investigation is expressed as a percentage of total other investigations ordered or undertaken, as a rate per 100 encounters, and as a rate per 100 problems, each with 95% confidence limits. Electrical tracings were the most common group of other investigations ordered or undertaken, making up 49.4% of other investigations, followed by physical function test (28.1%).

Table 12.6: Other investigations ordered by GPs or performed in the practice

	Investigations ordered by the GP				Investigations undertaken in the practice				All investigations (ordered or undertaken)			
Investigation	**Number**	**Per cent**	**Rate per 100 encounters (95% CI) (*n* = 95,879)**	**Rate per 100 problems (95% CI) (*n* = 151,675)**	**Number**	**Per cent**	**Rate per 100 encounters (95% CI) (*n* = 95,879)**	**Rate per 100 problems (95% CI) (*n* = 151,675)**	**Number**	**Per cent**	**Rate per 100 encounters (95% CI) (*n* = 95,879)**	**Rate per 100 problems (95% CI) (*n* = 151,675)**
Electrical tracings*	419	55.7	0.44 (0.37–0.50)	0.28 (0.24–0.32)	746	46.4	0.78 (0.66–0.90)	0.49 (0.42–0.57)	1,165	49.4	1.22 (1.08–1.35)	0.77 (0.68–0.86)
Diagnostic endoscopy*	181	24.0	0.19 (0.15–0.23)	0.12 (0.09–0.14)	18	1.1	0.02 (0.01–0.03)	0.01 (0.01–0.02)	199	8.4	0.21 (0.17–0.25)	0.13 (0.11–0.16)
Physical function test*	142	18.9	0.15 (0.12–0.18)	0.09 (0.08–0.11)	522	32.5	0.54 (0.46–0.62)	0.34 (0.29–0.39)	664	28.1	0.69 (0.60–0.78)	0.44 (0.38–0.49)
Other diagnostic procedures*	11	1.4	0.01 (0.00–0.02)	0.01 (0.00–0.01)	320	19.9	0.33 (0.27–0.40)	0.21 (0.17–0.25)	331	14.0	0.35 (0.28–0.41)	0.22 (0.18–0.26)
Total other investigations	**753**	**100.0**	**0.79 (0.70–0.87)**	**0.50 (0.44–0.55)**	**1,606**	**100.0**	**1.68 (1.50–1.85)**	**1.06 (0.95–1.17)**	**2,359**	**100.0**	**2.46 (2.25–2.67)**	**1.56 (1.43–1.68)**

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.6 <hdl.handle.net/2123/11882>).

Note: CI – confidence interval.

12.5 Changes in investigations over the decade 2004–05 to 2013–14

Data on investigations are reported for each year from 2004–05 to 2013–14 in Chapter 12 of the companion report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1] In that report, changes over time are measured as change in the management of problems (that is, as a rate per 100 problems). This reflects change in how GPs are managing problems, and accounts for the significant increase in the number of problems managed per encounter over the decade. The major changes are highlighted below.

- At least one pathology test was ordered for 12.2% of problems managed in 2004–05 rising to 13.9% of problems in 2013–14. The number of pathology tests ordered increased from 25.2 tests (or batteries of tests) per 100 problems managed in 2004–05 to 31.0 per 100 problems in 2013–14. The largest increase was in orders for chemical pathology, which increased from 14.0 per 100 problems in 2004–05 to 18.1 per 100 problems in 2013–14. Haematology increased at a slower rate, from 4.8 per 100 problems in 2004–05 to 5.4 in 2013–14.
- Between 2004–05 and 2013–14, the number of problems managed per 100 encounters rose from 145.5 to 158.2. Both the rise in the proportion of problems generating at least one pathology test and the rise in the number of problems managed at encounter contributed to an overall increase in the proportion of encounters involving a pathology test. This rose from 15.7% of encounters in 2004–05 to 19.1% in 2013–14. Combined with the increased attendance rate over the decade, this suggests that in 2013–14 one or more pathology tests were ordered at about 10 million more encounters nationally than in 2004–05.
- The rate of pathology tests ordered per 100 encounters increased from 36.7 per 100 encounters in 2004–05 to 49.1 in 2013–14, which extrapolates to approximately 29.5 million more tests (or batteries of tests) ordered nationally in 2013–14 than a decade earlier.
- At least one imaging test was ordered for 5.2% of all problems managed in 2004–05, rising to 6.1% of all problems in 2013–14. The proportion of encounters generating imaging orders increased from 7.3% in 2004–05 to 9.3% in 2013–14. This resulted in an estimated 5.2 million more encounters at which imaging was ordered nationally in 2013–14 than in 2004–05.
- The number of imaging tests ordered increased from 5.7 tests per 100 problems managed in 2004–05 to 6.9 per 100 problems in 2013–14. Total imaging orders per 100 encounters increased significantly from 8.3 per 100 encounters in 2004–05 to 10.9 in 2013–14, suggesting that nationally there were 6.4 million more imaging orders in 2013–14 than in 2004–05.

13 Patient risk factors

General practice is a useful intervention point for health promotion because the majority of the population visit a GP at least once per year. In 2013–14, 85.2% of Australians visited a GP at least once (personal communication, DoH, August 2014). GPs have substantial knowledge of population health, screening programs and other interventions. They are therefore in an ideal position to advise patients about the benefits of health screening, and to counsel individuals about their lifestyle choices.

Since the beginning of the BEACH program (1998), a section at the bottom of each encounter form has been used to investigate aspects of patient health or healthcare 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 2.6.

The patient risk factors collected in BEACH include body mass index (BMI) (calculated using self-reported height and weight), self-reported alcohol consumption and self-reported smoking status. These 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 as Appendix 1. The methods used in the risk factor substudies reported in this chapter are described in each section below.

Unweighted (sample) data on patient risk factors measured in SAND are reported for each of the 10 most recent years, and risk factor prevalence after adjustment for attendance patterns by age–sex for each of the 7 most recent years are reported in the companion report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1]

Abstracts of results and the research tools used in other SAND substudies from April 1998 to March 2014 have been published. Those conducted:

- from April 1998 to March 1999 were published in *Measures of health and health care delivery in general practice in Australia*[23]
- from April 1999 to July 2006 were published in *Patient-based substudies from BEACH: abstracts and research tools 1999–2006*[24]
- since August 2006 have been published in each general practice annual reports[25-31]
- in the 2013–14 BEACH year are provided in Chapter 14 of this publication.

13.1 Body mass index

From the most recent publicly available Australian data, high body mass (BMI) was the third highest contributor to the total burden of disease in Australia in 2003, accounting for 7.5% of the total burden,[85] an increase from 4.3% of the total burden and sixth rank in 1996.[86] The Global Burden of Disease 2010 study compared burden of disease and injury attributable to 67 risk factors in 21 regions. In Australasia (which includes Australia) 'high body mass index' was the leading risk factor for disease burden, and 'physical inactivity and low physical activity' was ranked as the fourth risk factor for disease burden. These Australasian rankings compare unfavourably with the global risk factor rankings, with 'high body mass index' ranking sixth and 'physical inactivity and low physical activity' ranking tenth.[87]

In 2014, the Organisation for Economic Co-operation and Development (OECD) reported that Australia's adult obesity rates (based on measured data) in 1989, 1995, 2007 and 2011 were among the highest in the world (10.8%, 19.8%, 24.6% and 28.3% of adults respectively),

with Australia's adult obesity rate fifth globally, behind the United States and Mexico and on par with New Zealand and Hungary (28.4% and 28.5% respectively).[88]

In 2007 (or nearest year), Australia was fourth, with obesity rates 2% below that of New Zealand, but in the ensuing 5 years, Australia caught up to New Zealand (Australia increased by 4% to 28.3%, New Zealand increased by 2% to 28.4%).[88] In a similar 5-year period, obesity rates in the United States increased by about 1% to 35.3%, and those in Mexico increased by 2.4% to 32.4%.[88]

Australia's obesity rate of 28.3% in 2011 is much higher than the average for the 16 OECD countries with recent measured data (22.7%). It has been suggested that the growing prevalence of obesity in Australia foreshadows increases in related health problems (such as diabetes and cardiovascular diseases) and escalating health care costs in future.[89]

The Australian Health Survey (2011–12), using trained interviewer measured data, estimated that 35% of Australians aged 18 years and over were overweight (BMI 25–<30) and 28% were obese (BMI 30 or more). Men were more likely to be overweight (42%) than women (28%), but obesity rates were the same (28% among both men and women).[90]

The Australian Health Survey also reported that 25% of children aged 2–17 years were classified as overweight or obese (18% overweight, 7% obese).[90]

The Australian government has recognised the epidemic of overweight and obesity, and the impact on future health costs and negative health outcomes. New guidelines about the clinical management of overweight and obesity were released by the National Health and Medical Research Council in May 2013.[91]

Method

Patient BMI was investigated for a subsample of 40 of each GP's 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 (from feet and inches; from stones and pounds) were provided to the GP.

The BMI for an individual was calculated by dividing weight (kilograms) by height (metres) squared. The WHO recommendations[92] for BMI groups were used. They 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 weight
- 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 ABS.[93] Adults whose self-reported height was 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. (2000 & 2007) developed a method to calculate the age–sex-specific BMI cut-off levels for underweight, overweight and obesity specific to children aged 2–17 years.[94,95] There are four categories defined for childhood BMI: underweight, normal weight, 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 and Centres for Disease Control.[93,96] Children whose self-reported height was outside 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).

Results

Body mass index of adults

The sample size was 31,371 patients aged 18 years and over at encounters with 956 GPs.

- Over half (62.7%) of these adults were overweight (34.9%) or obese (27.8%) (Table 13.1).
- Just over one-third (35.1%) of adult patients had a BMI in the normal range, and 2.2% of were underweight. Underweight was more prevalent among females than males.
- Males were more likely to be overweight or obese (69.3%, 95% CI: 68.2–70.3) than females (58.6%, 95% CI: 57.5–59.6) (results not tabulated).
- Overweight/obesity was most prevalent among male patients aged 65–74 years (77.5%) and 45–64 years (76.0%) (Figure 13.1).
- This pattern was also noted in female patients, with overweight/obesity most prevalent in those aged 65–74 years (69.4%) and 45–64 years (65.2%) (Figure 13.1).
- Underweight was most prevalent among patients aged 18–24 years (6.7%, 95% CI: 5.6–7.8) (results not tabulated).
- Of young adults (aged 18–24 years), 7.5% of females and 4.6% of males were underweight, and among those aged 75 years and over, 3.9% of females and 1.6% of males were underweight (Figure 13.2).

Our overall and sex-specific prevalence estimates of overweight/obesity among patients at general practice encounters (63% of adults, 69% of males and 59% of females are remarkably consistent with the ABS 2011–12 figures from the Australian Health Survey (based on measured BMI data), which reported that 63% of adults aged 18 and over (70% of men and 56% of females) were overweight or obese.[18]

Readers interested in the prevalence of the three WHO-defined levels of obesity will find more information and discussion in Chapter 7 of *General practice in Australia, health priorities and policies 1998 to 2008*.[97]

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

The BEACH study provides data about patient BMI from a sample of the patients attending general practice. 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 BEACH sample than in the total population who attend a GP at least once in a year. The 2013–14 BEACH sample was weighted to estimate the BMI of the GP–patient attending population (that is, the 15.4 million adult patients who attended a GP at least once in 2013–14 (personal communication, DoH, August 2014), using the method described by Knox et al. (2008).[20] This statistical adjustment had little effect on the resulting proportions.

The estimates for the adult population who attended general practice at least once (after adjusting for age–sex attendance patterns) suggest that 26.9% of the adult patient population were obese, 34.6% were overweight, 36.3% were normal weight and 2.2% were underweight (Table 13.1).

Table 13.1: 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* = 12,022)	Per cent in patient population (95% CI)[b]	Per cent in BEACH sample (95% CI) (*n* = 19,112)	Per cent in patient population (95% CI)[b]	Per cent in BEACH sample (95% CI) (*n* = 31,371)	Per cent in patient population (95% CI)[b]
Obese	27.2 (26.2–28.2)	26.2 (25.1–27.4)	28.1 (27.2–29.0)	27.5 (26.6–28.5)	27.8 (27.0–28.5)	26.9 (26.1–27.8)
Overweight	42.0 (41.1–43.0)	41.1 (40.0–42.1)	30.4 (29.7–31.2)	29.1 (28.3–29.8)	34.9 (34.3–35.5)	34.6 (33.9–35.2)
Normal	29.6 (28.6–30.6)	31.4 (30.2–32.6)	38.5 (37.5–39.5)	40.3 (39.3–41.4)	35.1 (34.3–35.9)	36.3 (35.4–37.2)
Underweight	1.1 (0.9–1.3)	1.3 (1.0–1.5)	2.9 (2.7–3.2)	3.1 (2.7–3.4)	2.2 (2.0–2.4)	2.2 (2.0–2.4)

(a) Patient sex was not recorded for 237 respondents.

(b) Estimation of BMI among the total adult general practice patient population (that is, patients aged 18 years and over who attended a GP at least once in 2013–14). *Source:* Unpublished Medicare data, personal communication, DoH, August 2014 (*n* = 15.4 million).

Note: BMI – body mass index; CI – confidence interval.

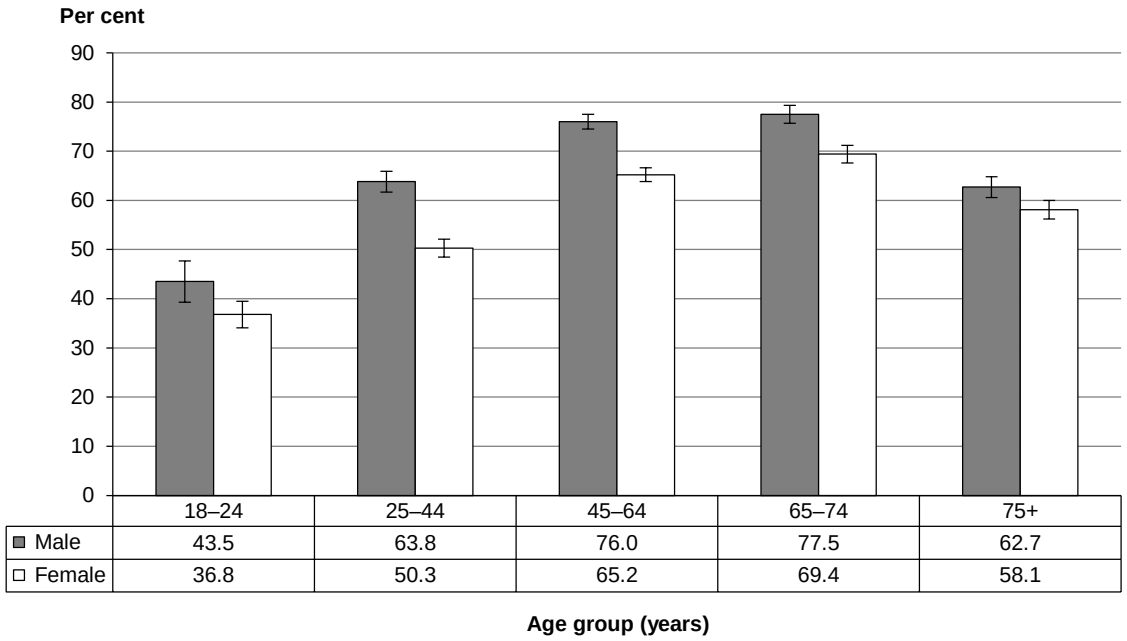


Figure 13.1: Age–sex-specific rates of overweight/obesity among sampled adults, 2013–14 (95% confidence intervals)

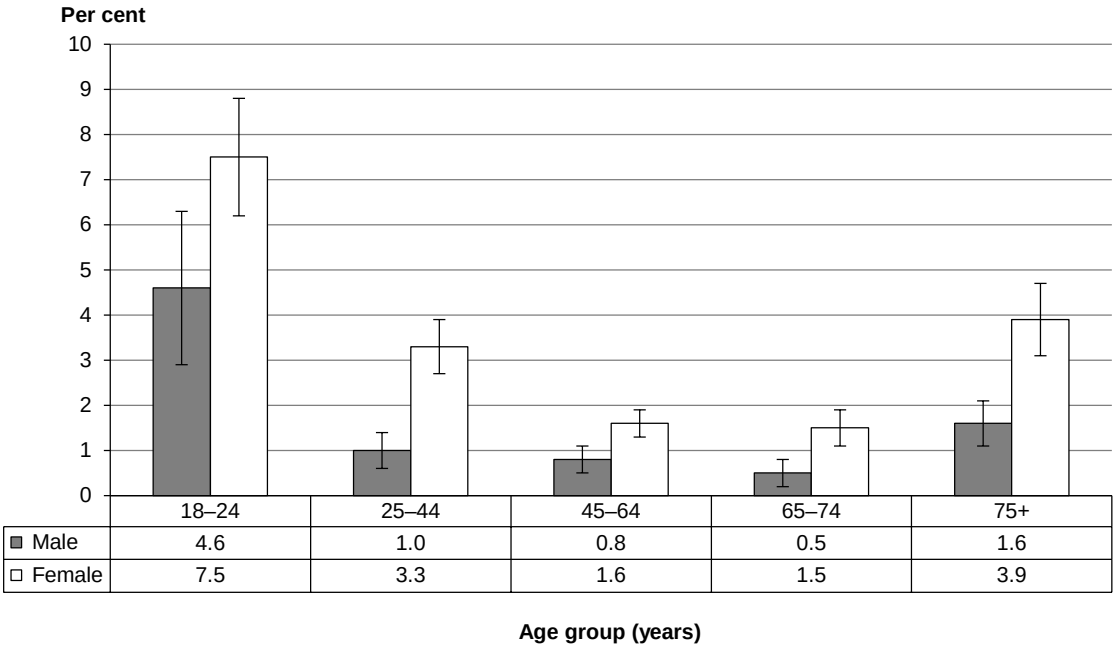


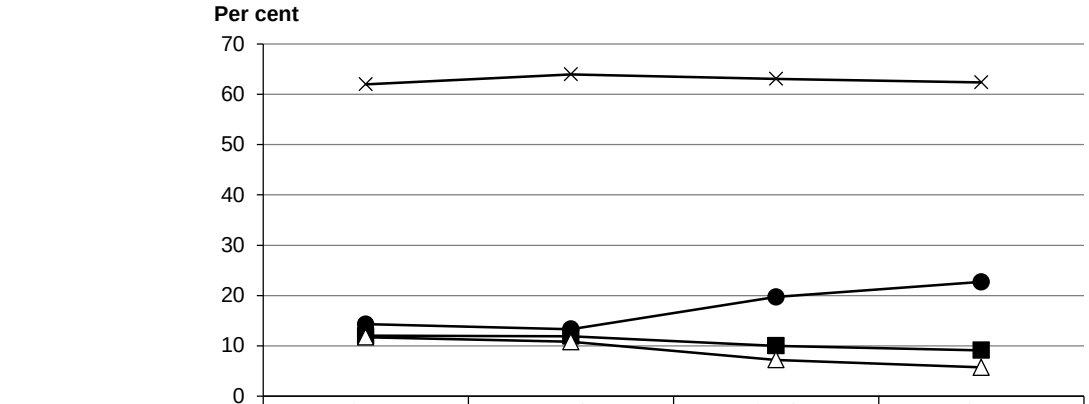
Figure 13.2: Age–sex-specific rates of underweight among sampled adults, 2013–14 (95% confidence intervals)

Body mass index of children

BMI was calculated for 2,536 patients aged 2–17 years at encounters with 836 GPs.

- Just over one-quarter of children (28.3%, 95% CI: 26.3–30.3) were classed as overweight or obese, including 9.6% (95% CI: 8.3–10.8) obese and 18.7% (95% CI: 17.1–20.4) overweight (results not tabulated).
- There was no difference in the prevalence of overweight/obesity among male (28.5%, 95% CI: 25.8–31.2) and female children (28.2%, 95% CI: 25.6–30.7) (results not tabulated).
- The age-specific rates of obesity followed similar patterns for both sexes (figures 13.3 and 13.4).

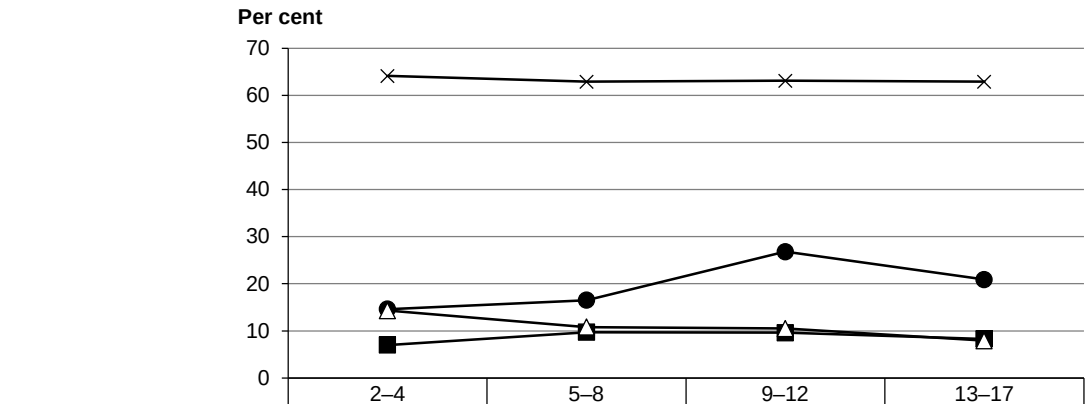
Readers interested in further detail and discussion about overweight and obesity in children attending general practice will find more information in Cretikos et al. (2008) *General practice management of overweight and obesity in children and adolescents in Australia*.[98]



	2–4	5–8	9–12	13–17
Male obese	12.0	11.9	10.0	9.1
Male overweight	14.3	13.3	19.7	22.7
Male normal weight	62.0	64.0	63.1	62.4
Male underweight	11.7	10.8	7.2	5.7

Age group (years)

Figure 13.3: Age-specific rates of obesity, overweight, normal weight and underweight among sampled male children, 2013–14



	2–4	5–8	9–12	13–17
Female obese	7.0	9.7	9.6	8.3
Female overweight	14.6	16.5	26.8	20.9
Female normal weight	64.1	62.9	63.1	62.9
Female underweight	14.3	10.8	10.5	7.9

Age group (years)

Figure 13.4: Age-specific rates of obesity, overweight, normal weight and underweight among sampled female children, 2013–14

13.2 Smoking (patients aged 18 years and over)

Tobacco smoking is the leading cause of ill health, drug-related death and hospital separations in Australia.[99] It is a major risk factor for coronary heart disease, stroke, peripheral vascular disease, several cancers, respiratory disorders and other diseases.[100] The most recent publicly available Australian data identified smoking as the risk factor associated with the greatest disease burden, accounting for 7.8% of the total burden of disease in Australia in 2003,[85] a decrease from 9.7% of total burden in 1996.[86]

The Global Burden of Disease 2010 study has compared burden of disease and injury attributable to 67 risk factors in 21 regions. In Australasia (which includes Australia), 'tobacco smoking, including second hand smoke' was ranked as the second most important risk factor for disease burden. These Australasian rankings are on par to the global risk factor rankings, with 'tobacco smoking, including second hand smoke' second globally.[87]

In 2014, the OECD reported that Australia has been remarkably successful in reducing tobacco consumption by more than half, from 30.6% of adults in 1986 to 15.1% in 2010, now one of the lowest smoking rates in OECD countries at that time. [88] They suggested "much of this decline can be attributed to policies aimed at reducing tobacco consumption through public awareness campaigns, advertising bans and increased taxation". In December 2012, Australia became the first (and currently only) country to require tobacco products to be sold in plain packaging.[89]

According to the 2010 National Drug Strategy Household Survey (NDSHS), 15.1% of Australians aged 14 years and over smoked daily: 16.4% of males and 13.9% of females.[101] The 2011–12 Australian Health Survey reported that 16.1% of Australians aged 18 years and over were daily smokers: 18.1% of males and 14.1% of females.[90]

Method

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

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

Results

The smoking status of 32,166 adult patients was established at encounters with 955 GPs. Table 13.2 shows that:

- 13.5% of sampled adult patients were daily smokers
- significantly more male (16.7%) than female patients (11.6%) were daily smokers (Table 13.2)
- only 2.3% of sampled adult patients were occasional smokers
- more than one-quarter of sampled adults (28.6%) were previous smokers.

Table 13.2: Patient smoking status (aged 18 years and over)

Smoking status	Male[a]		Female[a]		Total respondents	
	Per cent in BEACH sample (95% CI) (*n* = 12,294)	Per cent in patient population (95% CI)[b]	Per cent in BEACH sample (95% CI) (*n* = 19,625)	Per cent in patient population (95% CI)[b]	Per cent in BEACH sample (95% CI) (*n* = 32,166)	Per cent in patient population (95% CI)[b]
Daily	16.7 (15.7–17.8)	20.9 (19.6–22.2)	11.6 (10.9–12.3)	13.4 (12.6–14.2)	13.5 (12.9–14.2)	16.9 (15.9–17.8)
Occasional	2.9 (2.5–3.3)	3.9 (3.3–4.4)	1.9 (1.7–2.2)	2.4 (2.1–2.7)	2.3 (2.1–2.5)	3.1 (2.7–3.4)
Previous	37.0 (35.8–38.2)	29.8 (28.7–30.9)	23.3 (22.4–24.1)	21.9 (21.1–22.7)	28.6 (27.8–29.4)	25.6 (24.8–26.3)
Never	43.4 (42.1–44.7)	45.4 (44.0–46.9)	63.2 (62.2–64.2)	62.3 (61.2–63.4)	55.6 (54.6–56.6)	54.5 (53.4–55.6)

(a) Patient sex was not recorded for 247 respondents.

(b) Estimation of smoking status among the total adult general practice patient population (that is, patients aged 18 years and over who attended a GP at least once in 2013–14). *Source:* Unpublished Medicare data, personal communication, DoH, August 2014 (*n* = 15.4 million).

Note: CI – confidence interval.

Daily smoking was least prevalent among older adults aged 65–74 and 75 years or more (8.0% and 3.3% respectively), and most prevalent among adult patients aged 25–44 years (19.8%) (results not tabulated). Over half (53.3%) of the male and 24.3% of the female patients aged 75 years and over were previous smokers, but only 3.7% of males and 3.0% of females in this age group were daily smokers (figures 13.5 and 13.6).

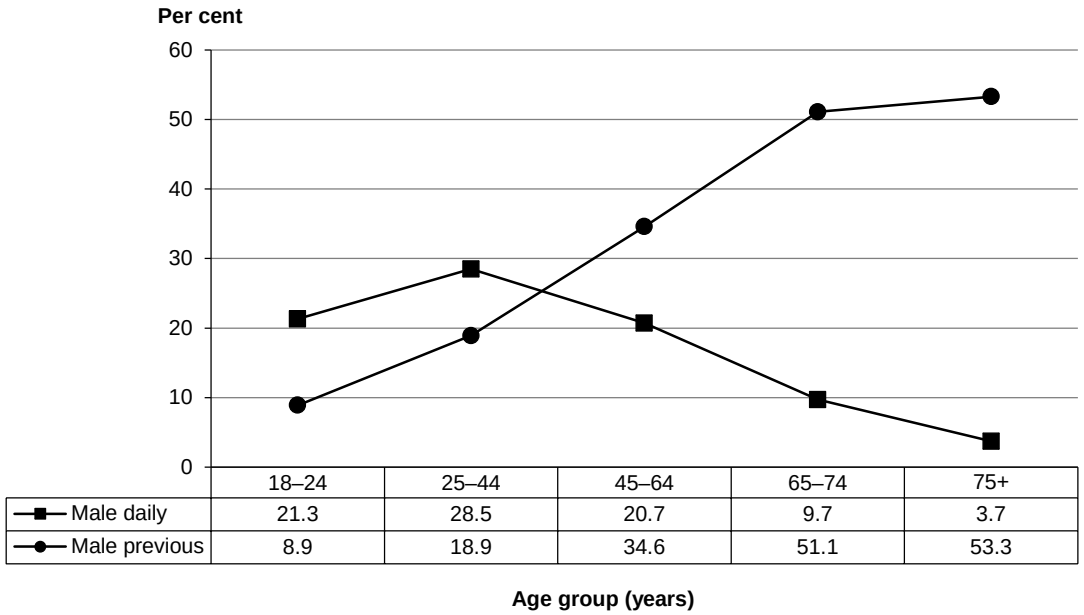


Figure 13.5: Smoking status – male age-specific rates among sampled patients, 2013–14

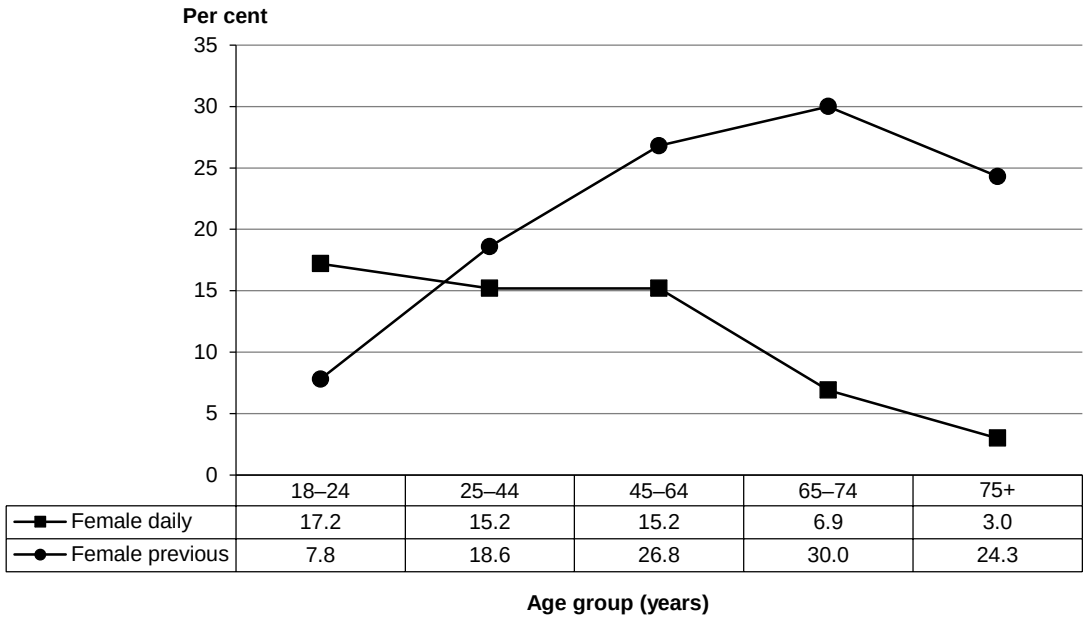


Figure 13.6: Smoking status – female age-specific rates among sampled patients, 2013–14

Estimation of smoking in the adult general practice patient population

The BEACH study provides data about patient smoking habits from a sample of the patients attending general practice. 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 BEACH sample than in the total population who attend a GP at least once in a year. The 2013–14 BEACH sample was weighted to estimate the smoking status of the GP–patient attending population (that is, the 15.4 million adult patients who attended a GP at least once in 2013–14 [personal communication, DoH, August 2014]), using the method described by Knox et al. (2008).[20]

After adjusting for age–sex attendance patterns, we estimated that 16.9% of the patient population aged 18 or more were daily smokers, 3.1% were occasional smokers, 25.6% were previous smokers and 54.5% had never smoked. Male patients in the total general practice population were significantly more likely to be daily (20.9%), occasional 3.9%) and previous smokers (29.8%), than females patients (13.4%, 2.4% and 21.9%, respectively) (Table 13.2).

13.3 Alcohol consumption (patients aged 18 years and over)

Among 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.[102] Following a review of the evidence, the National Health and Medical Research Council (NHMRC) stated that at low levels of consumption, alcohol has some cardiovascular health benefits in certain age groups (middle-aged and older males, and women after menopause). Low levels of alcohol consumption raise high-density lipoprotein cholesterol and reduce plaque accumulations in arteries. Alcohol can also have a mild anti-coagulating effect. However, the authors of the review noted that the extent of cardiovascular risk reduction is uncertain, and the potential

cardiovascular benefits can be gained from other means, such as exercise or modifying the diet.[103] From the most recent publicly available Australian data, 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%.[85]

The Global Burden of Disease 2010 study compared burden of disease and injury attributable to 67 risk factors in 21 regions. In Australasia (which includes Australia) 'alcohol use' was ranked as the ninth risk factor for disease burden, a lower ranking than in the global risk factor rankings, where 'alcohol use' ranked fifth.[87]

The Australian Health Survey classified alcohol use for those aged 18 years or more based on the estimated average daily consumption of alcohol during the previous week. The results indicated that 11.7% drank at levels considered to be risky (13.4% of males and 10.1% of females), based on the 2001 NHMRC guidelines.[18] Based on the NHMRC 2009 guidelines, 19.5% of adults drank at levels exceeding the guidelines (29.1% of males and 10.1% of females).[18]

The 2010 NDSHS found that 20.1% of people aged 14 years and over (29.0% of males and 11.3% of females) drank at levels considered to put them at risk of harm from alcohol-related disease or injury over their lifetime. The NDSHS also found that 28.4% of people aged 14 years or more (38.2% of males and 18.9% of females) drank (at least once in the previous month) in a pattern that placed them at risk of an alcohol-related injury from a single drinking occasion.[101] These alcohol consumption risk levels were based on the NHMRC 2009 guidelines.[103]

For consistency over time, this report uses the definitions of alcohol-related risk developed by WHO (see 'Method' below).[104] This differs from the definition in the NHMRC guidelines.

Method

To measure alcohol consumption, BEACH uses AUDIT-C,[105] which is the first three items from the WHO Alcohol Use Disorders Identification Test (AUDIT),[104] with scoring for an Australian setting.[106] The AUDIT-C has demonstrated validity and internal consistency and performs as well as the full AUDIT tool.[107] The three AUDIT-C tool is practical and valid in a primary care setting to assess 'at-risk' alcohol consumption (heavy drinking and/or active alcohol dependence).[105] 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.[106]

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 or more
- 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.

Results

Patient self-reported alcohol consumption was recorded for 31,369 adult patients (18 years and over) at encounters with 956 GPs.

- Just under one-quarter of sampled adults reported drinking alcohol at at-risk levels (23.0%) (Table 13.3).
- At-risk drinking was more prevalent among male (27.6%) than female patients (20.1%) (Table 13.3).
- At-risk drinking was most prevalent in those aged 18–24 years, particularly among men. In this age group almost half the males (43.8%) and one-third of females (30.4%) reported at-risk alcohol consumption (Figure 13.7).
- The proportion of patients who were at-risk drinkers decreased with age among both males and females (Figure 13.7).

These estimates are not directly comparable with the results from the 2011–12 Australian Health Survey[18] or the 2010 NDSHS[101]. They all use different definitions for risky levels of alcohol consumption, and different adult populations (patients aged 18 years or more for BEACH, persons aged 15 or 18 years or more for the Australian Health Survey, and persons aged 14 years or more for the NDSHS).

Readers interested in the relationship between morbidity managed and alcohol consumption will find more information in Proude et al. (2006) *The relationship between self-reported alcohol intake and the morbidities managed by GPs in Australia*.[108]

Table 13.3: Patient alcohol consumption (aged 18 years and over)

	Male		Female		Total respondents	
Alcohol consumption	Per cent in BEACH sample (95% CI) (*n* = 12,079)	Per cent in patient population (95% CI)[(a)]	Per cent in BEACH sample (95% CI) (*n* = 19,290)	Per cent in patient population (95% CI)[(a)]	Per cent in BEACH sample (95% CI) (*n* = 31,369)	Per cent in patient population (95% CI)[(a)]
At-risk drinker	27.6 (26.5–28.8)	31.6 (30.2–32.9)	20.1 (19.2–20.9)	21.6 (20.7–22.5)	23.0 (22.2–23.8)	26.2 (25.3–27.1)
Responsible drinker	48.8 (47.6–50.5)	46.5 (45.2–47.8)	40.8 (39.8–41.9)	41.9 (40.7–43.0)	43.9 (43.0–44.8)	44.0 (43.0–45.0)
Non-drinker	23.6 (22.4–24.7)	22.0 (20.7–23.2)	39.1 (37.8–40.4)	36.5 (35.1–37.9)	33.1 (32.0–34.2)	29.8 (28.7–30.9)

(a) Estimation of alcohol consumption among the total adult general practice patient population (that is, patients aged 18 years and over who attended a GP at least once in 2013–14). *Source:* Unpublished Medicare data, personal communication, DoH, August 2014 (*n* = 15.4 million).

Note: CI – confidence interval.

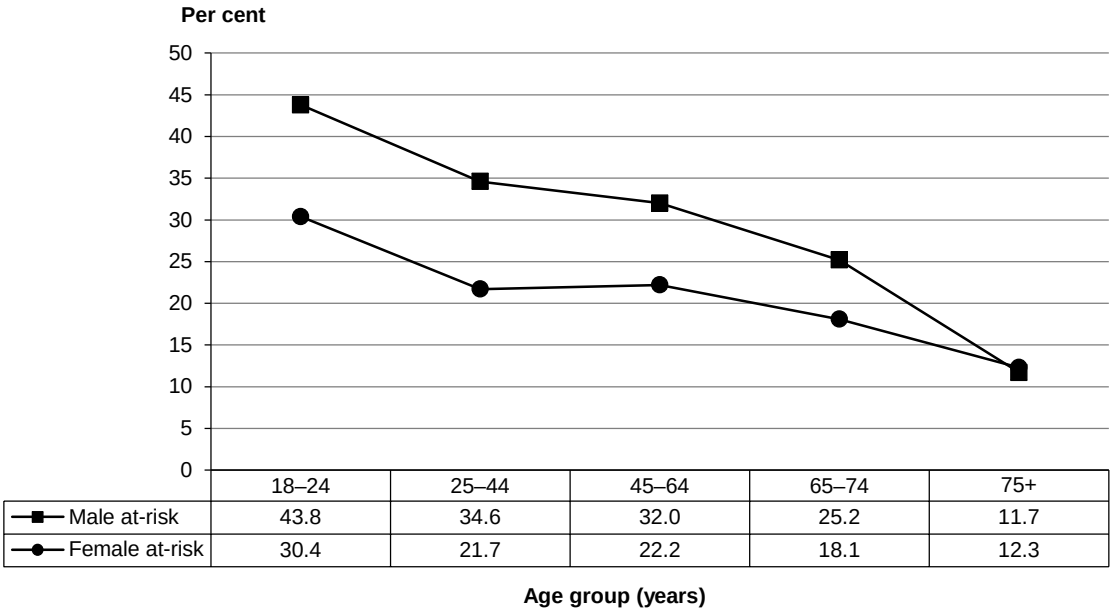


Figure 13.7: Age–sex-specific rates of at-risk alcohol consumption in sampled patients, 2013–14

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

The BEACH study provides data about patient alcohol consumption from a sample of the patients attending general practice. 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 BEACH sample than in the total population who attend a GP at least once in a year. The 2013–14 BEACH sample was weighted to estimate the prevalence of at-risk alcohol consumption among the GP–patient attending population (that is, the 15.4 million adult patients who attended a GP at least once in 2013–14 (personal communication, DoH, August 2014), using the method described by Knox et al. (2008).[20]

After adjusting for age–sex attendance patterns, we estimated that 26.2% of the patient population were at-risk drinkers, 44.0% were responsible drinkers and 29.8% were non-drinkers. Males in the general practice attending population were significantly more likely to be at-risk drinkers (31.6%) than females (21.6%) (Table 13.3).

13.4 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. For the purposes of this analysis, being overweight or obese, a daily smoker or an at-risk drinker were considered risk factors. A risk factor profile was prepared for the 30,250 adult patients from 954 GPs, for whom data were available in all three elements. (Table 13.4).

- About half (53.0%) the sampled adult respondents had one risk factor. The most common was overweight (23.9% of adults) followed by obesity (19.6%).
- Almost 1 in 5 patients (18.4%) had two risk factors, the most common combinations being:
  - overweight and at-risk alcohol consumption – 6.6% of patients
  - obesity and at-risk alcohol consumption – 4.5% of patients
  - overweight and daily smoking – 2.6% of patients.
- A small group of patients (3.2%) had all three risk factors.

Table 13.5 shows the number of risk factors by patient sex.

- Females were significantly more likely to have no risk factors (29.1%) than males (19.6%).
- Females were significantly less likely to have two or three risk factors (15.0% and 2.2% respectively) than males (23.9% and 4.7%).

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

The 2013–14 BEACH sample was weighted to estimate the risk profile of the GP–patient attending population; that is, the 15.4 million adult patients who attended a GP at least once in 2013–14.

After adjusting for age–sex attendance patterns we estimated that:

- one-quarter of patients had no risk factors (24.5%)
- half of the adult patients had one risk factor (50.6%), the most common being overweight (22.0% of adults) followed by obesity (17.7%)
- 1 in 5 patients had two risk factors (20.8%), the most common combinations being overweight and at-risk alcohol consumption (7.1%), followed by obesity and at-risk alcohol consumption (4.7%)
- 4.1% of patients who attend general practice had three risk factors (Table 13.4)
- significantly more female than male patients had no risk factors (29.6% and 18.4% respectively). Male patients were also more likely to have two and three risk factors (26.6% and 5.8%) than females (15.9% and 2.7%) (Table 13.5).

Table 13.4: Risk factor profile of patients (aged 18 years and over)

Number of risk factors	Number	Per cent in BEACH sample (*n* = 30,250)	95% LCL	95% UCL	Per cent in patient population[(a)]	95% LCL	95% UCL
No risk factors	**7,696**	**25.4**	**24.7**	**26.2**	**24.5**	**23.7**	**25.3**
One risk factor	**16,025**	**53.0**	**52.3**	**53.7**	**50.6**	**49.8**	**51.3**
Overweight only	7,236	23.9	23.3	24.5	22.0	21.4	22.7
Obese only	5,925	19.6	19.0	20.2	17.7	17.1	18.4
At-risk alcohol level only	1,953	6.5	6.1	6.9	7.2	6.7	7.7
Current daily smoker only	911	3.0	2.7	3.3	3.6	3.3	4.0
Two risk factors	**5,571**	**18.4**	**17.8**	**19.0**	**20.8**	**20.1**	**21.6**
Overweight and at-risk alcohol level	1,988	6.6	6.2	6.9	7.1	6.6	7.5
Obese and at-risk alcohol level	1,365	4.5	4.2	4.8	4.7	4.4	5.0
Overweight and current daily smoker	795	2.6	2.4	2.9	3.1	2.8	3.4
Daily smoker and at-risk alcohol level	721	2.4	2.2	2.6	3.2	2.9	3.5
Obese and current daily smoker	702	2.3	2.1	2.5	2.7	2.5	3.0
Three risk factors	**958**	**3.2**	**2.9**	**3.4**	**4.1**	**3.8**	**4.5**
Overweight and current daily smoker and at-risk alcohol level	559	1.8	1.7	2.0	2.5	2.2	2.7
Obese and current daily smoker and at-risk alcohol level	399	1.3	1.2	1.5	1.7	1.5	1.9

(a) Estimation of risk factor profile among the total adult general practice patient population (that is, patients aged 18 years and over who attended a GP at least once in 2013–14). *Source:* Unpublished Medicare data, personal communication, DoH, August 2014 (*n* = 15.4 million).

Note: LCL – lower confidence limit; UCL – upper confidence limit.

Table 13.5: Number of risk factors, by patient sex

	Male		Female	
Number of risk factors	Per cent in BEACH sample (95% CI) (*n* = 11,687)	Per cent in patient population (95% CI)[(a)]	Per cent in BEACH sample (95% CI) (*n* = 18,563)	Per cent in patient population (95% CI)[(a)]
No risk factors	19.6 (18.7–20.4)	18.4 (17.5–19.4)	29.1 (28.2–30.1)	29.6 (28.6–30.6)
One risk factor	51.9 (50.8–52.9)	49.1 (48.0–50.3)	53.7 (52.8–54.5)	51.8 (50.9–52.7)
Two risk factors	23.9 (22.9–24.9)	26.6 (25.5–27.7)	15.0 (14.3–15.6)	15.9 (15.2–16.6)
Three risk factors	4.7 (4.2–5.1)	5.8 (5.3–6.4)	2.2 (2.0–2.5)	2.7 (2.4–3.0)

(a) Estimation of risk factor profile among the total adult general practice patient population (that is, patients aged 18 years and over who attended a GP at least once in 2013–14). *Source:* Unpublished Medicare data, personal communication, DoH, August 2014 (*n* = 15.4 million).

Note: CI – confidence interval.

13.5 Changes in patient risk factors over the decade 2004–05 to 2013–14

To investigate changes over time in prevalence of these patient risk factors, results are reported from the BEACH sample data for each year from 2004–05 to 2013–14 in Chapter 13 of the companion report, *A decade of Australian general practice activity 2004–05 to 2013–14*.[1]

The major changes between 2004–05 and 2013–14 are summarised below.

- The prevalence of obesity in adults attending general practice increased significantly, from 22.4% to 27.8%, an increase apparent in both male and female patients. In parallel, the prevalence of normal weight in adults attending general practice decreased significantly, from 40.3% to 35.1%.
- The prevalence of overweight and obesity among sampled children aged 2–17 years did not differ significantly between 2004–05 and 2013–14 (around 10% and 18% respectively), this stable relationship noted for both male and female children.
- There was a significant decrease in the prevalence of current daily smoking and occasional smoking among sampled adults aged 18 years and over attending general practice, from 18.0% and 3.7% respectively in 2004–05, to 13.5% and 2.3% in 2013–14. These decreases were apparent among both male and female patients.
- Prevalence of at-risk levels of alcohol consumption among sampled adults declined from about 26% in 2004–05 to 23% in 2013–14. A corresponding increase in non-drinkers from about 29% in 2004–05 to 33% in 2013–14 was seen. The significant decrease in at-risk levels of alcohol consumption and increase in non-drinkers was apparent among both male and female patients.
- There was a significant increase in the proportion of adults with one risk factor from 48.8% in 2004–05, to 53.0% in 2013–14. The increase was noted for both male and female patients. About 1 in 5 adults had two risk factors in all reported years. There was a significant decrease in the proportion of patients with three risk factors from 4.0% to 3.2%.

14 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 healthcare 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 2.6. All substudies were approved by the Human Ethics Committee of the University of Sydney.

The Family Medicine Research Centre (FMRC) and most of the organisations supporting the BEACH program select topics for investigation in 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 13). Topics can be repeated to increase the sample size and its statistical power.

This chapter includes the abstracts and research tools for SAND substudies, most of which were conducted from April 2013 to March 2014. The subjects covered in the abstracts in this chapter are listed in Table 14.1, with the sample size for each topic.

Table 14.1: SAND abstracts for 2013–14 and sample size for each

Abstract number	Subject	Number of respondents	Number of GPs
211	Antiplatelet therapy in general practice patients	2,658	92
212	The prevalence of common chronic conditions in patients at general practice encounters 2012–14	14,391	479
213	Influenza and pneumococcal vaccination in general practice patients – 2013[(a)]	2,523	97
214	COPD prevalence, severity and management in general practice patients	5,583	196
215	Travel vaccination and prophylaxis in general practice patients – 2013	2,362	80
216	Management of opioid-induced constipation in general practice patients	2,891	98
217	Practice based continuity of care	7,799	269
218	Management of hypertension in general practice patients – 2013	2,419	82
219	Use of combination products in the management of hypertension in general practice patients	2,528	86
220	Management of asthma and COPD in general practice patients in Australia – 2013	2,818	96
221	Patient weight, perception and management[(b)]	5,199	204
222	GP encounters in languages other than English and interpreter use	6,074	206

Note: COPD – chronic obstructive pulmonary disease

(a) Substudy limited to patients aged 15 years and over.

(b) Substudy limited to patients aged 18 years and over.

SAND abstract number 211: Antiplatelet therapy in general practice patients

Organisation collaborating for this study: Merck Sharp and Dohme (Australia) Pty Ltd

Issues: The proportion of general practice patients who had atherosclerotic disease or diabetes and the proportion of those who had coronary artery bypass graft (CABG) and/or percutaneous coronary intervention (PCI) and/or were taking antiplatelet drugs. Their original and current antiplatelet drugs and reason for change of drug, and expected duration of therapy.

Sample: 2,658 patients from 92 GPs; data collection period: 14/08/2012 – 17/09/2012.

Method: Detailed in the paper entitled *SAND Method 2013–14* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Summary of results

Of 2,648 patients who provided patient age, there were significantly more respondents aged <1 year (3.6%; 95% CI: 2.6–4.6 compared with 1.8%; 95% CI: 1.7–1.9) and 1–4 years (6.5%; 95% CI: 4.8–8.3 compared with 4%; 95% CI: 4.2–4.7), than among patients at all 2011–12 BEACH encounters, and significantly fewer aged 65–74 years (9.3%; 95% CI: 7.8–10.8 compared with 13.4%; 95% CI: 12.8–13.9).

Patient sex was known for 2,646 respondents of whom 38.2% (95% CI: 34.9–41.5) were male, a significantly smaller proportion than among those at all BEACH encounters in 2011–12, where 43.5% (95% CI: 42.7–44.3) were male.

Of the 2,658 respondents, 402 (15.1%, 95% CI: 12.3–18.0) reported having any atherosclerotic disease or diabetes with 99 (3.7% 95% CI: 2.4–5.1) having two or more conditions. Of the 2,658 patients, 149 (5.6%, 95% CI: 3.8–7.4) had atherosclerotic disease; 60 (2.3%, 95% CI: 1.4–3.1) had experienced a single myocardial infarction; 10 patients (0.4%, 95% CI: 0.2–0.6) had multiple myocardial infarctions; 86 (3.2%, 95% CI: 2.1–4.4) had a stroke or transient ischaemic attack (TIA); 40 (1.5%, 95% CI: 0.6–2.4) had peripheral vascular disease (PVD)/ peripheral arterial disease (PAD); and 187 (7.0%, 95% CI: 5.7–8.4) had diabetes.

Of 402 patients with a listed condition, 378 responded to the procedure question, 82 (21.7%, 95% CI: 15.8–27.6) reported at least one procedure and 4 (1.1%, 95% CI: 0.0–2.1) two or more. A CABG had been performed on 42 patients (11.1%); 6 (1.6%) had a PCI without stent; 15 (4.0%) had undergone a PCI with stent; and 6.1% had undergone a PCI drug-eluting stent.

Responses to medication questions were recorded for 387 of the 402 patients. Of these, 67.4% were currently taking at least one oral antiplatelet, and for 80.5% of these, their current regimen was that originally prescribed (i.e. had not been changed).

Of the 261 patients currently taking an antiplatelet, 73.6% were taking aspirin; 19.2% were taking clopidogrel; 2.7% were taking aspirin and clopidogrel; 0.8% were taking prasugrel.

Of 71 patients who had an antiplatelet medication changed or stopped, 63.4% were commenced on aspirin, 22.5% on aspirin plus clopidogrel, 5.6% on clopidogrel, and 8.5% on other medications.

The reasons for change included 'high bleeding risk' (recorded for 19.7% of patients with medication changes); 'more effective/additional therapy needed' (for 36.6%); 'treatment no longer needed' (for 21.1%); and 'adverse effect' (for 9.9%).

Expected duration of current antiplatelet treatment was reported for 247 patients. For 97.6% of these patients, the GP expected the treatment to be required for more than 12 months.

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

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **ANTIPLATELET THERAPY.**

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

INSTRUCTIONS

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

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

Patient conditions

Please use the tick boxes to advise whether the patient **currently has**, or has a **history of, atherosclerotic disease** (e.g. coronary artery disease; cerebrovascular disease), **or any of the other listed conditions**.

Tick all that apply.

If the patient has **not** had any of the listed conditions, you may **end questions here** for this patient.

Note: *TIA = transient ischaemic attack; PVD = peripheral vascular disease; PAD = Peripheral arterial disease.*

Procedures

Please advise if the patient **underwent one or more of the listed procedures**.

Tick all that apply.

Note: *CABG = coronary artery bypass graft; PCI = percutaneous coronary intervention*

Original oral antiplatelet

Please use the tick boxes to advise which **oral antiplatelet** medication(s) was **originally** used to treat the patient.

Tick all that apply.

If the antiplatelet was one **other than those listed**, please **write the name** of the medication in the space provided.

Note: *FDC = fixed-dose combination*

Current oral antiplatelet

If the patient's **current** oral antiplatelet medication is the **same as originally prescribed**, please tick the box labelled **'unchanged'** and **go to the final question**.

If it is **NOT** the same (i.e. a **different** or **additional** antiplatelet), please advise the **current oral antiplatelet** medication/s.

Tick all that apply.

If the current oral antiplatelet is, or includes, one **other than those listed**, please **write the name** of the medication/s in the space provided.

Reason for medication change

Where oral antiplatelet **has been changed** (i.e. is not that originally prescribed), please use the tick boxes to advise the **reason for the medication change**.

Tick all that apply.

If the change was made because of an **adverse effect** related to the original medication, please **write a brief description** of the adverse effect (e.g. rash, GI bleed, diarrhoea, abdominal pain, constipation, etc) in the space provided.

Expected duration of treatment

Please advise the **approximate time** you expect the patient to require the current antiplatelet treatment.

Does the patient have (or have a history of): *(tick all that apply)*	**What procedure/s did the patient undergo?** *(tick all that apply)*	**With which oral antiplatelet/s was the patient originally treated?** *(tick all that apply)*	**What is the patient's current oral antiplatelet treatment?**	**If the oral antiplatelet was changed, for what reason/s?** *(tick all that apply)*	**How long do you expect the patient to require the current antiplatelet/s?**
☐ Atherosclerotic disease	☐ CABG	☐ Aspirin	☐ Unchanged → *(go to last question)*	☐ high bleeding risk	☐ <3 mths
☐ Myocardial infarct - single	☐ PCI without stent	☐ Clopidogrel	OR ☐ Aspirin *(tick all that apply)*	☐ more effective/additional therapy needed	☐ 3 - 12 mths
☐ Myocardial infarcts - multiple	☐ PCI bare metal stent	☐ FDC aspirin/clopidogrel	☐ Clopidogrel	☐ treatment no longer needed/ time since event	☐ >12 mths
☐ Stroke / TIA	☐ PCI drug-eluting stent	☐ Prasugrel	☐ FDC aspirin/colpidogrel	☐ adverse effect _____ *(please specify)*	☐ not applicable
☐ PVD / PAD	☐ None of the above	☐ Other _____ *(please specify)*	☐ Prasugrel	☐ cost	
☐ Diabetes	☐ Don't know	☐ None	☐ Other _____ *(please specify)*		
☐ None of above → **End Q's**	BL145C		☐ None		

SAND abstract number 212: The prevalence of common chronic conditions in patients at general practice encounters 2012–14

Organisation conducting this study: Family Medicine Research Centre

Issues: The prevalence among patients at general practice encounters of: common chronic conditions; two or more chronic conditions; three or more chronic conditions; two or more chronic conditions classified to two or more different ICPC-2 chapters; three or more chronic conditions classified to 3+ different ICPC-2 chapters (complex multimorbidity).

Sample: 14,391 patients from 479 GPs; data collection period: 27/11/2012 – 31/03/2014.

Method: Detailed in the paper entitled *SAND Method 2013–14* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>. This study combines the results from two SAND prevalence substudies. The chronic conditions measured were consistent across both these studies.

Summary of results

The sex distribution of patients in this sample (with female patients accounting for 60.3%) did not differ from that of all patients at unweighted 2013–14 BEACH encounters. The age distribution did not differ from patients at all unweighted 2013–14 BEACH encounters.

The most prevalent chronic condition was hypertension, reported for one-quarter (26.3%) of patients sampled. The prevalence of other common chronic conditions were: osteoarthritis (23.4%); hyperlipidaemia (17.4%); depression (16.6%); anxiety (12.0%); gastro-oesophageal reflux disease (11.3%); chronic back pain (9.9%); type 2 diabetes (9.5%); asthma (8.8%); obesity (8.2%); ischaemic heart disease (7.5%); malignant neoplasms (5.9%); osteoporosis (5.9%); chronic obstructive pulmonary disease (4.6%); hypothyroidism (4.6%); atrial fibrillation (4.3%); insomnia (3.9%); other arthritis (3.0%); chronic renal failure (2.7%); congestive heart failure (2.6%); cerebrovascular accident (2.5%); dementia (2.3%); sleep apnoea (2.2%); peripheral vascular disease (1.6%); glaucoma (1.6%); rheumatoid arthritis (1.4%); type 1 diabetes (0.9%); and hyperthyroidism (0.6%).

When chronic conditions were classified by ICPC-2 chapter (largely based on body systems), one-third of patients had at least one chronic musculoskeletal condition (33.0%). The prevalence of at least one chronic condition in other ICPC-2 chapters were: circulatory (32.2%); endocrine (31.1%); psychological (26.9%); respiratory (15.4%); digestive (15.1%); neurological (4.3%); male & female genital (4.1%); urinary (4.0%); skin (3.3%); general & unspecified (3.0%); eye (2.8%); blood & blood-forming organs (1.8%); ear (0.7%); pregnancy (0.1%) and social (0.1%).

About half (52.0%, 95% CI: 50.1–54.0) the sampled patients at GP encounters had two or more chronic conditions. Over one-third (37.5%, 95% CI: 35.5–39.4) of patients had three or more chronic conditions. The proportion of patients with chronic conditions within two or more ICPC-2 chapters was 48.3% (95% CI: 46.3–50.3). The proportion of sampled patients with complex multimorbidity (chronic conditions classified to three or more ICPC-2 chapters) was 30.3% (95% CI: 28.5–32.2).

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

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **PATIENT'S CHRONIC CONDITIONS / PROBLEMS.**

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

START Time

:

AM / PM
(please circle)

Start time

Record the time the consultation STARTED in hours and minutes and circle whether the time was AM or PM.

For example: 9:10

(AM) / PM
(please circle)

INSTRUCTIONS

Answer these questions for **EACH** of the **next 30 PATIENTS in the order in which the patients are seen.**

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

Use your own knowledge, patient knowledge and your records as you see fit, in order to answer these questions.

Finish time

Record the time the consultation FINISHED in hours and minutes and circle whether the time was AM or PM.

For example: 9:28

(AM) / PM
(please circle)

Frequency of GP visits

Please write the approximate **number of times (including today's visit)** the patient has **seen any GP for any reason** in the **past 12 months**. Use patient recall, and/or your notes or knowledge, to give the best estimate.

Abbreviations

BMI = body mass index
IHD = ischaemic heart disease
CHF = congestive heart failure
Periph Vasc Dis = peripheral vascular disease
CVA = cerebrovascular accident
COPD = chronic obstructive pulmonary disease (including emphysema)
GORD = gastro-oesophageal reflux disease

Patient chronic conditions/problems

The aim of these questions is to estimate the **prevalence** and **patterns** of **multimorbidity** in general practice patients. With an ageing population, the prevalence of multimorbidity is expected to increase and much of the care will fall on general practice. This study will highlight the complexity of multimorbidity and assist in planning for future health service needs.

If the patient has **NO chronic problems** please tick the box labelled '**NO chronic problems in this patient**', and go to the 'finish time' question.

If the patient **DOES** have **chronic conditions or problems**, please **use the tick boxes to indicate which ones** they have (irrespective of whether you have managed them today). Tick as many as apply.

If the patient has a **malignant neoplasm(s)** please **specify the primary site** of the neoplasm.

If the patient has any **other chronic problems or conditions** that are **not listed** please specify these in the **'Other chronic problems not listed'** section.

Approx. how many times has this patient seen any GP in the past 12 months (including today)?

No: _____

☐ Don't know

Does the patient have any chronic conditions/ problems?

(Tick all that apply)

Musculoskeletal
- ☐ Osteoarthritis
- ☐ Rheumatoid arthritis
- ☐ Other arthritis
- ☐ Osteoporosis
- ☐ Chronic back pain

Psychological
- ☐ Depression
- ☐ Anxiety
- ☐ Insomnia
- ☐ Dementia (incl Alzheimer's)

Endocrine / nutritional
- ☐ Hyperlipidaemia
- ☐ Diabetes Type 1
- ☐ Diabetes Type 2
- ☐ Obesity (BMI ≥30)
- ☐ Hypothyroidism
- ☐ Hyperthyroidisim

Cardiovascular
- ☐ Hypertension
- ☐ IHD
- ☐ CHF
- ☐ Periph.Vasc. Dis
- ☐ CVA/stroke
- ☐ Atrial fibrillation

Other chronic problems
- ☐ Asthma
- ☐ COPD
- ☐ Sleep apnoea
- ☐ Chronic renal failure
- ☐ GORD
- ☐ Glaucoma
- ☐ Malignant neoplasm → Site: _____

Other chronic problems not listed: *(please specify)*

_____

_____

_____

☐ **NO chronic problems in this patient → Go to last question**

FINISH Time

:

AM / PM
(please circle)

BL152C

SAND abstract number 213: Influenza and pneumococcal vaccination in general practice patients – 2013

Organisation collaborating for this study: bioCSL (Australia) Pty Ltd

Issues: The proportion of general practice patients with indications for influenza and pneumococcal vaccination; the proportion of patients who received an influenza/pneumococcal vaccine; how the vaccine was supplied; reasons for not vaccinating against influenza/pneumococcal. The proportion of patients aware of the influenza/pneumococcal campaign; whether this campaign prompted patients to ask a GP about vaccination.

Sample: 2,523 patients aged 15+ years from 97 GPs; data collection period: 26/03/2013 – 30/04/2013.

Method: Detailed in the paper entitled *SAND Method 2013–14* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Summary of results

The age and sex distributions of the 2,523 respondents aged 15 years and over did not differ from the age and sex distributions of all patients at 2012–13 BEACH encounters.

Of 2,523 respondents, more than half had at least one risk factor for influenza (50.5%) or pneumococcal disease (55.1%). More than one-third (38.4%) of total respondents were at-risk due to being aged 65+ years, 13.4% had chronic heart disease, 11.3% had diabetes and 10.4% had chronic lung disease. Nearly 1 in 10 patients were at-risk due to tobacco smoking (9.2%), 3.6% had chronic renal failure and 1.0% were pregnant.

Influenza: Of 2,523 respondents, 29.0% had one risk factor and 14.5% had two. More than half of 2,499 respondents had received an influenza vaccination (55.7%), including 82.4% (n = 1,036) of those with at least one risk factor. Influenza vaccination was free to 79.6% of 1,327 patients, fully privately funded by 17.0% of patients and PBS subsidised for 3.5%.

Of 140 at-risk patients not vaccinated, 64.3% objected to vaccination, for 18.6% the GP assessed the patient as not at-risk and 17.9% of patients did not agree they were at-risk.

Pneumococcal infection: Of 2,523 respondents, 32.1% had one risk factor and 15.5% had two. One-third (33.9%) of 2,386 patients had received a pneumococcal vaccination. More than half with at least one risk factor had been vaccinated (57.9%, n = 770), while 37.4% had not been vaccinated. Of 766 patients who had been vaccinated, 96.1% of pneumococcal vaccines were free to the patient, 3.1% were PBS subsidised and 0.8% fully privately funded. For 45.6% of 331 at-risk patients not vaccinated, the GP did not assess the patient at-risk of pneumococcal disease, 39.3% of patients objected to vaccination and 14.2% did not agree they were at-risk.

Awareness: Nearly half (46.7%) of 2,328 respondents had seen a consumer awareness campaign about influenza and/or pneumococcal infection. For 31.3% of these patients, this prompted a discussion with the GP about vaccination (333 of 1,065 respondents).

A consumer awareness campaign had been seen by more than half (54.6%) of the 185 patients who had a risk factor for influenza and had not been vaccinated, and by 49.9% of the 469 patients with a pneumococcal risk factor who had not been vaccinated.

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

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **INFLUENZA AND PNEUMOCOCCAL VACCINATION.**

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

INSTRUCTIONS

The following 30 forms relate to the **next 30 PATIENTS in the order in which the patients are seen.**

For any patients aged less than 15 years, please leave the questions in the bottom section blank.

For patients aged 15+ years

Risk factors for influenza and pneumococcal infection

Please use the tick boxes to indicate whether the patient has any of the listed **risk factors** or **indications** for **influenza** and/or **pneumococcal** vaccination.

Please tick as many as apply.

If the patient **does not** have any of the listed risk factors/ indications please tick the box labelled '**none of the above**'.

Vaccination status

Please use the tick boxes to indicate whether the patient is **currently vaccinated for influenza** (i.e. within the past 12 months) and/or **pneumococcal** (i.e. within the past 5 years)**.**

Patients who WERE vaccinated

For patients who **received an influenza and/or pneumococcal vaccination** please indicate for each vaccine whether it was:

- **supplied free of charge** to the patient (i.e. under the Government's Immunise Australia Program),
- **subsidised by PBS** or
- **fully privately paid (e.g by the patient, employer)**.

Patients who were NOT vaccinated

For patients who **did not** receive the **influenza and/or pneumococcal vaccination** please indicate the **reasons that the vaccine(s) was/ were not given**.

Please tick all options that apply.

If the reason for not vaccinating is one **other** than those listed, please **write the reason/s in the space/s provided** at the bottom of the box for each of the vaccinations.

Consumer disease awareness campaign

Please indicate whether, during 2013, the patient has seen a **consumer awareness campaign** about **influenza and/or pneumococcal disease**.

If '**yes**', please indicate whether this campaign prompted the patient to **ask** a GP **about vaccination**.

(If 15+ years) **Does the patient have:**	**Is the patient currently vaccinated for influenza (in past 12 mths) or pneumococcal (past 5 yrs)?**	**If patient IS VACCINATED, how was the vaccine(s) supplied?** *(tick all that apply)*	**If patient IS NOT VACCINATED, the reason(s) was:**	**In 2013, has the patient seen a consumer awareness campaign about influenza and/or pneumococcal disease?**	**If 'yes', did it prompt the patient to ask a GP about vaccination?**
☐ Chronic heart disease					
☐ Chronic lung disease					
☐ Diabetes *(tick all that apply)*					
☐ Chronic renal failure					
☐ Other chronic disease					
☐ Immune deficiency (e.g. HIV)					
☐ Pregnancy					
☐ Tobacco smoker					
☐ **None of the above** BL151B					

Is the patient currently vaccinated for influenza (in past 12 mths) or pneumococcal (past 5 yrs)?

	Influ	Pneum
Yes	☐	☐
No	☐	☐
Don't know	☐	☐

If patient IS VACCINATED, how was the vaccine(s) supplied? *(tick all that apply)*

	Influ	Pneum
Free to patient *(i.e. Govt supplied)*	☐	☐
PBS subsidised	☐	☐
Fully privately funded	☐	☐

If patient IS NOT VACCINATED, the reason(s) was: *(tick all that apply)*

	Influ	Pneum
GP assessed patient as not at risk	☐	☐
Patient objection	☐	☐
Cost to patient	☐	☐
Patient disagrees with risk assessment	☐	☐

Other reason *(please specify below ...)*

Influ _____ **Pneum** _____

In 2013, has the patient seen a consumer awareness campaign about influenza and/or pneumococcal disease?

☐ Yes
☐ No

If 'yes', did it prompt the patient to ask a GP about vaccination?

☐ Yes
☐ No

SAND abstract number 214: COPD prevalence, severity and management in general practice patients

Organisation collaborating for this study: Novartis Pharmaceuticals Australia Pty Ltd

Issues: The proportion of patients with diagnosed COPD +/- asthma; severity of COPD; management of COPD.

Sample: 5,583 patients from 196 GPs; data collection periods: 26/03/2013 – 30/04/2013; 03/12/2013 – 20/01/2014.

Method: Detailed in the paper entitled SAND Method 2012–13 on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Method for this substudy: Severity of COPD assessed using GOLD guidelines (Rabe KF et al. 2007, Am J Respir Crit Care Med 176(6):532-55). *LABA – long-acting beta agonist; LAMA – long-acting muscarinic agent; ICS – inhaled corticosteroid.*

Summary of results

The initial question about diagnosed COPD +/- asthma was completed by 5,583 patients. Age was known for 5,551 and sex for 5,541 patients. The age and sex distributions did not differ from those of patients at all BEACH encounters in 2012–13.

Of 5,583 respondents, 297 (5.3%, 95% CI: 4.5–6.1) had diagnosed COPD. Of these, half (*n* = 148) had COPD with asthma and half (*n* = 149) had COPD without asthma. A further 532 (9.5%) had asthma without COPD.

There was no significant difference between the proportions of male and female patients with diagnosed COPD (6.4% males and 4.5% females). Age-specific rates showed that COPD increased with patient age – only five patients aged <45 years had COPD; 4.5% of those aged 45–64; 9.7% of those aged 65–74 and 12.6% of patients aged 75 years or older.

For 289 COPD respondents, GPs reported that 37.7% had mild COPD; 40.8% moderate COPD; 17.3% severe COPD and 4.2% had very severe COPD.

Of 287 respondents with COPD, 21 patients (7.3%) were taking LAMA + LABA; 108 patients (37.6%) took LAMA + LABA/ICS; 54 patients (18.8%) took LAMA without LABA or LABA/ICS, and 104 (36.2%) did not take LAMA.

Regimen information was available for 120 of the 129 patients taking LAMA + LABA or LAMA + LABA/ICS. Of these, 34 patients (28.3%) had taken both agents since diagnosis and 71.7% had taken one agent initially with the other added later. Of the 20 patients taking LAMA + LABA, six had taken both agents since diagnosis and 14 had taken one initially with the other added later. Of 100 patients taking LAMA + LABA/ICS, 28 had taken both since initial diagnosis and 72 had taken one agent initially with the second added later.

Severity and LAMA medication status was known for 279 patients. Of these, LAMA was taken by 44.6% of patients with mild COPD; 70.5% of patients with moderate COPD; 87.8% of patients with severe COPD; and 91.7% of patients with very severe COPD.

Primary use for the combination treatment was recorded for 127 of the 129 patients taking LAMA + LABA (or LABA/ICS). For 24.4% of patients, the primary reason was 'breathing problems'; for 11.0% 'managing exacerbations' was the primary reason, and both reasons were reported for 64.6%.

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

Severity of Chronic Obstructive Pulmonary Disease (COPD) reference card

Severity	Measure	Symptoms
Mild	$FEV_1/FVC < 0.7$ $FEV_1 \geq 80\%$ predicted	Characterised by mild airflow limitation. Symptoms of chronic cough and sputum production may be present.
Moderate	$FEV_1/FVC < 0.7$ $FEV_1 \geq 50$ and $<80\%$ predicted	Characterised by worsening airflow limitation. Shortness of breath typically developing on exertion, chronic cough and sputum production may also be present.
Severe	$FEV_1/FVC < 0.7$ $FEV_1 \geq 30$ and $<50\%$ predicted	Characterised by further worsening of airflow limitation. Greater shortness of breath, reduced exercise capacity, fatigue, and repeated exacerbations that almost always have an impact on patients' quality of life.
Very severe	$FEV_1/FVC < 0.7$ $FEV_1 <30\%$ predicted ***or*** $FEV_1 <50\%$ predicted plus chronic respiratory failure[(a)]	Characterised by severe airflow limitation. Quality of life is very appreciably impaired and exacerbations may be life threatening.

(a) Respiratory failure is defined as arterial pressure of oxygen (Pa_{O2}) <8.0 kPa (60 mm Hg) with or without arterial partial pressure of CO_2 (Pa_{CO2})>6.7 kPa (50 mm Hg) while breathing at sea level.

Note: FEV_1—post bronchodilator forced expiratory volume in one second; FVC—forced vital capacity (maximal inspiration); FEV_1/FVC—ratio of forced expiratory volume to forced vital capacity.

Source: Rabe KF, Hurd S, Anzueto A, Barnes PJ, Buist SA, Calverley P et al. 2007. Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease: GOLD executive summary. Am J Respir Crit Care Med 176(6):532-555.

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **MANAGEMENT OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE.**

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

INSTRUCTIONS

Please answer the following questions for **EACH** of the **next 30 PATIENTS in the order in which the patients are seen.**

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

Chronic Obstructive Pulmonary Disease (COPD) and Asthma

Please use the tick boxes to indicate whether this patient has been diagnosed with **COPD (without asthma)**, **COPD with asthma** or **asthma (without COPD)**.

If the patient has been diagnosed with COPD (with or without asthma) please continue the questions.

If the patient has **not been diagnosed with COPD** please **finish the questions here** for this patient.

Severity of COPD

Referring to the **COPD severity scale** on the **laminated card** in your research pack, please indicate the **severity of the patient's COPD**.

Current COPD medication/s

Please use the tick boxes to advise which of the **listed medications** the patient is **taking currently for management of their COPD**. Tick as many as apply.

If the patient is taking medication/s for COPD other than those listed, please **write the medication/s in the space/s provided.**

If the patient is **taking one of the first two listed combinations** of medication please **continue** to the next question.

If the patient is **not taking** one of these combinations, please **finish the questions here** for this patient.

LABA = Long-acting beta agonist
LAMA = Long-acting muscarinic agent
ICS = Inhaled corticosteroid
SABA = Short-acting beta agonist

Regimen of COPD medication from time of diagnosis

If the patient is taking a **combination** of

1. **LABA + LAMA**, or of
2. **LABA / ICS + LAMA**,

please advise whether the combinations were **initiated at the time of COPD diagnosis** or were initiated **separately, one subsequent to the other**.

Primary reason for combination of treatment

Please advise whether the **objective** for this combination of medications is primarily for **breathing problems**, for treatment of **COPD exacerbations** or for **both reasons** equally.

Has this patient been diagnosed with:

- ☐ COPD with Asthma → continue
- ☐ COPD without Asthma → continue
- ☐ Asthma without COPD → End questions
- ☐ None of the above → End questions

BL158B

How severe is the patient's COPD? *According to the GOLD guidelines (see card)*

- ☐ Mild
- ☐ Moderate
- ☐ Severe
- ☐ Very Severe

What medication is the patient currently taking for COPD management?

- ☐ LABA + LAMA
- ☐ LABA / ICS + LAMA

→ *(Please continue only if the patient is taking one of these combinations...)*

- ☐ LAMA
- ☐ LABA / ICS
- ☐ LABA
- ☐ ICS
- ☐ SABA
- ☐ Other: *(please specify)* 1. _____ 2. _____

For patients taking:-
1. LABA + LAMA *or*
2. LABA / ICS + LAMA
has the patient been...

- ☐ treated with both agents since diagnosis of COPD?
- ☐ treated with one agent initially with the other added later?

Has this combination of treatments been used primarily for:

- ☐ Breathing problems?
- ☐ Management of COPD exacerbations?
- ☐ Both?

SAND abstract number 215: Travel vaccination and prophylaxis in general practice patients – 2013

Organisation collaborating for this study: bioCSL (Australia) Pty Ltd

Issues: The proportion of patients who travelled overseas in the previous 2 years; countries visited; travel advice sought; vaccination and prophylaxis status; discussion of risk of disease with the GP; and reasons for non-vaccination.

Sample: 2,362 patients from 80 GPs; data collection period: 01/05/2013 – 03/06/2013.

Method: Detailed in the paper entitled SAND Method 2012–13 on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Summary of results

The initial question about travel overseas in the previous 2 years was completed by 2,362 patients. Age was known for 2,347 and sex for 2,347 patients. The age and sex distributions did not differ from those of patients at all BEACH encounters in 2011–12.

Of 2,362 respondents, 476 (20.2%, 95% CI: 17.1–23.2) had travelled overseas in the previous 2 years. A smaller proportion of patients aged < 15 years and aged 75 + had travelled overseas.

All following results relate only to the most recent overseas trip.

Of 473 travellers, 76.7% had visited one country, 14.8% two countries, and 8.5% three or more countries. The 'main' destinations most frequently visited were New Zealand (NZ) (14%), United States of America (USA) (10%) and Thailand (9%).

Of the 473 travellers, 287 (60.7%, 95% CI: 55.5–65.9) had travelled to one or more 'at-risk' destinations: 58.4% (of 473) to countries with a risk for hepatitis B, 55.4% for typhoid, 53.1% for hepatitis A, 45.0% for rabies, 6.1% for malaria and 2.1% for yellow fever.

Of 453 respondents (who each reported nil, one or more sources of advice): 64.0% had not sought travel advice before travel; 30.0% had sought advice from a GP; 3.3% from a travel clinic; and 2.9% from the internet. Of the 277 respondents who had travelled to at-risk destinations, 52.3% had not sought advice and 39.7% had sought advice from a GP.

For each of six infectious diseases we investigated the patient's pre-travel vaccination status and discussion of infection risk. The following results should be interpreted with caution, as the number of respondents and the proportion of completed questions varied considerably.

Of 185 respondents visiting at least one at-risk country, only 7.0% had been fully vaccinated/given prophylaxis for all relevant diseases (out of the six diseases listed below). The proportion of respondent travellers who were fully vaccinated (or malaria prophylaxis) for each specified disease prior to travel was: 53.8% of 160 respondents travelling to a hepatitis A risk destination; 51.2% of 164 respondents for a typhoid risk destination; 37.5% of 160 for hepatitis B; 52.2% of 23 for malaria; 77.8% of 9 for yellow fever; and 5.2% of 116 respondents travelling to a rabies risk destination. For each of these diseases, the proportion of respondent travellers who were both 'at-risk' and 'had not discussed the risk' was 14.8%, 14.9%, 12.7%, 14.9%, 11.6% and 16.4% respectively.

Of 57 'not fully-vaccinated' respondents visiting an at-risk country, the reason for lack of full protection was 'Patient refusal' for 31.6% and 'Did not consult GP/doctor 'for 26.3%.

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

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **TRAVEL VACCINATIONS AND PROPHYLAXIS MEDICATION.**

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

INSTRUCTIONS

Ask **EACH** 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.

Overseas travel

Please advise whether this patient has **travelled overseas** in the **past 2 years**.

If '**yes**' please specify how many times this patient has **travelled overseas.**

If '**no**' you can **end questions here for this patient**.

The remaining questions on this form relate to the patient's most recent overseas trip. Patients who have made multiple overseas trips in the past 2 years should answer the questions pertaining to the most recent trip.

Destination country, rurality and length of stay

Please **specify the country where the patient spent the most time during** the most recent overseas trip.

Please also record details of **other countries** visited in the same trip.

For **each country** please use the tick boxes to indicate whether:

- the patient **stayed overnight in a rural area**
- the **length of time spent in the country was ≤4 weeks.**

Infectious diseases

Prior to the most recent trip - for **each of the specified infectious diseases**, please indicate whether:

- the patient was **fully vaccinated**, regardless of whether the vaccination was specifically given for this trip. For malaria, please advise whether prophylaxis medication was given.
- the **risk** of each **disease was OR was not discussed** with the patient in regard to the travel destination(s), and/or
- the patient was **not** considered to be **at risk of contracting the disease** in the travel destination(s).

Note: at least one response should be recorded for each of the listed diseases.

Travel advice

Prior to the most recent trip please indicate whether the patient **sought travel advice** about **vaccinations or prophylaxis medications,** and where this advice was sought.

Vaccination/prophylaxis not given

When a **vaccination**(s) and/or **prophylaxis medication**(s) was **indicated** for the patient's travel destination but **not given to the patient** please use the tick boxes to indicate **why** it/they were not given.

Please **write a number** in the space provided (under the label '**Disease No.**') to indicate the disease/s to which each of the reason/s relate.

If the '**other**' label applies, please **specify the reason** in the space provided.

Has the patient travelled overseas in the past 2 years?

☐ Yes - please specify how many trips: _____

☐ No → **End questions** BL152B

The remaining questions relate to the most recent overseas trip

Country where most time was spent:	Overnight stay in rural area?	Length of stay ≤4 weeks?
_____	☐	☐
Other countries visited: *(in the same trip)*		
_____	☐	☐
_____	☐	☐
_____	☐	☐

PRIOR TO TRAVEL: Did the patient seek travel vaccination or prophylaxis advice?

☐ Yes - from GP
☐ Yes - travel clinic
☐ Yes - internet
☐ Yes - other
☐ No

For each disease, was:	Patient fully vaccinated?	Risk discussed? Yes	Risk discussed? No	Patient not at risk?
1. Rabies	☐	☐	☐	☐
2. Typhoid	☐	☐	☐	☐
3. Yellow fever	☐	☐	☐	☐
4. Hepatitis A	☐	☐	☐	☐
5. Hepatitis B	☐	☐	☐	☐
	Prophylaxis given?			
6. Malaria	☐	☐	☐	☐

If indicated but *not* given, why not? Disease No.

☐ Insufficient time prior to travel..... ____
☐ Cost..... ____
☐ Patient refusal.... ____
☐ Other *(please specify):*
_____ ____

SAND abstract number 216: Management of opioid-induced constipation in general practice patients

Organisation collaborating for this study: AstraZeneca Pty Ltd (Australia)

Issues: Proportion of patients consulting a GP who have taken an opioid for chronic non-cancer pain; type(s) of opioids taken; duration of opioid use. Proportion of these patients who experienced opioid-induced constipation requiring laxative treatment; first, second and third line laxative treatment; proportion who needed rescue therapy; type(s) of rescue therapy used; number of times rescue therapy was used in the previous 12 months.

Sample: 2,891 patients from 98 GPs; data collection period: 04/06/2013 – 15/07/2013

Method: Detailed in the paper entitled *SAND Method 2013–14* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Methods for this substudy: An information card on types of medication used for constipation was supplied to participating GPs.

Summary of results

The sex distribution of respondents in this sample did not differ from patients at all 2012–13 encounters. There were fewer patients aged 25–44 years and more patients aged 75 and over in this sample, compared with patients in these age groups at all 2012–13 BEACH encounters.

Of the 2,891 respondents, 340 (11.8%) had taken opioid medication in the previous 12 months for non-cancer pain: 72 (2.5%) patients had taken opioids for less than 4 weeks (accounting for 21.2% of patients who had taken an opioid) and 268 (9.3%) had taken them for 4 weeks or more (78.8% of those who took an opioid).

Opioid use in young patients was rare. A significantly smaller proportion of patients aged 25–44 years had taken an opioid compared with those aged 75 years or older, but there was no significant difference in the likelihood between patients aged 45–64, 65–74 and 75 years or older. Likelihood also did not differ between the sexes.

Of 268 patients who had taken an opioid for 4 weeks or more, 77.2% had taken one opioid and 19.0% had taken two. A total of 330 opioids were recorded: 71.2% were natural opium alkaloids, 14.2% were oripavine derivatives, and 6.4% were 'other opioids'. Oxycodone was the most common type of opioid (accounting for 40.9% of those recorded), followed by paracetamol/codeine 30mg (14.8%), and buprenorphine (14.2%). Duration of use was known for 307 opioids listed, and most (63.5%) had been taken for 7 months or more.

Among 264 respondents, 118 (44.7%) had used a laxative for opioid-induced constipation. Of 116 respondents, 59.5% only required first line treatment, 35.3% needed second line treatment, and 5.2% needed third line treatment. As first line treatment, 39.7% (of those taking a laxative) took an osmotic laxative, 34.5% took a softener/stimulant, 31.9% took a bulk laxative, 9.5% took a stimulant laxative, and 1.7% ate prunes. As second line treatment, 19.8% (of those taking a laxative) took a softener/stimulant, 13.8% took an osmotic laxative, 7.8% took a stimulant laxative, and 3.4% took a bulk laxative.

Among 116 respondents, 7.8% had needed rescue therapy for constipation in the previous 12 months: six had an enema or manual evacuation administered at home (three patients had it once, and one patient had it 3 times), one patient visited the hospital for an enema or manual evacuation (4 times), and two recorded 'other' rescue therapy.

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

Types of laxatives

Laxative type	Active ingredient/s
Bulk	Psyllium husk (e.g. metamucil, nucolox, fibre health) Ispaghula (e.g. fybogel) Sterculia and rhamnus frangula (e.g. normacol) Methylcellulose
Softener & stimulant	Docusate-senna (e.g. coloxyl with senna)
Stimulant	Bisacodyl (e.g. dulcolax, lax-tab) Senna (e.g. senokot)
Osmotic	Lactulose (e.g. duphalac, actilax, genlac, lac-dol) Macrogol 3350 (e.g. movicol)
Other	Suppositories, enemas etc.

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **OPIOID INDUCED CONSTIPATION.**

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

INSTRUCTIONS

Ask **EACH** 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.

Types of laxatives*

Laxative type	Active ingredient/s
Bulk	Psyllium husk (e.g. metamucil, nucolox, fibre health) Ispaghula (e.g. fybogel) Sterculia and rhamnus frangula (e.g. normacol) Methylcellulose
Softener & stimulant	Docusate-senna (e.g. coloxyl with senna)
Stimulant	Bisacodyl (e.g. dulcolax, lax-tab) Senna (e.g. senokot)
Osmotic	Lactulose (e.g. duphalac, actilax, genlac, lac-dol) Macrogol 3350 (e.g. movicol)
Other	Suppositories, enemas etc.

Note: these definitions are also included on a laminated card in your research pack.

Opioid use

Please advise whether this patient has taken **opioid medication for chronic non-cancer pain** in the past 12 months.

If '**yes**' please indicate whether opioids have been taken for a **duration of less than 4 weeks** or for **4 weeks or more.**

If '**no**' please **end questions here for this patient.**

Opioid induced constipation

Please indicate whether the patient experiences **constipation associated with opioid use**, that **requires treatment.**

If '**no**' please **end questions here for this patient.**

Rescue therapy

Please indicate the **number of times in the past 12 months** the patient needed **rescue therapy** for constipation.

Opioid medication

Please write the **name** and **form** of the **opioid medication/s** taken by the patient, including the regimen (i.e. **strength, dose and frequency**) of the medication.

Please also specify the **duration** that the opioid has been taken by this patient.

Laxative use

Please indicate the **type/s of laxative/s** (see box above) used as:

- **First line treatment**: the **type/s of laxatives used initially** to manage the opioid induced constipation.
- **Second line treatment**: if **no change** was made to first line treatment please tick the box labelled '**no second line**'. If first line treatment was not satisfactory, please indicate the laxatives used as second line treatment. Please specify the **entire second line treatment** used, that is, include laxatives that are continuing as well as additions/changes.
- **Third line treatment**: if **no change** was made to second line treatment please tick the box labelled '**no third line**'. If third line treatment was needed, please indicate the **entire third line treatment** used.

In each treatment line please tick all that apply.

Has this patient taken opioid medication for chronic non-cancer pain in the past 12 months?	**Opioid medication taken is/was:** Name & Form / Strength / Dose / Freq / Duration of use	**Does/did the patient experience constipation, requiring laxative treatment, associated with opioid use?**	**First line laxative/s regimen:** (* See card; tick all that apply)	**Second line regimen:** (Tick all that apply)	**Third line regimen:** (Tick all that apply)	**Rescue therapy used in the past 12 months:** Number of times
☐ Yes - taken for <4 wks ☐ Yes - taken for ≥4 wks ☐ No → **End questions**	_____ ____mths _____ ____mths BL153B	☐ Yes ☐ No → **End Qs**	☐ Bulk* ☐ Softener & stimulant* ☐ Stimulant* ☐ Osmotic* ☐ Other* *(specify)*: _____	☐ **No second line** ☐ Bulk* ☐ Softener & stimulant* ☐ Stimulant* ☐ Osmotic* ☐ Other* *(specify)*: _____	☐ **No third line** ☐ Bulk* ☐ Softener & stimulant* ☐ Stimulant* ☐ Osmotic* ☐ Other* *(specify)*: _____	☐ Enema or manual evacuation administered at home ____ ☐ Visit GP for enema or manual evacuation ____ ☐ Visit hospital for enema or manual evacuation ____ ☐ Other: _____ ____

SAND abstract number 217: Practice based continuity of care

Organisation collaborating for this study: Family Medicine Research Centre

Issues: Proportion of patients, and proportion of those with chronic disease, who have a regular general practice ('that they usually visit'); relationship between having/not having a regular practice, and attendance frequency. Extent of, and reasons for, multiple practice usage among those with a regular practice.

Sample: 7,799 patients from 269 GPs; data collection: 04/06/2013–23/09/2013

Method: Detailed in the paper entitled *SAND Method 2013–14* on this website: <http://sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Summary of results

The sex-distribution of the responding patients did not differ from that of patients at all BEACH encounters in 2012–13, but this sample had a smaller proportion of patients aged 25–44 years (19.8%, 95% CI: 18.2–21.4) than average (22.5%, 95% CI: 21.8–23.2).

Of the 7,799 respondents, 96.0 (95% CI: 95.2–96.8) said they had a regular practice, 88.1% 'this' practice and 7.8% another practice. Adjusted for attendance rates, we estimated 94.4% (95% CI: 93.3–95.5) of the attending population and 80.3% (95% CI: 79.1–81.4) of the total population have a regular practice. Likelihood of having a regular practice did not differ between the sexes, was least likely among babies <1 year (92.2%), and most likely among those aged 65 years or more (98.6%).

Of 7,762 (99.5%) patients for whom presence/absence of diagnosed chronic condition(s) was reported, 70.6% (95% CI: 68.5–72.8) had one or more diagnosed chronic condition(s) and this proportion applied in both sexes. Likelihood increased step-wise with age, from 11.1% of babies (< 1 year), to 98.5% of those aged 75 years and over.

Of the 5,482 respondents who had one or more diagnosed chronic condition(s), 97.7% (95% CI: 97.1–98.3) had a regular practice and 2.3% did not. Among those with no chronic conditions (n = 2,280), a significantly smaller proportion, but still the vast majority (91.8%, 95% CI: 89.9–93.7) had a regular practice (80.7% 'this' practice and 11.1% another practice).

For 7,702 patients reporting number of GP visits (including the recorded encounter) in the previous 12 months, the mean was 9.2 (95% CI: 8.8–9.6), range 1–115 visits. Those with a regular practice had averaged 9.4 (8.9–9.8) visits, double the average of those without (mean 4.7, 95% CI: 3.7–5.8). Respondents with 1+ chronic conditions visited an average 10.8 times (95% CI: 10.3–11.3), double the rate of those with none (mean 5.2 visits, 95% CI: 4.9–5.5). This suggests the higher attendance rate among those with a regular practice is largely due to the high prevalence of one or more chronic conditions in this group.

Of the 7,485 patients with a regular practice, 7,386 responded to the question on visits to other practices. Of these, 78.4% (95% CI: 76.4.0–80.4) had not attended any other practice and the remaining 21.6% (n = 1,597) had attended an average of 1.3 (95% CI: 1.3–1.4) practices other than their regular practice over the previous 12 months.

Main reasons for other practice visits were: difficulties getting appointment at regular practice (26%): convenience of location (e.g. work, home) (26%); travelling (12.4%); emergency (12.0%), use for specific problem (9.5%).

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

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **PRACTICE-BASED CONTINUITY OF CARE.**

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

INSTRUCTIONS

Ask **EACH** 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.

Chronic conditions

Please indicate whether the patient has been **diagnosed with any chronic conditions.**

Regular general practice

Please ask the patient whether they have a **regular general practice that they usually visit**.

If '**yes**' please indicate whether the patient regards the **practice they are visiting today** as their **regular general practice.**

A general practice is defined as a group of primary care practitioners that share medical records.

Frequency of GP visits

Please ask the patient approximately how many **times (including today's visit)** they have **seen any GP for any reason** in the **past 12 months, at any practice**.

If the patient cannot recall, use your notes or knowledge, to give the best estimate.

General practices visited

Please ask the patient **how many other general practices they have visited in the past 12 months**. Do not include deputising services.

If the patient **did not** visit any other general practice please tick the box labelled '**none - only this practice**' and **end questions here for this patient**.

Reasons for visiting other practices

For patients who have visited any other general practice/s in the past 12 months, please indicate **why the other practice/s was/were visited**.

Examples of 'other practices used for specific health problems' include: a practice that provides specialised services such as acupuncture, skin clinic; seeking a female GP for female problems, etc.

Types of management provided at other practices

Please ask the patient whether they received any of the specified **types of management from any other general practice** in the **past 12 months**.

Does the patient have any diagnosed chronic conditions?	Ask the patient: Do you have a regular general practice* you usually visit?	Approx. how many times have you seen any GP in the past 12 months (including today)?	How many other general practices** have you visited in the past 12 months? (**Do not include deputising services)	Why was other practice/s visited? (tick all that apply)	At any other practice, have you received any of the following in the past 12 months? (tick all that apply)
☐ Yes ☐ No BL153C	☐ Yes - this one ☐ Yes - another one ☐ No (*a practice is a group of primary care practitioners who share medical records)	_____ ☐ Don't know	_____ ☐ None - only this practice → **End Qs**	☐ Unable to get appointment at regular practice ☐ Other practice/s used for specific problem/s ☐ Travelling (e.g. on holiday, away for work) ☐ Convenient practice location (e.g. near work, home) ☐ Emergency ☐ Second opinion ☐ Do not have a regular practice ☐ Other (please specify): _____	☐ Pathology order ☐ Imaging order ☐ Prescription ☐ Referral to specialist ☐ Referral to allied health professional ☐ Health care plan

SAND abstract number 218: Management of hypertension in general practice patients – 2013

Organisation collaborating for this study: Merck Sharp and Dohme (Australia) Pty Ltd

Issues: Diagnosed prevalence of hypertension among patients consulting a GP; medication(s) taken for hypertension; use of combination products; comorbidities; current blood pressure (BP); level of BP control; reasons for uncontrolled BP; next step in the management plan for patients with uncontrolled BP.

Sample: 2,419 patients from 82 GPs; data collection period: 16/07/2013 – 19/08/2013.

Method: Detailed in the paper entitled *SAND Method 2013–14* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Summary of results

The age and sex distributions of patients in this sample did not differ from those of patients at all 2012–13 BEACH encounters.

Of the 2,419 respondents, 735 (30.4%) had diagnosed hypertension and there was no significant difference in prevalence between the sexes. The prevalence rose significantly by age group from 15–24 (1.0%), 25–44 (7.2%), 45–64 (32.6%), to the highest among patients aged 65 years or older (63.0%).

Among 730 respondents with hypertension, 691 (94.7%) were currently taking at least one anti-hypertensive medication. Of these, almost half (47.2%) were taking a single anti-hypertensive product, one-quarter (25.8%) were taking two or more agents not as a combination product, and the remaining quarter (27.1%) were taking combination products.

An angiotensin II receptor antagonist (ATRA) was the most frequently listed anti-hypertensive medication type (29.0%), followed by angiotensin-converting-enzyme (ACE) inhibitor (27.1%), and calcium channel blocker (CCB) (25.8%).

Among 688 respondents with hypertension, 575 (83.6%) had at least one comorbidity: 54.5% having dyslipidaemia; 28.1% diabetes; 23.0% coronary heart disease; 8.0% cerebral vascular disease; 7.8% chronic kidney disease; 6.3% peripheral vascular disease; and 2.0% proteinuria. A family history of coronary artery disease was reported for 21.5% of respondents.

Current BP was recorded for 705 patients with hypertension. According to the National Heart Foundation BP categories, 45.0% of patients had high-normal BP, and 32.6% had isolated systolic hypertension (ISP) on that day.

Of 695 respondents with hypertension, 491 (70.6%) were considered by the GP to have well controlled BP, however most of them had either high-normal BP (61.4%) or ISP (26.4%) on that day. Of the 204 (29.4%) patients considered to have uncontrolled BP, the main reason reported by 32.3% was that the current medication was not efficacious, and 14.4% reported patient non-compliance.

No change in management was planned for 27.0% of the 204 patients with uncontrolled BP. Dose titration was the next step for 20.6%; 6.9% planned to add a CCB, 3.9% planned to add an ATRA, 2.9% planned to add a beta blocker, 2.5% planned to add a diuretic, and another 2.5% planned to add an ACE inhibitor as the next step in the management plan.

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

PLEASE READ CAREFULLY

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

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

INSTRUCTIONS

Please answer the following questions for **EACH** of the **next 30 PATIENTS in the order in which the patients are seen.**

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

Hypertension

Please indicate whether this patient has been **diagnosed with hypertension**.

If '**no**' please **end questions here** for this patient.

Comorbidities

Please use the tick boxes to advise whether the patient has any of the listed **comorbidities**. Tick all that apply.

If the patient has a **chronic disease** that is not listed please write it in the space provided.

If the patient **does not have** any chronic disease please tick the box labelled '**None**'.

Uncontrolled blood pressure

For patients who have **uncontrolled blood pressure** please indicate:

1. **Main reason that BP is uncontrolled**

Please indicate the **main reason** that you believe this patient's **blood pressure is uncontrolled**. If the reason is not listed, please tick the box labelled 'other' and write the reason in the space provided. Please tick only one option.

2. **Future management plan**

Please indicate your **next step in managing** this patient's **blood pressure**. If your next step is not listed please write it in the space provided. Tick all that apply.

Medications

Please specify the **medication(s) currently taken for hypertension**. Please write the **name, form** and regimen (**dose and frequency**) for **each medication**.

If the patient is **not** currently taking medication for hypertension please tick the box labelled '**no medication**'.

Current blood pressure

Please **test the patient's blood pressure** and write the level in the space provided.

Blood pressure control

Please advise **whether** (in your clinical opinion) the patient's **blood pressure is well controlled**.

Has this patient been diagnosed with hypertension?	Current medication(s) for hypertension:	Does this patient have:	Today's blood pressure is:	If BP is uncontrolled:	
☐ Yes ☐ No → **End questions**	Name & Form / Strength / Dose / Frequency _____ _____ _____ _____ ☐ **No medication**	☐ Diabetes ☐ Coronary heart disease ☐ Cerebral vasc. dis. ☐ Peripheral vasc. dis. ☐ Family Hx of coronary artery disease ☐ Dyslipidaemia ☐ Proteinuria *(>300mg/day)* ☐ Chronic kidney disease ☐ Other chronic disease: *(please specify)* _____ ☐ None	_____ / _____ mmHg **Is this patient's BP currently well controlled?** ☐ Yes ☐ No	**1. What is the main reason:** ☐ Current medication(s) is not efficacious ☐ Patient non-compliance ☐ Alternative medications are unsuitable ☐ Other: _____	**2. What is the next step in the management plan?** ☐ NO CHANGE ☐ Add a diuretic ☐ Add a calcium channel blocker ☐ Add a beta blocker ☐ Dose titration ☐ Other: _____

BL154C

SAND abstract number 219: Use of combination products in the management of hypertension in general practice patients

Organisation collaborating for this study: Merck Sharp and Dohme (Australia) Pty Ltd

Issues: Diagnosed prevalence of hypertension among patients consulting a GP; level of blood pressure (BP) control for patients with hypertension; reasons for uncontrolled BP; medications taken for hypertension; use of combination products; reasons for not using a combination product; difference in BP control between patients taking single product and combination product.

Sample: 2,528 patients from 86 GPs; data collection period: 20/08/2013 – 23/09/2013.

Method: Detailed in the paper entitled *SAND Method 2013–14* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Summary of results

The initial question about hypertension status was answered by 2,528 patients. Sex was known for 2,518 patients, and age was known for 2,517 patients. The sex distribution did not differ from patients at all 2012–13 BEACH encounters, but there were fewer patients aged 15–24 years in this sample (6.6%, 95% CI: 5.4–7.8 compared with 8.3%, 95% CI: 7.9–8.7).

Of the 2,528 respondents, 760 patients (30.1%) had diagnosed hypertension and there was no significant difference in prevalence between the sexes. The prevalence rose significantly by age group from 15–24 (1.8%), 25–44 (7.4%), 45–64 (31.6%), to the highest among patients aged 65 years or older (61.7%).

Among 750 respondents with hypertension, 85.6% were considered to have 'well controlled' BP, 13.7% had BP that was 'too high', and for 0.7% it was 'too low'. Of 102 patients considered to have uncontrolled BP, the main reason reported for 52.9% of patients was that the current medication was not efficacious, patient non-compliance for 10.8%, and alternative medications were unsuitable for 3.9% of patients.

At least one anti-hypertensive was recorded for 732 patients (97.5%). The majority (59.0%) were taking one anti-hypertensive, 28.5% were taking two, 7.9% were taking three, and 2.1% were taking four. An angiotensin II receptor antagonist (ATRA) was the most frequently listed anti-hypertensive medication (32.9%).

Combination anti-hypertensive products were taken by 178 (24.3%) of the 732 patients taking anti-hypertensives. More than half had taken it for more than 2 years (58.1% of 167 respondents). The most common reasons for prescribing a combination product were to improve BP control (67.3%), simplify treatment (37.5%) and/or improve compliance (16.1%).

Almost three-quarters (73.8%, n = 554) of patients taking anti-hypertensives were not taking a combination product: 342 patients (46.8% of 730 respondents taking an anti-hypertensive) were taking a single anti-hypertensive agent, and 210 (28.8%) were taking two or more anti-hypertensive agents not in a combination product. Good current BP control was the reason for not using a combination product for 81.8% of 417 respondents.

Patients using a single anti-hypertensive agent were more likely to have well controlled BP (92.4%; 95% CI: 89.5–95.2) than those taking two or more products not in a combination product (83.1%; 95% CI: 77.0–89.2) or those using a combination product (79.8%; 95% CI: 73.5–86.0).

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

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **COMBINATION PRODUCTS IN HYPERTENSION.**

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

INSTRUCTIONS

Please answer the following questions for **EACH** of the **next 30 PATIENTS in the order in which the patients are seen.**

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

Hypertension

Please indicate whether this patient has been **diagnosed with hypertension**.

If '**no**' please **end questions here** for this patient.

Uncontrolled blood pressure

For patients who have **uncontrolled blood pressure** please indicate the **main reason** that you believe this patient's **blood pressure is uncontrolled**. If the reason is not listed, please tick the box labelled 'other' and write the reason in the space provided.
Please tick only one option.

Current use of fixed dose combination products

Duration of use

Please advise the patient's approximate **duration of use** of the combination product.

Previous hypertension medication

Please use the tick boxes to advise the **single product** medications taken by the patient **prior to commencing** the combination product.

Please tick as many as apply.

Reasons for prescribing combination product

Please advise the main reason/s for the **decision to prescribe** a combination product for hypertension management for this patient.

Tick as many options as apply.

If you **do not know** the reason for prescribing, tick the box labelled '**don't know**'.

Blood pressure control

Please advise **whether** (in your clinical opinion) the patient's **blood pressure is well controlled**.

Medications

Please specify the **medication(s) currently taken for hypertension**. Please write the **name, form** and regimen (**dose and frequency**) for **each medication**.

If the patient is **not** currently taking medication for hypertension please tick the box labelled '**no medication**'.

Reason/s that a fixed dose combination product is not used

If the patient is not taking a fixed dose combination product for hypertension please use the tick boxes to **indicate the reasons** for this.
Please tick as many as apply.

Has this patient been diagnosed with hypertension?	The patient's BP is currently:	If BP is uncontrolled, what is the main reason?	Current hypertension medication(s): Name & Form Strength Dose Freq	If the patient is taking a fixed dose combination product, for how long has it been used?	Prior to the combination product, the patient took:	A combination product was prescribed to:	If a combination product is not used, the reason(s) are:
☐ Yes ☐ No → **End questions**	☐ Well controlled ☐ Too high ☐ Too low	☐ Current medication(s) is not efficacious ☐ Patient non-compliance ☐ Alternative medications are unsuitable ☐ Other: _____	_____ _____ _____ _____ ☐ **No medication**	☐ <3 months ☐ 3-12 months ☐ 13-24 months ☐ > 24 months	☐ a diuretic ☐ a beta-blocker ☐ a CCB ☐ an ACE inhibitor ☐ an A2RA ☐ none of the above ☐ no previous treatment	☐ simplify therapy ☐ improve compliance ☐ reduce side effects ☐ improve BP control ☐ reduce cost to patient ☐ don't know	☐ Pt has good control ☐ Required drug combo does not exist ☐ Required dosage combo does not exist ☐ Other

BL155B

SAND abstract number 220: Management of asthma and COPD in general practice patients in Australia – 2013

Organisation collaborating for this study: AstraZeneca Pty Ltd (Australia)

Issues: The prevalence among patients seeing a general practitioner (GP) of asthma and/or chronic obstructive pulmonary disease (COPD); presence of selected characteristics of asthma/COPD; medications taken for asthma/COPD; use of eformoterol + budesonide for prevention and as a reliever; frequency of short acting beta agonist (SABA) use; use of spacers; level of asthma/COPD control.

Sample: 2,818 patients from 96 GPs; data collection period: 20/10/2013 – 02/12/2013.

Method: Detailed in the paper entitled *SAND Method 2013–14* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Summary of results

The age and sex distributions of the 2,818 respondents did not differ from the age and sex distributions of all patients at 2012–13 BEACH encounters.

Of 2,818 respondents, 478 (17.0%) had diagnosed asthma and/or COPD: 364 (12.9%) had asthma alone; 95 (3.4%) COPD alone; and 19 (0.7%) both asthma and COPD. More than one-third (35.1%) of patients with asthma and/or COPD were aged 65 years or over.

Of 437 respondents with asthma/COPD, 58.6% described it as 'intermittent' and 28.8% as 'persistent'. One in five patients (19.2%) reported their asthma/COPD flared up in winter, 15.3% indicated flare-ups in spring, and 12.1% reported exercise induced asthma/COPD.

There were 389 patients (84.0% of 463 respondents) taking at least one medication for the management of asthma/COPD, with 664 medications listed. SABA accounted for 45.9% of these medications, followed by salmeterol + fluticasone (19.3%), anticholinergics (11.6%) and eformoterol + budesonide (11.3% of medications).

Of 75 patients taking eformoterol + budesonide, 50.7%(n = 40) were taking this medication for prevention alone, and 46.7% (n = 35) for both prevention and as a reliever (SMART dosing).

There were 296 patients (63.9% of 463 patients with asthma/COPD) taking at least one SABA, with 287 patients (62.0%) taking one SABA and nine patients (1.9%) taking two. Of 246 patients for whom frequency of SABA use over the previous 4 weeks was reported, 32.1% had not used a SABA over the previous 4 weeks, 30.1% had used a SABA two or fewer times per week, 15.9% had used it more than twice a week, but less than daily, and 19.1% had used it daily.

At least one preventer medication was used by 249 patients (53.8% of 463 respondents). Of 244 of these respondents, one in five (20.5%) used a spacer. Of 297 patients using reliever medication, 29.2% of 284 respondents were using a spacer with their reliever.

Of 478 asthma/COPD patients: 24.1% had used reliever medication(s) more than twice a week in the previous 4 weeks; 22.2% had daytime symptoms due to asthma/COPD in the past 4 weeks and 12.6% had night-time waking/symptoms; 17.4% had limitations of activities due to asthma/COPD in the previous 4 weeks; 16.5% had taken an oral corticosteroid in the previous 12 months; and 7.3% had visited an accident and emergency department or been admitted to a hospital for asthma/COPD in the previous 12 months.

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

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **MANAGEMENT OF ASTHMA AND COPD.**

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

INSTRUCTIONS

Please answer the following questions for **ALL** of the **next 30 PATIENTS in the order in which the patients are seen.** Please **DO NOT select patients** to suit the topic being investigated.

Please use your own knowledge, patient knowledge and medical records as you see fit, in order to answer these questions.

Asthma and Chronic Obstructive Pulmonary Disease (COPD)

Please use the tick boxes to indicate whether this patient has been diagnosed with **Asthma** and/or **COPD**. Tick all that apply.

If the patient has **not been diagnosed with asthma or COPD** please **finish the questions here** for this patient.

Current medications

Please write the **name, form** and regimen (**dose and frequency**) of the medication(s) **currently used to treat asthma and/or COPD**.

If the patient is **not taking any medication** for the treatment of asthma or COPD please tick the box labelled '**no current asthma/COPD med**'.

Use of SABA medication

Ask the patient

For patients currently taking **a short-acting beta agonist (SABA)**, please ask the patient how often it was used over the past 4 weeks.

Please use the tick box to indicate the **average number of times it was used**. The intention of this question is to get a general indication of SABA use over the past 4 weeks.

Other management/ symptoms

Ask the patient

Please use the tick boxes to indicate whether the patient has required/experienced **any of the listed interventions/symptoms due to asthma/COPD** in the stated timeframe. Tick all that apply.

Characteristics of asthma/COPD

Please use the tick boxes to indicate whether the patients asthma/COPD is **persistent, intermittent, exercise induced**, **flares up in spring** and/or **flares up in winter**. Tick all that apply.

Use of symbicort

For patients currently taking **symbicort** (an inhaled corticosteroid/long-acting beta agonist [ICS/LABA] combination product), please use the tick boxes to indicate whether it was prescribed as

- a **preventive medication only**
- a **preventive and reliever medication** (i.e. SMART dosing).

If you and the patient don't know, please tick the box labelled 'don't know'.

Use of spacer

Ask the patient

Please ask the patient whether they **use a spacer** when taking **reliever medication, and/or preventive medication**. Tick all that apply.

Has this patient been diagnosed with: *(Tick all that apply)*	**Is this patient's asthma/COPD:** *(Tick all that apply)*	**Current asthma/COPD medication/s:** Name & Form / Strength / Dose / Freq	**For patients taking symbicort, is it prescribed for:**	**Please ask patients taking SABA, how often (on average) it was used over the past 4 weeks?**	**Please ask the patient, whether they use a spacer?**	**Has the patient had any of the following due to asthma/COPD?** *(Tick all that apply)*
☐ Asthma	☐ Persistent		☐ Prevention only	☐ >6 times/day	☐ Yes for reliever medication	☐ Visit to A&E/hospital admission **in past 12 mths**
☐ COPD	☐ Intermittent		☐ Prevention and as a reliever (i.e. 'SMART' dosing)	☐ Daily (<6 times/day)	☐ Yes for preventive medication	☐ Taken oral corticosteroid **in past 12 mths**
☐ Neither → **End questions**	☐ Exercise induced		☐ Don't know	☐ >2 times/wk (not daily)	☐ No	☐ Used reliever meds >2 times/wk **in past 4 wks**
	☐ Flare up in spring			☐ ≤ 2 times/week		☐ Nightime waking/symptoms **in past 4 wks**
	☐ Flare up in winter	☐ **No current asthma/COPD med**		☐ Not used	BL157B	☐ Daytime symptoms >2 times/wk **in past 4 wks**
						☐ Any limitation of activities **in past 4 wks**

SAND abstract number 221: Patient weight, perception and management

Organisation collaborating for this study: Family Medicine Research Centre

Issues: Prevalence of overweight in patients aged 18 years or older; proportion of patients who considered themselves overweight; proportion considered overweight by the GP; relationship between patient body mass index (BMI) and weight perception; methods used by patients and GPs to manage overweight in the previous 12 months.

Sample: 5,199 patients aged 18 years or older from 204 GPs; data collection period: 29/10/2013 – 02/12/2013, and 21/01/2014 – 24/02/2014.

Method: Detailed in the paper entitled *SAND Method 2013–14* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Methods for this substudy: Patient-reported height and weight was used to calculate BMI and World Health Organisation recommendations for BMI groups were used <http://apps.who.int/bmi/index.jsp?introPage=intro_3.html>.

Summary of results

Patient-reported height and weight was recorded for 5,199 adult patients. Age was known for all patients, and sex was known for 5,178. The age and sex distributions of respondents in this sample did not differ from those of adult patients at all 2012–13 BEACH encounters.

Of sampled patients, 2.3% were underweight, 37.8% normal weight, and 59.9% overweight/obese (BMI ≥25.0), including: 23.7% obese and 4.7% morbidly obese. Overweight/obesity was most prevalent among 65–74 year olds (69.1%) and 45–64 year olds (66.8%). Males were significantly more likely than females to be overweight (BMI 25.0<30.0) (37.1% compared with 28.3%), but female patients were more likely to be morbidly obese (5.8% compared with 2.9%).

Of 5,161 respondents, 2,426 (47.6%) perceived themselves to be overweight. When patient self-perception and BMI were compared 26.8% of overweight/obese patients did not consider themselves overweight. The vast majority of obese (90.8%) and morbidly obese (99.2%) patients had correct perceptions about their weight, however 43.9% of overweight patients (BMI 25.0<30.0) did not consider themselves overweight.

Of 2,236 patients who correctly identified themselves as overweight, 80.8% had taken steps to manage their weight in the previous 12 months. The most common method used was diet/meal plan (68.2%), followed by exercise (61.4%), seeking GP advice (17.2%) and weight loss program (8.1%). Multiple responses were allowed.

Of 5,066 patients, 49.2% were considered overweight/obese by the GP. When GP perception and patient BMI were compared, 20.1% of overweight/obese patients were not considered overweight/obese by the GP. In the previous 12 months, the GP had provided weight management to two-thirds (66.4%) of patients they considered overweight/obese. The most common method was diet advice (62.1%), followed by exercise advice (55.8%) and referral to another health professional (11.7%).

When perceptions and patient BMI were compared, overweight/obesity was correctly identified by both patient and GP for 69.2% of patients. About 1 in 6 (16.0%) overweight/obese patients were not considered overweight/obese by either the patient or the GP. The gap between perceptions and BMI needs to be addressed to encourage early intervention and prevention of disease associated with overweight and obesity.

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

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **PATIENT WEIGHT, PERCEPTION AND MANAGEMENT.**

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

INSTRUCTIONS

For the **next 30 PATIENTS**, ask every adult patient aged 18 years or older the following questions. If the patient is less than 18 years of age leave the questions blank. Please **DO NOT select patients** to suit the topic being investigated.

Please use your own knowledge, patient knowledge and medical records as you see fit, in order to answer these questions.

For patients aged 18 years or older

Height/weight

Please ask patients aged 18+ years:

What is their height (without shoes)?*

What is their weight (unclothed)?*

Conversion tables from stone/pounds to kilograms and feet/inches to centimetres are provided.

** You are NOT REQUIRED to weigh or measure the patient, but if the patient is unsure, you may either do so or take information from the medical records.*

Weight loss methods used in past 12 months

Ask the patient (who considers themself to be overweight):, what steps they have taken to manage their weight over the past 12 months.

Tick as many as apply.

If the patient has not taken any steps to manage their weight in the past 12 months please tick the box labelled 'NONE'.

Note: **Diet/meal plan** refers to a structured diet, whether self-developed or use of commercial meal plans such as Lite N Easy, etc.

Weight loss programs include Jenny Craig, Weight Watchers etc.

Over-the-counter (OTC) products refer to those available from pharmacies, supermarkets, health food stores etc, examples include Slimfast, Optifast, Fat Blaster etc.

Weight management

If in your **clinical opinion**, this patient is overweight or obese, please indicate **whether you have managed the patient's weight** and the **methods** you have used **in the past 12 months**. Tick all that apply.

If you have **not managed the patient's weight**, please tick the box labelled '**no weight management**'.

Self assessment

Ask the patient

Please ask the patient whether they consider themself to be **overweight** (in their own opinion).

Weight assessment

Please use the tick boxes to indicate whether in your **clinical opinion**, you consider the pateint to be **obese, overweight, normal weight or underweight**.

If you perceive the patient to be **normal weight or underweight,** please **end questions here for this patient**.

For patients aged 18 years or older

Patient reported:

Height: ____ cm

Weight: ____ kg

Ask the patient:

Do you consider yourself to be overweight?

☐ Yes → **If 'yes', what steps have you taken to manage your weight in the past 12 months?** *(Tick all that apply)*

☐ No

BL157C

- ☐ Diet/meal plan
- ☐ **NONE**
- ☐ Exercise
- ☐ Sought GP advice
- ☐ Weight loss program
- ☐ Prescribed medication
- ☐ OTC product (pharmacy/retail)
- ☐ Sought specialist/dietitian advice
- ☐ Other: _____

For the GP:

Do you consider this patient to be:

- ☐ Obese
- ☐ Overweight
- ☐ Normal weight → **End questions**
- ☐ Underweight → **End questions**

In the past 12 months, how have you managed this patient's weight? *(Tick all that apply)*

- ☐ Diet advice
- ☐ Exercise advice
- ☐ Prescribed/advised medication
- ☐ Referred the patient to another health professional
- ☐ Advised use of a service (e.g. personal trainer, weight loss program)
- ☐ Referral for gastrointestinal surgery
- ☐ Other: _____
- ☐ **No weight management**

SAND abstract number 222: GP encounters in languages other than English and interpreter use

Organisations collaborating for this study: Family Medicine Research Centre and GPs from the Doutta Galla Community Health Centre.

Issues: The proportion of general practice patients who speak a language other than English in the home; the languages spoken; the extent to which encounters with patients from non-English-speaking backgrounds (NESB) were conducted in languages other than English; and use of interpreter services.

Sample: 6,074 patients from 206 GPs; data collection period: 03/12/2013 – 20/01/2014; 25/02/2014 – 31/03/2014.

Method: Detailed in the paper entitled *SAND Method 2013–14* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Summary of results

The age distribution of respondents in this sample revealed a smaller proportion of patients aged 15–24 (6.9%, 95% CI: 6.0–7.8) and 25–44 years (21.4%, 95% CI: 19.5–23.4), and a significantly larger proportion of patients aged 75+ years (19.5%, 95% CI: 17.4–21.6) compared with patients at all BEACH encounters in 2012–13: 15–24 years (8.3%, 95% CI: 7.9–8.7); 25–44 years (22.5%, 95% CI: 21.8–23.2); and 75+ years 16.2% (95% CI: 15.4–17.0). There was no difference in the sex distribution.

Of 6,074 respondents, 986 (16.2%, 95% CI: 13.2–19.3) reported that a language other than English was spoken at home. Patients indicated more than 80 different languages were spoken at home. The most common were: Greek (14.9% of NESB patients), Italian (13.8%), Cantonese (7.7%), and Spanish (6.0%).

One-in-three (32.3%) encounters with NESB patients (n = 946 respondents) involved communication, between the patient (or their carer) and the GP, in a language other than English. At 82.3% of these, multilingual GPs spoke the patient's language, and for 17.7% a family/friend acted as interpreter. A professional interpreter was only used at 1.0% of these encounters. Languages spoken by NESB patients at encounters with multilingual GPs were most commonly Greek (31.9% of patients at these encounters), Cantonese (15.9%) and Spanish (10.8%).

At encounters conducted in languages other than English where a professional interpreter was not used (n = 291 respondents), GPs were asked whether they believed the quality of the consultation would have been improved if a professional had been used. GPs indicated that they believed quality would have been improved for 8.6% of these encounters, for 2.4% they were unsure of improvement, and that quality would not be improved for 89.0%.

There were 796 encounters with NESB patients where an interpreter of any kind (including a family member, friend or a professional interpreter) was not used. For the vast majority (96.4%) of these, the GP or patient felt it was not needed (e.g. the patient was fluent in English or the GP was multilingual). Other reasons given included: that the patient was in a nursing home (1.9%); that a family/friend was unavailable to interpret today (0.8%). GP lack of awareness of interpreting services, and unavailability of these, were reasons rarely given.

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

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **USE OF LANGUAGES DURING CONSULTATIONS.**

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

INSTRUCTIONS

Please answer the following questions for **ALL** of the **next 30 PATIENTS in the order in which the patients are seen.** Please **DO NOT select patients** to suit the topic being investigated.

Please use your own knowledge, patient knowledge and medical records as you see fit, in order to answer these questions.

Language spoken at home

Ask the patient if they **speak a language other than English at home**. Please tick only one box. If **more than one 'other' language** is spoken at home, please tick the box to indicate the **one spoken most often**.

Include **Indigenous languages**, and **sign languages** in '**other**', if these apply in the home.

If the patient cannot speak (e.g. a young child), please answer this question for the **parent or carer** with whom you are communicating at the consultation.

If **English** is the only language spoken at home, you may **end questions here for this patient**.

Other language spoken in today's consultation

Please indicate whether **today's consultation involved communication with the patient/ patient's carer** in **a language other than English**.

If '**yes**', please indicate **who spoke with the patient** in the **'other' language**.

Interpreter use

For this question, an interpreter refers to the person enabling communicating between the patient/patient's carer and the GP, and can include a family member, friend or professional interpreter.

For consultations where an **interpreter was NOT used**, please indicate the **reason/s why an interpreter wasn't used**. Tick all that apply.

Quality of consultation

For consultations where a professional interpreter was **NOT used**, please indicate whether, **in your clinical opinion**, the **use of a professional interpreter** would have **improved the quality of the consultation**.

Does this patient speak a language other than English at home? *(Tick only one box)*

- ☐ Yes, Mandarin
- ☐ Yes, Italian
- ☐ Yes, Arabic
- ☐ Yes, Cantonese
- ☐ Yes, Greek
- ☐ Yes, other: *(please specify)* _____
- ☐ **No, English only → End questions**

BL160C

Did any part of today's consultation involve communication with the patient/patient's carer in a language other than English?

- ☐ Yes
- ☐ No

If 'yes', who communicated with the patient/carer in the other language?

- ☐ GP
- ☐ Professional interpreter (over the phone/onsite)
- ☐ Family member/friend
- ☐ Other: _____

If an interpreter was NOT used, why not?

- ☐ Not needed (e.g. patient 'fluent' in English)
- ☐ Family/friend not available to interpret
- ☐ No interpreter service available
- ☐ Unaware of interpreter service
- ☐ Cost of interpreter service
- ☐ Other: _____

In your clinical opinion, would the quality of the consultation have improved if a professional interpreter had been used?

- ☐ Yes
- ☐ No
- ☐ Unsure
- ☐ N/A

References

1. Britt H, Miller GC, Henderson J, Bayram C, Valenti L, Harrison C et al. A decade of Australian general practice activity 2004–05 to 2013–14. General practice series no. 37. Sydney: Sydney University Press; 2014.
2. Australian Bureau of Statistics. Australian demographic statistics: December quarter 2013. Cat. no. 3101.0. Canberra: ABS, 2014. Viewed 8 August 2014, www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/E1FFDD84F70BC5C0CA257CFB0014E932/$File/31010_dec%202013.pdf
3. Australian Institute of Health and Welfare. Health expenditure Australia 2011–12. Health and welfare expenditure series no. 50. AIHW Cat. no. HWE 59. Canberra: AIHW; 2013.
4. Australian Government Department of Health. Annual Medicare Statistics – Financial Year 2007–08 to 2013–14 (Table 1.1 BTOS Summary). Canberra: Australian Government Department of Health, 2014. Viewed 17 October 2014, www.health.gov.au/internet/main/publishing.nsf/Content/34A89144DB4185EDCA257BF0001AFE29/$File/MBS%20Statistics%20Financial%20Year%202013-14%20external%2020140718.pdf
5. Australian Institute of Health and Welfare. Medical workforce 2012. National health workforce series no. 8. AIHW Cat. no. HWL 54. Canberra: AIHW; 2014.
6. Australian Government Department of Health. Quarterly Medicare Statistics – March Quarter 2007 to June Quarter 2014. Canberra: DoH, 2014. Viewed 17 October 2014, www.health.gov.au/internet/main/publishing.nsf/Content/Quarterly-Medicare-Statistics
7. Meza RA, Angelis M, Britt H, Miles DA, Seneta E, Bridges-Webb C. Development of sample size models for national general practice surveys. Aust J Public Health 1995;19(1):34–40.
8. Classification Committee of the World Organization of Family Doctors. ICPC-2: International Classification of Primary Care. 2nd ed. Oxford: Oxford University Press; 1998.
9. Robertson J, Fryer JL, O'Connell DL, Smith AJ, Henry DA. Limitations of Health Insurance Commission (HIC) data for deriving prescribing indicators. Med J Aust 2002;176(9):149–424.
10. Henderson J, Harrison C, Britt H. Indications for antidepressant medication use in Australian general practice patients. Aust N Z J Psychiatry 2010;44(9):865.
11. Britt H, Harrison C, Miller G. A misleading measure of GP prescribing of antibiotics for URTI. Number 2012–001. Sydney: FMRC, University of Sydney, 2012. Viewed 17 October 2014, http://sydney.edu.au/medicine/fmrc/beach/bytes/BEACH-Byte-2012-001.pdf
12. Australian Association of Pathology Practices Inc & Britt H. An analysis of pathology test use in Australia. Canberra: AAPP, 2008. Viewed 21 August 2013, http://pathologyaustralia.com.au/wp-content/uploads/2013/03/DOD-paper-+-append.pdf

13. Bayram C & Valenti L. GP pathology ordering. In: Britt H & Miller GC (eds). General practice in Australia, health priorities and policies 1998 to 2008. General practice series no. 24. Cat. no. GEP 24. Canberra: Australian Institute of Health and Welfare, 2009;57–86.
14. Bayram CF. Evaluation of pathology ordering by general practitioners in Australia. PhD thesis. The University of Sydney, 2013.
15. Studdert DM, Britt HC, Pan Y, Fahridin S, Bayram CF, Gurrin LC. Are rates of pathology test ordering higher in general practices co-located with pathology collection centres? Med J Aust 2010;193(2):114–9.
16. Bayram C, Britt H, Miller G, Valenti L. Evidence-practice gap in GP pathology test ordering: a comparison of BEACH pathology data and recommended testing. Sydney: The University of Sydney, 2009. Viewed 17 October 2014, www.health.gov.au/internet/publications/publishing.nsf/Content/QUPP-integrated-analysis-of-quality-use-of-pathology-program-final-reports-toc~Promoting-Evidence-Based-Practice~Evidence-Practice-Gap-in-GP-Pathology-Test-Ordering-A-Comparison-of-BEACH-Pathology-Data-and-Recommended-Testing-2009
17. Britt H, Miller GC, Valenti L, Henderson J, Gordon J, Pollack AJ et al. Evaluation of imaging ordering by general practitioners in Australia 2002–03 to 2011–12. General practice series no. 35. Sydney: The University of Sydney; 2014.
18. Australian Bureau of Statistics. Australian Health Survey: First Results, 2011–12. Cat. no. 4364.0.55.001. Canberra: ABS, 2012. Viewed 1 August 2013, www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4364.0.55.0012011-12?OpenDocument
19. Kerry SM & Bland JM. Sample size in cluster randomisation. BMJ 1998;316(7130):549.
20. Knox SA, Harrison CM, Britt HC, Henderson JV. Estimating prevalence of common chronic morbidities in Australia. Med J Aust 2008;189(2):66–70.
21. Britt HC, Harrison CM, Miller GC, Knox SA. Prevalence and patterns of multimorbidity in Australia. Med J Aust 2008;189(2):72–7.
22. Harrison C, Britt H, Miller G, Henderson J. Prevalence of chronic conditions in Australia. PLoS ONE 2013;8(7):e67494. Epub 2013 Jul 23.
23. Sayer GP, Britt H, Horn F, Bhasale A, McGeechan K, Charles J et al. Measures of health and health care delivery in general practice in Australia. General practice series no. 3. AIHW Cat. no. GEP3. Canberra: Australian Institute of Health and Welfare; 2000.
24. Britt H, Miller GC, Henderson J, Bayram C. Patient-based substudies from BEACH: abstracts and research tools 1999–2006. General practice series no. 20. AIHW Cat. no. GEP 20. Canberra: Australian Institute of Health and Welfare; 2007.
25. Britt H, Miller GC, Charles J, Bayram C, Pan Y, Henderson J et al. General practice activity in Australia 2006–07. General practice series no. 21. AIHW Cat. no. GEP 21. Canberra: Australian Institute of Health and Welfare; 2008.
26. Britt H, Miller GC, Charles J, Henderson J, Bayram C, Harrison C et al. General practice activity in Australia 2007–08. General practice series no. 22. AIHW Cat. no. GEP 22. Canberra: Australian Institute of Health and Welfare; 2008.
27. Britt H, Miller G, Charles J, Henderson J, Bayram C, Pan Y et al. General practice activity in Australia 2008–09. General practice series no. 25. AIHW Cat. no. GEP 25. Canberra: Australian Institute of Health and Welfare; 2009.

28. Britt H, Miller G, Charles J, Henderson J, Bayram C, Pan Y et al. General practice activity in Australia 2009–10. General practice series no. 27. AIHW Cat. no. GEP 27. Canberra: Australian Institute of Health and Welfare; 2010.
29. Britt H, Miller G, Charles J, Henderson J, Bayram C, Valenti L et al. General practice activity in Australia 2010–11. General practice series no. 29. Sydney: Sydney University Press; 2011.
30. Britt H, Miller GC, Henderson J, Charles J, Valenti L, Harrison C et al. General practice activity in Australia 2011–12. General practice series no. 31. Sydney: Sydney University Press; 2012.
31. Britt H, Miller GC, Henderson J, Bayram C, Valenti L, Harrison C et al. General practice activity in Australia 2012–13. General practice series no. 33. Sydney: Sydney University Press; 2013.
32. SAS proprietary software release 9.3. Cary: SAS Institute Inc, 2011.
33. Wolfe R & Hanley J. If we're so different, why do we keep overlapping? When 1 plus 1 doesn't make 2. CMAJ 2002;166(1):65–6.
34. Cumming G & Finch S. Inference by eye: confidence intervals and how to read pictures of data. Am Psychol 2005;60(2):170–80.
35. Austin PC & Hux JE. A brief note on overlapping confidence intervals. J Vasc Surg 2002;36(1):194–5.
36. World Health Organization. Family of international classifications. Geneva: WHO, 2004. Viewed 30 July 2013, www.who.int/classifications/en/WHOFICFamily.pdf
37. Australian Institute of Health and Welfare. Australian family of health and related classifications matrix. Canberra: AIHW, 2005. Viewed 30 July 2013, www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=6442475388&libID=6442475369
38. Wonca International Classification Committee. ICPC-2 English 2-pager. Singapore: World Organization of Family Doctors, 1998. Viewed 30 July 2013, www.kith.no/upload/2705/ICPC-2-English.pdf
39. Britt H. A new coding tool for computerised clinical systems in primary care–ICPC plus. Aust Fam Physician 1997;26(Suppl 2):S79–S82.
40. Bridges-Webb C, Britt H, Miles DA, Neary S, Charles J, Traynor V. Morbidity and treatment in general practice in Australia 1990–1991. Med J Aust 1992;157(19 Oct Spec Sup):S1–S56.
41. Britt H, Miles DA, Bridges-Webb C, Neary S, Charles J, Traynor V. A comparison of country and metropolitan general practice. Aust Fam Physician 1994;23(6):1116–25.
42. O'Halloran J, Miller GC, Britt H. Defining chronic conditions for primary care with ICPC-2. Fam Pract 2004;21(4):381–6.
43. World Health Organization Collaborating Centre for Drug Statistics Methodology. Anatomical Therapeutic Chemical (ATC) classification index with Defined Daily Doses (DDDs). January 1998 ed. Oslo: WHO; 1997.
44. Britt H, Miller G, Bayram C. The quality of data on general practice – a discussion of BEACH reliability and validity. Aust Fam Physician 2007;36(1–2):36–40.
45. Driver B, Britt H, O'Toole B, Harris M, Bridges-Webb C, Neary S. How representative are patients in general practice morbidity surveys? Fam Pract 1991;8(3):261–8.

46. Britt H, Harris M, Driver B, Bridges-Webb C, O'Toole B, Neary S. Reasons for encounter and diagnosed health problems: convergence between doctors and patients. Fam Pract 1992;9(2):191–4.
47. Britt H. Reliability of central coding of patient reasons for encounter in general practice, using the International Classification of Primary Care. Journ Informatics in Prim Care 1998;May:3–7.
48. Britt H. A measure of the validity of the ICPC in the classification of reasons for encounter. Journ Informatics in Prim Care 1997;Nov:8–12.
49. Bentsen BG. The accuracy of recording patient problems in family practice. J Med Educ 1976;51(4):311–6.
50. Barsky AJ, III. Hidden reasons some patients visit doctors. Ann Intern Med 1981;94(4 pt 1):492–8.
51. Morrell DC, Gage HG, Robinson NA. Symptoms in general practice. J R Coll Gen Pract 1971;21(102):32–43.
52. Anderson JE. Reliability of morbidity data in family practice. J Fam Pract 1980;10(4):677–83.
53. Marsland DW, Wood M, Mayo F. Content of family practice. New York: Appleton-Century-Crofts; 1980.
54. Bensing J. The use of the RFE classification system in observation studies – some preliminary results. Presented at the Tenth WONCA Conference on Family Medicine; 1983; Singapore: WONCA; 1983;95–100.
55. Howie JG. Diagnosis–the Achilles heel? J R Coll Gen Pract 1972;22(118):310–5.
56. Alderson M. Mortality, morbidity and health statistics. First ed. Southampton: Stockton Press; 1988.
57. Crombie DL. The problem of variability in general practitioner activities. In: Yearbook of research and development. London: Her Majesty's Stationery Office, 1990;21–24.
58. Britt H, Bhasale A, Miles DA, Meza A, Sayer GP, Angelis M. The sex of the general practitioner: a comparison of characteristics, patients, and medical conditions managed. Med Care 1996;34(5):403–15.
59. Knottnerus JA. Medical decision making by general practitioners and specialists. Fam Pract 1991;8(4):305–7.
60. Britt H, Meza RA, Del Mar C. Methodology of morbidity and treatment data collection in general practice in Australia: a comparison of two methods. Fam Pract 1996;13(5):462–7.
61. Gehlbach SH. Comparing methods of data collection in an academic ambulatory practice. J Med Educ 1979;54(9):730–2.
62. Britt H, Angelis M, Harris E. The reliability and validity of doctor-recorded morbidity data in active data collection systems. Scand J Prim Health Care 1998;16(1):50–5.
63. Australian Bureau of Statistics. Australian Standard Geographical Classification. AIHW Cat. no. 1216.0. Canberra: ABS; 2008.
64. Bayram C, Knox S, Miller G, Ng A, Britt H. Clinical activity of overseas-trained doctors practising in general practice in Australia. Aust Health Rev 2007;31(3):440–8.
65. Charles J, Britt H, Valenti L. The independent effect of age of general practitioner on clinical practice. Med J Aust 2006;185(2):105–9.

66. Harrison CM, Britt HC, Charles J. Sex of the GP – 20 years on. Med J Aust 2011;195(4):192–6.
67. Henderson J. The effect of computerisation on the quality of care in Australian general practice. PhD thesis. The University of Sydney, 2007.
68. Britt H, Miller GC, Charles J, Henderson J, Bayram C, Valenti L et al. General practice activity in Australia 2000–01 to 2009–10: 10 year data tables. General practice series no. 28. AIHW Cat. no. GEP 28. Canberra: Australian Institute of Health and Welfare; 2010.
69. Britt H, Valenti L, Miller GC, Farmer J. Determinants of GP billing in Australia: content and time. Med J Aust 2004;181(2):100–4.
70. Britt HC, Valenti L, Miller GC. Determinants of consultation length in Australian general practice. Med J Aust 2005;183(2):68–71.
71. Britt H, Valenti L, Miller G. Debunking the myth of general practice as '6 minute medicine'. Number 2014–002. Sydney: FMRC, University of Sydney, 2014. Viewed 17 October 2014, http://sydney.edu.au/medicine/fmrc/beach/bytes/BEACH-Byte-2014-002.pdf
72. McWhinney IR. Are we on the brink of a major transformation of clinical method? CMAJ 1986;135(8):873–8.
73. Harrison C & Britt H. General practice – workforce gaps now and in 2020. Aust Fam Physician 2011;40(1–2):12–5.
74. Harrison C, Britt H, Miller G, Henderson J. Examining different measures of multimorbidity, using a large prospective cross-sectional study in Australian general practice. BMJ Open 2014;4(7):e004694.
75. Family Medicine Research Centre. ICPC-2 PLUS – Demonstrator. Sydney: FMRC, 2014. Viewed 17 October 2014, http://sydney.edu.au/medicine/fmrc/icpc-2-plus/demonstrator/index.php
76. World Health Organization Collaborating Centre for Drug Statistics Methodology. Anatomical Therapeutic Chemical (ATC) classification index with Defined Daily Doses (DDDs). January 2009 ed. Oslo: WHO; 2009.
77. Miller GC, Valenti L, Britt H, Bayram C. Drugs causing adverse events in patients aged 45 or older: a randomised survey of Australian general practice patients. BMJ Open 2013;3(10):e003701.
78. O'Halloran J, Harrison C, Britt H. The management of chronic problems. Aust Fam Physician 2008;37(9):697.
79. UBM Medica Australia Pty Ltd. MIMS Australia. Sydney: UBM Medica Australia Pty Ltd; 2010.
80. Therapeutic Goods Administration. Scheduling of medicines and poisons. Canberra: TGA, 2010. Viewed 9 August 2010, www.tga.gov.au/industry/scheduling.htm
81. Australian Government Department of Health and Ageing. Medicare Benefits Schedule book. Canberra: DoHA; 2004.
82. Britt H, Knox S, Miller GC. Changes in pathology ordering by general practitioners in Australia 1998-2001. General practice series no. 13. AIHW Cat. no. GEP 13. Canberra: Australian Institute of Health and Welfare; 2003.
83. Australian Government Department of Health. Medicare Benefits Schedule book. Canberra: DoH, 2014. Viewed 17 October 2014,

www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/Downloads-201407

84. Britt H, Miller GC, Knox S. Imaging orders by general practitioners in Australia 1999–00. General practice series No 7. AIHW Cat. no. GEP 7. Canberra: Australian Institute of Health and Welfare; 2001.
85. Begg S, Vos T, Barker B, Stevenson C, Stanley L, Lopez AD. The burden of disease and injury in Australia 2003. AIHW Cat. no. PHE 82. Canberra: Australian Institute of Health and Welfare; 2007.
86. Mathers C, Vos T, Stevenson C. The burden of disease and injury in Australia. AIHW Cat. no. PHE 17. Canberra: AIHW; 1999.
87. Lim SS, Vos T, Flaxman AD, Danaei G, Shibuya K, ir-Rohani H et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet 2012;380(9859):2224–60.
88. Organisation for Economic Co-operation and Development. OECD Health Data 2014. Risk Factors table. Paris: OECD, 2014. Viewed 16 October 2014, www.oecd.org/els/health-systems/oecd-health-statistics-2014-frequently-requested-data.htm
89. Organisation for Economic Co-operation and Development. OECD Health Statistics 2014. How does Australia compare? Paris: OECD, 2014. Viewed 16 October 2014, www.oecd.org/els/health-systems/Briefing-Note-AUSTRALIA-2014.pdf
90. Australian Bureau of Statistics. Australian Health Survey: Updated Results, 2011–12. Cat. no. 4364.0.55.003. Canberra: ABS, 2013. Viewed 1 October 2013, www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4364.0.55.0032011-2012?OpenDocument
91. National Health and Medical Research Council. Clinical practice guidelines for the management of overweight and obesity in adults, adolescents and children in Australia. Melbourne: NHMRC; 2013 May.
92. World Health Organization. Body mass index (BMI). Geneva: WHO, 2009. Viewed 22 August 2013, http://apps.who.int/bmi/index.jsp?introPage=intro_3.html
93. Australian Bureau of Statistics. National Nutrition Survey: nutrient intakes and physical measurements, Australia 1995. AIHW Cat. no. 4805.0. Canberra: ABS; 1998.
94. Cole TJ, Bellizzi MC, Flegal KM, Dietz WH. Establishing a standard definition for child overweight and obesity worldwide: international survey. BMJ 2000;320(7244):1240–3.
95. Cole TJ, Flegal KM, Nicholls D, Jackson AA. Body mass index cut offs to define thinness in children and adolescents: international survey. BMJ 2007;335(7612):194.
96. Ogden CL, Kuczmarski RJ, Flegal KM, Mei Z, Guo S, Wei R et al. Centers for Disease Control and Prevention 2000 growth charts for the United States: improvements to the 1977 National Center for Health Statistics version 54. Pediatrics 2002;109(1):45–60.
97. Valenti L. Overweight and obesity. In: Britt H & Miller GC (eds). General practice in Australia, health priorities and policies 1998 to 2008. General practice series no. 24. Cat. no. GEP 24. Canberra: Australian Institute of Health and Welfare, 2009;105–120.

98. Cretikos MA, Valenti L, Britt HC, Baur LA. General practice management of overweight and obesity in children and adolescents in Australia. Med Care 2008;46(11):1163–9.
99. Australian Institute of Health and Welfare. Australia's health 2008. Biennial health report no. 11. AIHW Cat. no. AUS 99. Canberra: AIHW; 2008.
100. AIHW. Australia's Health 2012. Australia's health no. 13. AIHW Cat. no. AUS 156. Canberra: AIHW; 2012.
101. Australian Institute of Health and Welfare. 2010 National Drug Strategy Household Survey report. Drug Statistics Series no. 25. AIHW Cat. no. PHE 145. Canberra: AIHW; 2011.
102. Ridolfo B & Stevenson C. The quantification of drug-caused mortality and morbidity in Australia, 1998. Drug Statistics Series. AIHW Cat. no. PHE 29. Canberra: AIHW; 2001.
103. National Health and Medical Research Council. Australian guidelines to reduce health risks from drinking alcohol. Canberra: Commonwealth of Australia; 2009.
104. Saunders JB, Aasland OG, Babor TF, de la Fuente JR, Grant M. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption–II. Addiction 1993;88(6):791–804.
105. Bush K, Kivlahan DR, McDonell MB, Fihn SD, Bradley KA. The AUDIT alcohol consumption questions (AUDIT-C): an effective brief screening test for problem drinking. Ambulatory Care Quality Improvement Project (ACQUIP). Alcohol Use Disorders Identification Test. Arch Intern Med 1998;158(16):1789–95.
106. Centre for Drug and Alcohol Studies. The alcohol use disorders identification test. 1993. Sydney, The University of Sydney.
107. Meneses-Gaya C, Zuardi AW, Loureiro SR, Hallak JE, Trzesniak C, de Azevedo Marques JM et al. Is the full version of the AUDIT really necessary? Study of the validity and internal construct of its abbreviated versions. Alcohol Clin Exp Res 2010;34(8):1417–24.
108. Proude EM, Britt H, Valenti L, Conigrave KM. The relationship between self-reported alcohol intake and the morbidities managed by GPs in Australia. BMC Fam Pract 2006;7:17.

Abbreviations

ABS	Australian Bureau of Statistics
ACE	angiotensin-converting enzyme
ACRRM	Australian College of Rural and Remote Medicine
AF	Atrial fibrillation
AHS	allied health service
AHW	Aboriginal health worker
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)
CKD	chronic kidney disease
COPD	chronic obstructive pulmonary disease
CT	computerised tomography
DoH	Australian Government Department of Health
DoHA	Australian Government Department of Health and Ageing
DVA	Australian Government Department of Veterans' Affairs
ENT	Ear, nose and throat
FMRC	Family Medicine Research Centre
FTE	full-time equivalent
GFR	glomerular filtration rate
GP	general practitioner
HbA1c	haemoglobin, type A1c
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
LABA	long-acting beta agonist
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
NHMRC	National Health and Medical Research Council
NLC	Nocturnal leg cramp
OTC	over-the-counter (medications advised for over-the-counter purchase)
PBS	Pharmaceutical Benefits Scheme
PN	Practice nurse
RACGP	Royal Australian College of General Practitioners
RFE	reason for encounter
RRMA	Rural, Remote and Metropolitan Area classification
SABA	short-acting beta agonist
SAND	Supplementary Analysis of Nominated Data
SAS	Statistical Analysis System
UCL	upper confidence limit
URTI	upper respiratory tract infection
WHO	World Health Organization
Wonca	World Organization of Family Doctors

Symbols

–	not applicable
<	less than
>	more than
NEC	not elsewhere classified
n	number
NOS	not otherwise specified

Glossary

A1 Medicare items: see *MBS/DVA items: A1 Medicare items*.

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 health services: Clinical and other specialised health services provided in the management of patients by allied and other health professionals 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, which entitles the holder to reduced-cost medicines under the Pharmaceutical Benefits Scheme and some 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 that act as a second axis across all chapters.

Co-located health service: a health service (e.g. physiotherapist, psychologist etc.) located in the practice building or within 50 metres of the practice building, available on a daily or regular basis.

Co-operative after-hours arrangements: the normal after-hours arrangements for patient care provision is undertaken in co-operation with another practice(s).

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 exposure, 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:
  - *MBS/DVA-claimable:* Encounters for which GPs have recorded at least one MBS item number as claimable, where the conditions of use of the item require that the patient be present at the encounter.
  - *Workers compensation:* Encounters paid by workers compensation insurance.
  - *Other paid:* Encounters paid from another source (for example, state).

Full-time equivalent (FTE): A GP working 35–45 hours per week.

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).

Generic medication: See *Medication: Generic.*

GP consultation service items: Includes GP services provided under the MBS professional services category including MBS items classed as A1, A2, A5, A6, A7, A14, A17, A18, A19, A20, A22 and selected items provided by GPs classified in A11, A15 and A27.

GP consultation service items: See *MBS/DVA items: GP consultation service items*.

MBS/DVA items: MBS item numbers recorded as claimable for activities undertaken by GPs and staff under the supervision of GPs. In BEACH, an MBS item number may be funded by Medicare or by the Department of Veterans' Affairs (DVA).

- *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.
- *GP consultation service items:* Includes GP services provided under the MBS professional services category including MBS items classed as A1, A2, A5, A6, A7, A14, A17, A18, A19, A20, A22 and selected items provided by GPs classified in A11, A15 and A27.
- *MBS/DVA item categories:* (Note: item numbers recorded in BEACH in earlier years which are no longer valid are mapped to the current MBS groups)
  - *Surgery consultations:* Identified by any of the following item numbers: short 3, 52, 5000, 5200; standard 23, 53, 5020, 5203; long 36, 54, 2143, 5040; prolonged 44, 57, 2195, 5060, 5208.
  - *Residential aged care facility:* Identified by any of the following item numbers: 20, 35, 43, 51, 92, 93, 95, 96, 5010, 5028, 5049, 5067, 5260, 5263, 5265, 5267.
  - *Home or institution visits (excluding residential aged care facilities):* Identified by any of the following item numbers: 4, 19, 24, 33, 37, 40, 47, 50, 58, 59, 60, 65, 87, 89, 90, 91, 503, 507, 5003, 5023, 5043, 5063, 5220, 5223, 5227, 5228.
  - *GP mental health care:* Identified by any of the following item numbers: 2700, 2701, 2702, 2704, 2705, 2710, 2712, 2713, 2715, 2717, 2721, 2723, 2725.
  - *Chronic disease management items:* Identified by any of the following item numbers: 720, 721, 722, 723, 724, 725, 726, 727, 729, 730, 731, 732.
  - *Health assessments:* Identified by any of the following item numbers: 700, 702, 703, 704, 705, 706, 707, 708, 709, 710, 712, 713, 714, 715, 717, 718, 719.
  - *Case conferences:* Identified by any of the following item numbers: 139, 734, 735, 736, 738, 739, 740, 742, 743, 744, 747, 750, 762, 765, 771, 773, 775, 778.

- *Attendances associated with Practice Incentives Program payments:* Identified by any of the following item numbers: 2497, 2501, 2503, 2504, 2506, 2507, 2509, 2517, 2518, 2521, 2522, 2525, 2526, 2546, 2547, 2552, 2553, 2558, 2559, 2574, 2575, 2577, 2598, 2600, 2603, 2606, 2610, 2613, 2616, 2620, 2622, 2624, 2631, 2633, 2635, 2664, 2666, 2668, 2673, 2675, 2677, 2704, 2705.
- *Practice nurse/Aboriginal health worker/allied health worker services:* Identified by any of the following item numbers: 711, 10950, 10951, 10960, 10966, 10970, 10986, 10987, 10988, 10989, 10993, 10994, 10995, 10996, 10997, 10998, 10999, 16400, 82210.
- *Acupuncture:* Identified by any of the following item numbers: 173, 193, 195, 197, 199.
- *Diagnostic procedures and investigations*: Identified by item numbers: 11000–12533.
- *Therapeutic procedures:* Identified by item numbers: 13206–23042 (excluding 16400).
- *Surgical operations:* Identified by item numbers: 30001–52036.
- *Diagnostic imaging services:* Identified by item numbers: 55037–63000.
- *Pathology services:* Identified by item numbers: 65120–74991.

Medication: Includes medication that is prescribed, provided by the GP at the encounter or advised for over-the-counter purchase.

- *Generic*: The generic name of a medication is its non-proprietary name, which describes the pharmaceutical substance(s) or active pharmaceutical ingredient(s).
- *GP-supplied:* The medication is provided directly to the patient by the GP at the encounter.
- *Over-the-counter (OTC):* Medication that the GP advises the patient to purchase OTC (a prescription is not required for the patient to obtain an OTC medication).
- *Prescribed:* Medications that are prescribed by the GP (that is, does not include medications that were GP-supplied or 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.
- *Continued:* The medication prescribed/provided at the encounter/advised is a continuation or repeat of previous therapy for this problem.
- *Old:* See *Continued*.

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.
- *Patient seen previously:* The patient has attended the practice before.

Problem managed: See *Diagnosis/problem*.

Provider: A person to whom a patient has access when contacting the healthcare 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 services, 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 result. 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 2013–14 recording form

BEACH (Bettering the Evaluation And Care of Health) - Morbidity and Treatment Survey - National DOC ID

Encounter Number	Date of encounter	Date of Birth	Sex	Patient Postcode
	___/___/___	___/___/_ _ _ _	M ☐ F ☐	

START Time	Patient Reasons for Encounter
: AM / PM (please circle)	1. 2. 3.

	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. ___
Home visit (not RACF) ☐
Workers comp paid ☐
Other paid ☐
No charge ☐

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	Drug status 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	Drug status 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	Drug status 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	Drug status 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)
1. ___ 1 2 3 4
2. ___ 1 2 3 4

IMAGING/Other tests Body site Problem(s)
1. ___ - ___ 1 2 3 4
2. ___ - ___ 1 2 3 4
3. ___ - ___ 1 2 3 4

PATHOLOGY Problem(s)
1. ___ 1 2 3 4
2. ___ 1 2 3 4
3. ___ 1 2 3 4

PATHOLOGY (cont) Problem(s)
4. ___ 1 2 3 4
5. ___ 1 2 3 4

Patient reported
Height: (in cm) ___
Weight: (in kg) ___

To the patient if 18+:
Which best describes your smoking status?
Smoke daily ☐
Smoke occasionally ☐
Previous smoker ☐
Never smoked ☐

To the patient if 18+:
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 6 or more standard drinks on one occasion?
Never ☐
Less than monthly ☐
Monthly ☐
Weekly ☐
Daily or almost daily ☐

Have you spent non-billable time on the management of any of this patient's problems between their last visit and today's visit?
☐ Yes ☐ No ☐ N/A
If 'yes', approx how many minutes? ___ ☐ Unsure of time
Reason: ___

FINISH Time
: AM / PM (please circle)

BA16

Appendix 2: GP characteristics questionnaire, 2013–14

THE UNIVERSITY OF SYDNEY

GP profile

Family Medicine Research Centre

Doctor Identification Number | | | | | |

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. Country of graduation *(primary medical degree)*:

☐ Australia ☐ Other: *(specify)* _____

5. How many direct patient care hours do you work per week?

(Include hours of direct patient care, instructions, counselling etc and other services such as referrals, prescriptions, phone calls etc.) .....

6. In terms of providing direct patient care, is it likely in 5 years time that you will have: *(Circle one option)*

Increased number of working hours 1
Not changed number of working hours 2
Decreased number of working hours 3
Stopped working as a GP 4
Unsure about future work as a GP 5

7. Are you a GP registrar (i.e. in training)?..... **Yes / No**

8. Do you hold FRACGP? ..... **Yes / No**

9. Do you hold FACRRM? ..... **Yes / No**

10. Is a computer available at your major practice? ..... **Yes / No**

If '**yes**', which clinical software is used? *(specify)* _____

11. Do **YOU** use the computer at your major practice? ..... **Yes / No**

*If '**yes**', please tick to indicate which functions of the computer/clinical software you use*

Active medical records: ☐ Completely paperless ☐ Combination of computer and paper ☐ Paper only

Prescribing: ☐ Electronic prescribing (ePrescribing online) ☐ Print scripts ☐ Paper only (handwritten)

Other: ☐ Internet ☐ Email

12. Over the past four weeks have you provided any patient care...

(a) in a residential aged care facility? .....**Yes / No**

(b) as a salaried/sessional hospital medical officer? .....**Yes / No**

13. At how many practice locations do you usually work, in a regular week.....

14. Postcode of major practice address.....

15. For your major practice, please specify the number of individuals (ie. headcount) and number of full time equivalents (FTE*) for each type of professional:

**Each FTE is defined as working 35-45 hours per week e.g. 2 GPs each working 20 hours/wk is recorded as 2 individual GPs and 1 FTE; 1 enrolled nurse working 20 hours/wk is recorded as 1 individual and 0.5 FTE.*

	No. individuals	No. FTEs
(a) GPs (including yourself)		
(b) Enrolled nurses		
(c) Registered nurses		
(d) Nurse practitioners		
(e) Midwives		
(f) Aboriginal health workers		

16. Are any of the following health services located or available (on a daily or regular basis) at your major practice? *(Tick all that apply)*

	In the practice	In the building or within 50 metres
Physiotherapist	☐	☐
Psychologist	☐	☐
Dietitian	☐	☐
Podiatrist	☐	☐
Pathology collection centre/lab ..	☐	☐
Imaging	☐	☐
Specialist(s) *(specify)*: _____	☐	☐
_____	☐	☐
Other *(specify)*: _____	☐	☐
NONE	☐	☐

17. What are the normal after-hours arrangements for your major practice? *(Circle all that apply)*

Practice does its own.....1
Co-operative with other practices 2
Deputising service.....3
Other (*specify*) _____4
None 5

*Thank you for participating in the **BEACH PROGRAM.***
Please return this form with the completed BEACH pad.

FMRC, PO Box 533, Westmead Hospital, Wentworthville, 2145.
GP16 (V1) Ph: 02 9845 8151 fax: 02 9845 8155 email: beach@fmrc.org.au Web: sydney.edu.au/medicine/fmrc/

Appendix 3: Patient information card, 2013–14

THE UNIVERSITY OF SYDNEY

Family Medicine Research Centre

INFORMATION FOR PATIENTS

The BEACH © Project

Today your doctor is taking part in a National Survey of general practice called BEACH © *(Bettering the Evaluation and Care of Health).* This study is being done by the Family Medicine Research Centre, University of Sydney.

Your Doctor will be recording information about each patient he/she sees (age, gender etc), the problems that you see the Doctor about and the treatments given to you. **There are no names on the forms so you cannot be identified.** The information about today's visit to the doctor will be one record in a set of 100,000 records collected in general practices across Australia every year.

This information will be used by researchers to describe what happens in general practice and to look at different aspects of health care; by government departments to help them plan for our future health; and by pharmaceutical companies to gain a picture of the problems being treated with the drugs they produce.

Remember: your name will not be on the form and no information will ever be released which could possibly let anyone know who you are. However, if you do not wish your doctor to record any unidentified information about you or your visit **please tell your Doctor as soon as you go in**. Such a decision will not affect the consultation with your doctor in any way.

SEE OVER FOR PROJECT DETAILS

(page 1 / 2)

FMRC, Acacia House, Westmead Hospital, PO Box 533,WENTWORTHVILLE, 2145.
Ph: 02 9845 8151 fax: 02 9845 8155 email: clare.bayram@sydney.edu.au Web: http://sydney.edu.au/medicine/fmrc/

BEACH © Program Details

This program has been approved by the Ethics Committee of the University of Sydney. The data are being collected in accordance with the Privacy Act 1988 as amended.

Organisations contributing financially to the conduct of this study in 2013–2014 are:

- ✦ The Australian Government Department of Health and Ageing
- ✦ AstraZeneca Pty Ltd (Australia)
- ✦ Merck Sharp & Dohme (Australia) Pty Ltd
- ✦ Novartis Pharmaceuticals Australia Pty Ltd
- ✦ CSL Biotherapies Pty Ltd

BEACH is endorsed by the Royal Australian College of General Practitioners

BEACH is endorsed by the Australian Medical Association

AMA

FURTHER INFORMATION:

Family Medicine Research Centre
The University of Sydney
Acacia House, Westmead Hospital
Westmead 2145

Phone: (02) 9845 8151
Fax: (02) 9845 8155
Email: clare.bayram@sydney.edu.au
Web: http://sydney.edu.au/medicine/fmrc/

Any person with concerns or complaints about the conduct of this research study can contact The Manager, Human Ethics Administration, University of Sydney on +61 2 8627 8176 (Telephone); +61 2 8627 8177 (Facsimile); ro.humanethics@sydney.edu.au (Email).

(page 2/2)

Appendix 4: Code groups from ICPC-2 and ICPC-2 PLUS

Available at: <purl.library.usyd.edu.au/sup/9781743324219>, see 'Electronic editions and downloads'.

This book provides a summary of results from the 16th year of the BEACH program, a continuous national study of general practice activity in Australia.

From April 2013 to March 2014, 959 general practitioners recorded details of 95,900 GP–patient encounters, at which patients presented 148,880 reasons for encounter and 151,675 problems were managed. For an 'average' 100 problems managed, GPs recorded: 65 medications (including 53 prescribed, 7 supplied to the patient and 6 advised for over-the-counter purchase); 12 procedures; 24 clinical treatments (advice and counselling); 6 referrals to specialists and 3 to allied health services; orders for 31 pathology tests and 7 imaging tests.

A subsample study of more than 31,000 patients suggests prevalence of measured risk factors in the adult (18 years and over) population who attended general practice at least once in 2013–14 were: obesity—27%; overweight—35%; daily smoking—17%; at-risk alcohol consumption—26%. One in four people in the attending population had at least two of these risk factors.

SYDNEY UNIVERSITY PRESS
sydney.edu.au/sup

ISBN: 978-1743324219